

VARIABILITY OF INDIVIDUAL COTTON FIBER TENSILE PROPERTIES WITHIN AND BETWEEN SAMPLES**F. Hosseinali****Fiber and Biopolymer Research Institute, Plant and Soil Science, Texas Tech University,
Lubbock, Texas****E. Hequet****Fiber and Biopolymer Research Institute, Plant and Soil Science, Texas Tech University,
Lubbock, Texas****Texas AgriLife Research,****Lubbock, Texas****N. Abidi****B. Kelly****R. Manandhar****D. R. Paudel****Fiber and Biopolymer Research Institute, Plant and Soil Science, Texas Tech University,
Lubbock, Texas****Abstract**

The primary goal of this research is comparing individual fiber tensile strength results with other physical properties of cotton fibers such as bundle strength, length, and maturity. The secondary goal is documenting the variability of individual fiber tensile strength both within sample and between samples. Between-samples investigation (10 mm gauge length) shows a good reasonable relationship between bundle strength and individual fiber tenacity on average. Also, moderate relationship is observed between individual fiber force-to-break and theta. Within sample investigation (3.17 mm or 1/8 inch gauge length) indicates long fibers have a higher tensile strength compared to shorter fibers on average, which may show the abundance of non-crystalline regions on their physical structure.