

**A CRITICAL LOOK AT COTTON FIBER  
LENGTH MEASUREMENT BY AFIS  
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**Abstract**

The accurate measurement of fiber length is very important to evaluate cotton quality and to optimize fiber processing. The AFIS (Advanced Fiber Information System) provides the length distribution of a sample and its statistics by measuring “single” fibers. AFIS offers more complete length information than other instruments for fiber measurement. On the other hand, fiber damage may occur during the separation of fibers on the AFIS prior to actual measurement. Furthermore, only a portion of the fibers may be really “counted” since both entangled and hooked fibers are excluded. In this investigation, a series of experiments was performed to study the effects of sample properties on the length measurement by AFIS. The percentage of fibers counted was found to range from 9% to 33% depending on the sample type (sliver or lint) and fiber properties (short or long) when using the manufacturer recommended sliver density (42.5 mg/inch). This percentage was significantly increased with a decrease in sliver density. Even though only a portion of fibers that were fed to the instrument was counted, they represented the sample population fairly well with a slight bias towards the mean and a negative bias towards longer fibers. The average fiber length was reduced by a length of from 0.01 to 0.04 inch after AFIS measurement. This reduction in the average fiber length is due to fiber breakage, and it can be partially compensated for by calibration. Nonetheless, longer fibers (more than 1.0 inch) are more prone to be broken, and this causes a slight bias in the length distribution measured.