

## **AFIS MEASUREMENTS VARIABILITY**

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### **Abstract**

To check the AFIS (Advanced Fiber Information System) variability a set of 7 cotton standards was created at the International Textile Center (ITC). The cottons referenced as 2967, 2958 and 2942-2 were chosen to control the short term and long term stability of the instrument. Beginning September 1, 1999 those standards were run daily and a database containing 324 days of data created. In addition, 31 bales were chosen to test the within-bale variability in comparison with the HVI (High Volume Instrument). From these experiments it resulted that:

- For similar measurements (AFIS trash vs. HVI count, AFIS Short Fiber Content by weight vs. HVI Short Fiber Index, AFIS Upper Quartile Length vs. HVI Upper Half Mean Length, AFIS fineness vs. HVI micronaire), the within-bale CV's for both AFIS and HVI were very close. The short-term repeatability of the AFIS appeared to be at least as good as the HVI.
- The long-term variability of the AFIS was much higher than the short-term variability.
- On the long-term, small level shifts were clearly identified. They correspond in general to an instrument calibration (after the change of the length sensor for example).
- Even with level shifts, the control limits on the long-term charts were smaller than the control limits on the calibration cottons provided by Zellweger Uster.
- One way to keep the instrument from shifting would be to narrow the control limits of the calibration cottons.

In another experiment, the same cotton standards were run daily on the AFIS at the ITC and Cotton Incorporated laboratories. From this experiment it resulted that the two laboratories have level differences for several measurements. Narrowing the control limits of the calibration cottons could also probably solve this problem.