

LENGTH DISTRIBUTIONS AS A BREEDING TOOL TO IMPROVE MULTIPLE FIBER PROPERTIES**Carol M. Kelly****Jane K. Dever****Texas AgriLife Research****Lubbock, TX****Eric F. Hequet****Texas Tech University, Fiber & Biopolymer Research Institute****Texas AgriLife Research****Lubbock, TX****Abstract**

There are data supporting the hypothesis that cotton fiber length distribution may be effectively used to improve multiple fiber properties. Fiber maturity and fiber strength can influence fiber length distribution. These traits along with the short fiber content are becoming increasingly important in breeding programs because of their effect on spinning performance and yarn quality. Because of the relationships among these fiber properties it is of interest to investigate the possibility of using fiber length distribution as an effective fiber quality evaluation and improvement tool in breeding programs. An additional tool that may be useful for the improvement of fiber quality is evaluation of wild cotton accessions and their fiber properties. There is evidence (based on length distributions) that some of these cottons exhibit unique fiber quality traits. For example, one accession showed little change in length distributions for a saw ginned and roller ginned fiber sample compared to a hand ginned sample. This suggests this accession had minimal fiber breakage during ginning which is a very valuable fiber characteristic. Fiber breakage can sometimes be explained by fiber maturity or lack thereof. However, the maturity ratio for this accession was not high enough to fully explain the lack of fiber breakage. Further investigation of this accession is needed to determine what is unique about the fiber. It is possible that by examining fiber properties of wild cottons like this accession we might gain a better understanding of how to improve certain fiber properties through breeding.