DECODING DISTRIBUTIONAL CHANGES IN FIBER QUALITY DURING CONSECUTIVE STAGES OF PROCESSING Brendan Kelly Eric F. Hequet Noureddine Abidi Farzad Hosseinali Roji Manandhar Dev Paudel Fiber and Biopolymer Research Institute, Dept. Plant & Soil Science, Texas Tech University Lubbock, TX

Abstract

Advanced Fiber Information System (AFIS) testing provides breeders and spinners an advantage over traditional HVI testing by reporting distributions of fiber qualities within a sample. Fiber quality distributions have proven to be powerful tools in predicting yarn quality but they are also encoded with additional information. In order to measure the distribution of quality within a sample, the AFIS must first individualize the fibers from the sample and then proceed to the measurement. Fibers are stressed and can be entangled or broken during this individualization process. Understanding the dynamics of fiber breakage and entanglement during individualization is crucial for a complete interpretation of AFIS results. Decoding the changes in fiber quality from the distributions reported by AFIS testing may also provide insights into fiber breakage during cleaning, ginning, and spinning. Thirty six cottons were chosen to represent a wide range of maturity and other fiber qualities. Five replications of 5,000 fibers for each of the 36 cottons were tested with the AFIS Pro. After each of the 36 cottons was tested with the AFIS, the fibers were retrieved from the lint box and formed into new slivers for consecutive AFIS testing. This process was continued until no sliver suitable for AFIS testing could be formed. Changes in fiber quality distribution parameters as the result of consecutive AFIS runs are detailed along with the characteristics of some individual bales.