



# TEXAS TECH UNIVERSITY Fiber & Biopolymer Research Institute™

**Newsletter  
April 2020**

## FBRI Advisory Board Meeting

The FBRI advisory board met January 28, 2020. This board is composed of the following members:

- Steve Verett, Executive Vice President, Plains Cotton Growers
- Lorenzo Aleman-Sarinana, Seeds R&D Crop Technical Lead – Cotton, BASF Agriculture Solutions
- Eric Best, Research Agronomist, Bayer
- Ken Lege, Phytogen Cotton Development Specialist, Corteva Agriscience
- Kater Hake, Vice President Ag & Env. Research, Cotton Incorporated
- Mike Canale, Merchandizing Manager, Plains Cotton Cooperative Association
- Gregory Holt, Research Leader, Cotton Production & Processing Research, USDA-ARS Gin Lab
- Dale Swinburn, Cotton Producer
- Chris Jackson, President, Samuel Jackson Incorporated
- Julie Davis Holladay, Cotton Producer
- Kimberly Gramm, Associate Vice President of Innovation &

This advisory board meeting was an excellent opportunity to discuss not only the Institute's strength but also challenges facing us. Dr. Brown (Dean, CASNR) and Dr. Ritchie (Chair, PSS) were also present. The FBRI mission is to be an international leader in:

- Research and technology transfer in natural fibers and textiles
- Academic and professional education
- Testing, evaluation, and consultation related to natural fibers and textile products
- Development of textile testing methods and instrumentation

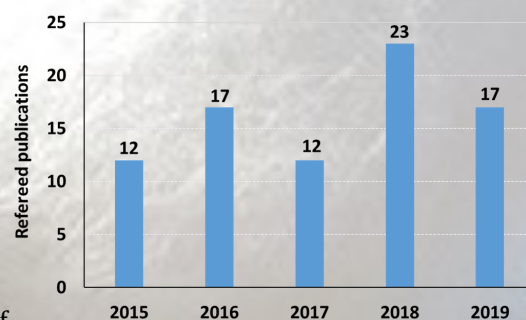
These charts show that FBRI continues to excel in research and service (on average \$1M/year), education (on average 16 graduate students/year), and dissemination of research (on average 16 refereed publications/year).



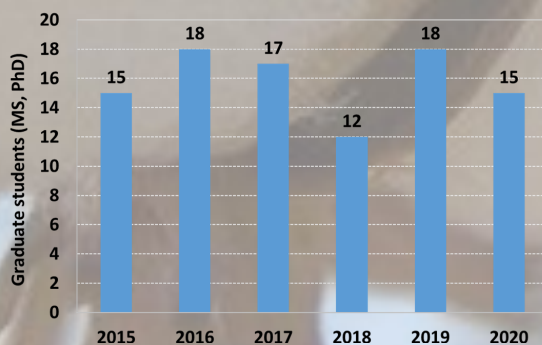
*FBRI advisory board meeting, January 28, 2020*



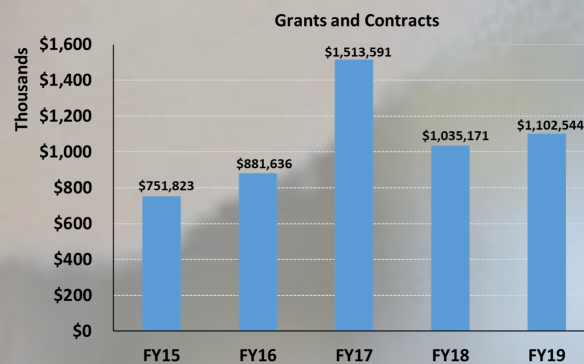
*C. Jackson gives an overview of the Sam Jackson humidification system*



*Number of refereed publications per year*



*Number of graduate students per year*



*Grants and Contracts*

**Make a Gift to The Fiber and Biopolymer Research Institute Fund for Excellence:** Your gifts help support FBRI to remain the premier Institute in cotton testing, evaluation, education, and research [Click here](#).



## FBRI will host the Texas International Cotton School



The Fiber & Biopolymer Research Institute in collaboration with the Lubbock Cotton Exchange will host the 40<sup>th</sup> session of the Texas International Cotton School. This session will be held August 3-13, 2020 in Lubbock, Texas.

The Texas International School has taught more than 500 students from 59 countries. It has raised the profile of Texas cotton around the world, creating a global network of people we communicate with and sometimes directly resulting in new customers of Texas cotton. Furthermore, the increased dominance of Texas in cotton production, along with the fact that almost all of Texas' production is now exported, makes the school more useful than before.

