CALIBRATION OF THE HIGH VOLUME INSTRUMENTS WITH THE WHOLE FIBROGRAM

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Abstract

High Volume Instrument (HVI) is the most common instrument used for cotton fiber quality evaluation. The HVI length measurements are based on the fibrogram theory originally proposed by Hertel (1940). Current HVI protocols provide two length measurements, Upper Half Mean Length (UHML) and Uniformity Index (UI). However, a preliminary experiment showed that these two length measurements are not independent and also represent the longest part of the fibrogram curve. A Principal Component Analysis of the complete fibrogram indicates that at least three independent variables are required to explain the total within sample variation in fiber length captured by the fibrogram. In this experiment, we developed a method to calibrate the HVIs using the whole fibrogram. The results obtained show that it is possible to bring the fibrogram curves measured by multiple instruments into agreement through calibration. It indicates that it may be possible to use the whole fibrogram to improve HVI fiber length measurements. If confirmed, it would allow cotton breeders to implement the use of the total within sample variation in fiber length in their programs.