CALIBRATION OF THE HIGH VOLUME INSTRUMENT (HVI) ELONGATION MEASUREMENT

Kolby M. McCormick
Eric Hequet
Brendan Kelly
Texas Tech University
Lubbock, TX

Abstract

The United States is currently the world leader in cotton exports. Spinning mills desire high quality fiber in order to maintain maximum efficiency. As machinery throughput increases, machinery becomes more aggressive and breaks more fibers. The High Volume Instrument (HVI) is the most common tool used to measure fiber quality. Strength and Elongation are two of the properties that HVI measures. However, there is not a calibration procedure for HVI elongation. Both elongation and strength factor into the work-to-break of fiber bundles or the total energy needed to break a bundle of fibers.

Recent research indicates that fiber elongation is a heritable trait and can be improved through breeding without diminishing other fiber qualities, specifically strength. This research also demonstrated that using a single HVI line to estimate elongation was possible and allowed for rapid testing of breeder samples. However without calibration, multiple HVI lines could not be used to measure elongation reliably.

The Stelometer is a much slower method of measuring bundle strength and elongation, but it is the reference method. With the use of the Stelometer to develop calibration standards, it is possible to calibrate HVI elongation, thus making it possible to use multiple HVI lines to collect fiber elongation data.