

**STICKY COTTON EFFECTS
ON THE CARDED SPINNING PROCESS**
R. Frydrych , O. Tamime, J. P. Gourlot and E. Gozé
CIRAD- Montpellier-France
T. Le Blan
ITF- Lille-France
Dr. F. Ahmed Salah
ARC-Wad Medani-Sudan
Dr. A. M. Abdin
SCC- Khartoum-Sudan

Abstract

Numerous papers have been published describing the disruptions of the spinning process caused by cotton rendered sticky through contamination with insect honeydew. By contrast, few quantitative results are available concerning the actual damage caused by this stickiness.

A project, labeled "The improvement of the marketability of cotton produced in zones affected by stickiness" is sponsored by the Common Fund for Commodities, and International Cotton Advisory Committee (ICAC) as supervisory body. The following bodies participate to this research : Sudan Cotton Company (SCC) as project executing agency, Agriculture Research Center (ARC), Institut Textile de France (ITF), and Cirad. One of the goals of this project is to evaluate the effects of stickiness on the spinning process.

A study was conducted under hygrometric conditions usually recommended from preparation up to spinning. 26 bales of cotton of different grades were tested. The study provided several important results concerning carded spinning.

Firstly, a comparison of the results obtained using measuring instruments such as SCT, H2SD and HPLC (results from ITC) showed that H2SD seems to be the most adapted method to predict stickiness during spinning.

Stickiness monitoring through the different processing steps shows that the different cleaning and opening operations do not affect the stickiness level of the cottons. No notable disruptions during the different preparation operations prior to carding were detected due to stickiness, in 3 to 4 hours test conditions.

By contrast, all the machines from the card through the rest of the production line are affected by stickiness to varying degrees. The increase in breakage and the reduced yields seems to be linked with the number of sticky points, with some imprecision due to stickiness distribution. The roving frame seems to be highly stickiness sensitive.

A correlation exists between the number of sticky points and the degradation observed in the quality of the slivers, the strands and the yarns for several parameters. The evenness of the card sliver and the drawing frame did not appear to be stickiness-related ; the effect on product quality is only statistically significant from the roving frame.

Sensitivity to stickiness, from a quality standpoint, was entirely different from one spinning process to the other : while ring spun yarn showed a significant degradation in nearly all its characteristics (notably the mass CV%, fineness, thickness, neppiness, strength and hairiness), open-end yarn was only affected for its strength and hairiness. This difference is assumed to be due to yarn structures, and measuring device sensitivity.

Although the correlation noted between stickiness and disruptions are statistically significant, some show relatively broad confidence intervals. The precision of the predictions for these parameters is therefore very low when establishing a critical threshold, i.e. the number of sticky points on the H2SD above which the stickiness will become economically damaging.

In the conditions of these researches, any threshold could be given as a rough guideline and actual values are left to the discretion of the different users.