*"The cotton school is structured to provide an integrated understanding of the Texas cotton industry and how it interacts with the global cotton/textile complex. The intensive, two-week educational course on cotton and textiles provides experience, knowledge, and insight into future developments affecting global markets. Professionals from around the world attend, as well as leading cotton experts."*

~ Excerpt from the Texas International Cotton School website.

Texas Tech graduate students alongside professionals are engaged in an extensive curriculum which include breeding strategies, production systems, biotechnology, marketing, insurance, fiber quality/textile processing, and several tours and gatherings. For more information, please visit: <https://www.texasintlcottonschool.com/>.

## Lou Ann Hillhouse and Mary Beard retired after 14 and 19 Years of service



M. Beard

The Fiber & Biopolymer Research Institute celebrated Lou Ann's 14 years and Mary Beard's 19 years of service to FBRI Texas Tech University.

Lou Ann started working at FBRI June 1, 2006 and retired in November 2019. Lou Ann served as FBRI analyst. She was in charge of preparing, coordinating, and maintaining all financial/accounting records of FBRI. She has performed an excellent job.

Mary started working at FBRI October 1, 2000 and retired in January 2020. Mary was our CPL Lab Supervisor and brought many years of experience to the position. We wish Lou Ann and Mary all the best of luck in their retirement ventures.



L. Hillhouse

## FBRI welcomes Ann Hodges



A. Hodges

The FBRI was pleased to welcome Ann Hodges as our new Analyst. Prior to joining FBRI, Ann worked as Analyst at TTU Operations Division Engineering Services for 13 years.

## Lara Cheryl promoted to CPL Supervisor



C. Lara

Following the retirement of Mary Beard, Lara Cheryl was promoted to a Supervisor of the Cotton Phenomics Lab. Cheryl joined FBRI March 2013.

## Dr. Abidi receives the American Chemical Society Cellulose Division Fellow Award

Dr. Nouredine Abidi, Professor and FBRI Director, was selected to receive the 2020 American Chemical Society Cellulose Division Fellow Award. This award was established in 1983 to recognize the dedication, leadership, and enthusiastic service to the Cellulose and Renewable Materials Division of the American Chemical Society.



Dr. N. Abidi



## FBRI Continues its Tradition of Hosting Tours, Demonstration, and Engagement Activities

Several individuals and groups visited FBRI during this semester:

- ◆ Lummus Corp brought in 5 Argentina Customers to tour microgin
- ◆ Texas Tech University Department of Design students toured the FBRI facility learning how textiles are created from the gin to finished textiles (35 students)
- ◆ Randy Bowman with Windstar Gins brought in a group of cotton producers from the surrounding areas to tour the FBRI Facility (25 gin operators)
- ◆ Eric Best with Bayer brought in 15 growers from Georgia to tour the facility.
- ◆ AgLead-FarmLead 2019-2020 Class of Texas Farm Bureau
- ◆ Panda Biotech from Dallas visited FBRI to explore processing hemp fibers
- ◆ Group from the Office of Research & Innovation at TTU



*R. Bowman and group of cotton producers*



*Office of Research & Innovation team*



*Students from TTU Department of Design*



*E. Best & group of cotton producers from Georgia*



*Panda Biotech from Dallas*



*AgLead-FarmLead 2019-2020 Class*

## FBRI Publications: October 2019—March 2020

### Peer Review Papers:

1. McCormick, K.Y, Morais\*, J., Hequet, E. F., Kelly, B. R. Development of the Calibration Procedure for High Volume Instrument (HVI) Elongation Measurement. *Textile Research Journal*. 89(19-20)(2019)4095-4103 .
2. Smith C.W., B. Beyer, E. F. Hequet, S. Hague, D. Jones. TAM BB-2139 ELSU extra-long staple upland germplasm. *J. Plant Regist.*, (2020)1–5. DOI: 10.1002/plr.2.20024.
3. Mathangadeera, R.W.Y, E. F. Hequet, B. Kelly, J.K. Dever, C.M. Kelly. Importance of cotton fiber elongation in fiber processing. *Industrial Crops and Products*, 147(2020)112217. <https://doi.org/10.1016/j.indcrop.2020.112217>
4. Dube, N., Deb, S., Mahan, J., Martin, C., Ritchie, G., Kelly, B. In Situ Cotton Leaf Area Index by Height Using Three-Dimensional Point Clouds. *Agronomy Journal* (2019).
5. Bechere, E., Auld, D.L., Smith, W.C., Cantrell, R.G., Hequet, E.F., Ritchie, G. L., Pabuayon, I., Mishra, D., Hendon, B.R., Brown, N., and Kelly, B.R. Registration of six Upland Cotton Germplasm Lines with Improved Fiber Quality through EMS Treatments and Selection. *Journal of Plant Registrations* (2019).
6. Morais\*, J.P.S., Kelly, B.R., Sayeed\*, A., Hequet, E.F. Effects of non-lint material on heritability estimates of cotton fiber length parameters. *Euphytica* 216(2020)24.
7. Morais\*, J.P., James\*, J., Hinds\*, Z., Smith, W., Kelly, B., Hequet, E.F. A method to improve cotton fiber length measurement for laboratory analysis. *Methods X* (2019).
8. S. Liyanage\*, N. Abidi. Fourier transform infrared applications to investigate induced biochemical changes in liver. *Applied Spectroscopy Reviews*, 2019 DOI: 10.1080/05704928.2019.1692307.
9. P. Parajuli\*, S. Acharya\*, Y. Hu, N. Abidi. Cellulose-based monoliths with enhanced surface area and porosity. *J. Applied Polymer Science*, 2020;e48975, <https://doi.org/10.1002/APP.48975>

