USE OF FIBER LENGTH PARAMETERS FROM HVI AND AFIS TO PREDICT YARN QUALITY

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Abstract

Predicting yarn quality from fiber properties is crucial to both the cotton breeding and the textile industries. Fiber length parameters are critical in this endeavor. The current High Volume Instruments (HVI) provide two length measurements, Upper Half Mean Length (UHML) and Uniformity Index (UI), where UI is the ratio of Mean Length (ML) to the UHML expressed as a percentage. UHML corresponds to approximately the 1.8% span length and ML the 7.8% span length. Those two parameters inform us of the length of the longest fibers but do not measure fiber length variation related to shorter fibers in the sample. On the other hand, the Advanced Fiber Information System (AFIS) measures the length of individual fibers (typically 9,000 to 15,000 fibers). We demonstrated that the use of the complete fiber length distribution from the AFIS to build yarn prediction models is beneficial. Nevertheless, it is a slower instrument than the HVI making its use in cotton classification impossible. Our goal is to investigate if using the complete HVI fibrogram or some parameters extracted from it could solve this problem. The results obtained on 60 samples that cover a wide range of fiber length parameters are promising.