1836 Length Distributions of Upland Cotton and Thire Measurements

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The Advanced Fiber Information System (AFIS) measures the lengths of individual fibers and reports the length distribution, based on which various statistical parameters can be calculated. The High Volume Instrument (HVI) that is used in cotton classification employs a fiber beard method to determinate fiber length parameters. The HVI is much faster than the AFIS. We selected a set of cotton samples with wide range of fiber length and tested on HVI and AFIS. The length distributions of fibers from HVI were compared with the original samples by use of AFIS. In addition, we used the AFIS data for finding the underlying theoretical distribution of the cotton. It is found that a mixture of two Weibull distributions fits the data very well. Fiber length distributions by number and by weight are discussed separately, and in both cases a mixed Weibull distribution shows a good fit to the data. Numerical comparisons for various parameters between the original distribution from the data and the fitted distribution are presented.