

**EFFECT OF DIFFERENT COTTON SAMPLE PREPARATION METHODS  
ON THE MEASUREMENT OF FIBER CHARACTERISTICS  
BY TWO GENERATIONS OF HVI**

**Gérard Gawrysiak, Bruno Bachelier, Jean-Paul Gurlot and Sandrine Duplan  
CIRAD-CA**

**Montpellier, France**

**Véronique Orssaud**

**ENSAIT**

**Lille, France**

**Abstract**

The natural within-sample variability of cotton can be used as a breeding criterion in cotton plant varietal improvement programs. But, the manual preparation of samples prior to technological analysis is also a potential source of variability for the characteristics measured. The study presented here therefore aimed to identify a mechanical sample preparation device capable of reducing this effect while conserving the intrinsic characteristics of the cotton fibers.

Manual opening (reference technique) was compared with three mechanical preparation methods based on two passages through the drawing frame (original idea from R. Frydrych, 1994): recovery of the fiber web i) by manual rolling-up, ii) in the rotative can and iii) in the fixed can with pneumatic impulse. Fifty-seven cottons (roller or saw ginned) were tested in this comparison. The length (UHML, ML and UI), strength and elongation of the samples prepared using the different methods were then measured on Zellweger Uster 910 and Spectrum HVI lines (on the basis of 10 combs). Parameters such as preparation time and final sample compactness were also taken into account.

The sample preparation method, the cotton used and the interaction between these two factors all had a very highly significant effect on these characteristics, but the effect of sample preparation was less than the precision of the HVIs. Preparation by manual rolling-up reduced the uniformity index of roller ginned cottons. The three mechanical preparations notably reduced the elongation measured by Spectrum (possibly due to a loss of crimp during the draw out). The most repeatable values on both HVIs were observed after preparation by rotative can and pneumatic impulse.

Finally, the rotative can preserves fiber characteristics, results in good sample homogeneity and precise values. It also minimizes operator effect and is not overly time-consuming. The CIRAD Cotton Technology Laboratory therefore considers this method to be the most suitable for sample preparation.