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Advanced Fiber Information System Length Measurement of Cottons Hand-Sorted by Length Group

Authors: David D. McAlister III, Jonn A. Foulk, and Robert E. Harrison
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With the focus that short fiber content in cotton receives from textile mills, there is a need to improve the precision and accuracy of this measurement. In order to do this, it is necessary to understand the opportunities that exist to improve the measurement of short fiber. Since the Advanced Fiber Information System (AFIS) is the most widely recognized method for determining short fiber content in cotton, it is the focus of this study. Hand sortings of fibers were collected by length groups from three bales of upland cotton with micronaire values of 3.7, 4.3, and 5.4. These fibers were tested for micronaire and strength by the Fibronaire and Stelometer, respectively, and then tested on AFIS to determine the lengths of the fibers ranging from 9.53 mm to 25.44 mm. Although short fibers were not present in a sample prior to testing on AFIS, the machine reported a short fiber content measurement. In addition, frictional properties and convolutions of individual fibers were determined by the RotorRing and by Favimat, respectively, for each sample. These tests indicated that the high micronaire cottons exhibited more convolutions than the low micronaire counterparts, and that the longer fibers exhibited higher frictional properties than shorter fibers.