IMPACT OF FIBER PROCESSING ON COTTON FIBER TENSILE PROPERTIES

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Abstract

In order to compete with man-made fibers in the textile industry, it is important to ensure the good processing performance of cotton fibers. Therefore, it is necessary to understand the changes in fiber properties which occur due to processing. If the decisive tensile properties in fiber processing could be identified, they could be given more consideration in the breeding programs to improve the processing performance of cotton fibers. Among the main tensile properties, fiber strength is considered as the dominant tensile property while fiber elongation has generally been neglected. Lack of HVI calibration standards for elongation and the presence of a weak negative correlation between bundle tenacity and elongation, are the main reasons for the lack of interest in elongation. The importance of elongation in fiber processing, was separately assessed using thirty two cotton samples which represented a wide range in elongation. These samples belonged to two families where all the fiber properties except elongation were constant within a family. The results indicated the better performance of higher elongation fibers. This was observed with the yarn quality data as well as with the tensile property measurements of fibers. Thus, in order to achieve better processing performance of fibers, elongation should be given more consideration in the breeding programs.