\*: Graduate student, ‡: Postdoc, Ψ: Previous student



## Selected New Projects for 2020

- Improving fiber length uniformity through breeding, PI: Kelly
- Enhancing the marketability of U.S. cotton through length uniformity improvement, PI: Hequet
- Maturity and standard fineness: determination, calibration, and use, PI: Hequet
- Developing bioproducts from low maturity cotton and cotton wastes, PI: Abidi
- Textile performance evaluation of selected High Plains cotton varieties, PIs: Kelly, Abidi
- Fiber yield and quality improvement using gene editing and wild cotton introgression, PI: Mendu
- Chemical and structural properties of cotton fiber base and associated seed-coat and their impact on fiber quality, PI: Abidi
- Establish the suitability of US cotton for Vortex spinning, PI: Hequet
- Targeting fiber quality attributes for the fiber of the future, PI: Kelly

## Potential New Research Opportunities

Dr. Eric Hequet continues to focus his efforts discussing potential new research opportunities related to industrial hemp. Increased interests has been on industrial hemp cultivation and processing in West Texas. The FBRI is interested to explore the spinnability of hemp fibers and blending with cotton fibers to produce new textile products. Further interest is on converting hemp biopolymers into bioproducts.



*Tensile Tester*

## FBRI Acquires new Tensile Tester

A new Tensile Tester was acquired. It will be primarily used to determine the stress and strain (elongation) of the bioplastic films prepared from cotton cellulose.

## FBRI Laboratories: Service, Collaboration & Engagement

The FBRI has been for many years a leader in interdisciplinary, collaborative research with different entities within and outside TTU. The FBRI labs provide valuable research and evaluation services to cotton breeders, researchers, producers, and seed companies. They also provide excellent opportunities for undergraduate and graduate students to perform their research projects on cotton.

### Ginning (contact: [noureddine.abidi@ttu.edu](mailto:noureddine.abidi@ttu.edu))

- Micro-gin: 24-saw fully-equipped Lummus Imperial III gin stand fed by a Lummus 700 Feeder and equipped with a super-jet lint cleaner behind the gin stand and a single Sentinel II saw lint cleaner (18" in width) for lint cleaning
- Tabletop 10-saw gin (minimum 50 g)
- Tabletop roller gin (for small sample 10 g or less)

### Fiber Testing (contact: [khawar.arain@ttu.edu](mailto:khawar.arain@ttu.edu))

- High Volume Instrument (HVI): HVI testing using Uster Technologies 1000 systems, providing the average of micronaire, length, uniformity, strength, elongation, color, and trash
- Advanced Fiber Information System (AFIS): AFIS provides measurements for length, maturity ratio, fineness, neps, and trash
- FAVIMAT single fiber testing to determine tenacity, elongation, work-to-break, and linear density
- Yarn testing

### Yarn Spinning (contact: [khawar.arain@ttu.edu](mailto:khawar.arain@ttu.edu))

- Yarn spinning (carded and combed)
- Rotor spinning

### Other Testing (contact: [noureddine.abidi@ttu.edu](mailto:noureddine.abidi@ttu.edu))

- Fiber cross-section
- X-Ray diffraction, FTIR analysis, Thermogravimetric analysis, High Performance Liquid Chromatography
- Color reading, small sample dyeing

### Helpful Links:

[FBRI](#)

[Plant and Soil Science](#)

[CASNR](#)

[TTU](#)

[Make a Gift](#)

#### Managing Director:

Noureddine Abidi, PhD.  
Email: [noureddine.abidi@ttu.edu](mailto:noureddine.abidi@ttu.edu)  
Phone: 806.834.1221

#### Mailing:

PO Box 45019, Lubbock,  
TX, 79409  
Lubbock, TX 79403

#### Shipping:

1001 East Loop 289 Front-  
age, Lubbock, TX, 79403

#### Phone: 806.742.5333

Fax: 806.742.5343  
Email: [fbri@ttu.edu](mailto:fbri@ttu.edu)