ESTIMATION OF AFIS SHORT FIBER CONTENT USING THE HVI FIBROGRAM

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Abstract

Short Fiber Content (SFC), the percentage of fibers shorter than 0.5 inch, is a critical fiber quality parameter for textile processing. Having a high amount of SFC in a bale results in increased yarn imperfections, increased waste during processing, and reduced processing efficiency. Therefore, a fast and reliable method of measuring SFC would be very useful to spinning mills and cotton breeders. The Advanced Fiber Information System (AFIS) provides a measurement of SFC; however, AFIS is too slow to be used in large breeding programs or in cotton classification. Thus, many researchers and textile mills use the High Volume Instrument (HVI) Short Fiber Index (SFI) as an estimate of SFC. Recent studies show that the HVI fibrogram exhibits important within-sample variation related to fiber length. In this experiment, we developed models to estimate AFIS SFC by number and weight using the total fiber length variation captured by the fibrogram along with micronaire from a set of 992 commercial samples. The results show that the estimated SFC can explain approximately 72% of the variation in AFIS SFC by number and 78% of the variation in AFIS SFC by weight, while SFI could explain only 56% of the variation in AFIS SFC by number and 67% of the variation in AFIS SFC by weight. This new fibrogram-based measurement could provide breeders a new tool for characterizing within sample variation in fiber length without adding complexity to their current selection schemes.