

7. Two solutions to reduce the consequences of stickiness

Lowering relative humidity during the spinning process:

This was found to bring about improvements in productivity and in quality, but the greatest improvements were in productivity. However, at lower humidity other problems could appear.

A binary mix of non-sticky with sticky cotton

Blends reduce the level of stickiness as measured with H2SD. The stickiness of a blend equals the mean of the stickiness levels of the two constituent parts weighted by their proportion in the mix. This is true only if the sticky cotton has no more than 50 sticky points.

FIGHTING STICKINESS FOR THE FUTURE

Fighting against stickiness requires a global collaborative approach, where improvements in breeding, agronomy, pest control and technology have to be made in a parallel manner. Classification is only a post-harvest tool to live with stickiness once it is detected. Measurement results can help, through mapping, to induce progress in other ways to reduce stickiness, such as breeding new varieties, developing new ways to better manage the crop, integrated pest management programs, and managing the seed cotton flow. On a long term basis, and possibly in the very near future, better measures will be taken to reduce variability, and this classification tool will be economically viable, and will ensure an improvement in the image of Sudanese cotton as well as that of other zones with problems of sticky cotton.

The International Cotton Advisory Committee and the Common Fund for Commodities are international intergovernmental organizations based in Washington DC, USA and Amsterdam, The Netherlands, respectively. More information on both of them can be found at their web sites.

The Project also produced a final Technical Report as Technical Paper No. 17 of the Common Fund for Commodities, in English and French languages. The Proceedings of a concluding seminar (2 - 4 July 2001 in Lille, France) have also been published in both languages. The "Technical Report on Research Activities" is also available. The reports can be requested from the Common Fund or from CIRAD.

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"Improvement of the Marketability of Cotton Produced in Zones Affected by Stickiness"



The International Cotton Advisory Committee sponsored a project, funded by the Common Fund for Commodities, in Sudan and France for slightly more than four years, from January 1997 to April 2001. The project was executed by the Sudan Cotton Company Ltd., with supporting research activities by the Agricultural Research Corporation of Sudan and by CIRAD-CA and the IFTH in France. The project was supervised by the International Cotton Advisory Committee. This brochure is based on the results of this project, which are expected to be of direct benefit for the textile industry.

Stickiness in cotton is caused by whiteflies and aphids, which are insects that deposit sticky excretions on the leaves and open bolls. This has an adverse impact on the growth potential of the plant and on the processability of cotton. Stickiness is not necessarily prevalent in all parts of whitefly and aphid infested cotton production areas in the world. In practice, however, countries known to produce sticky cotton are, incorrectly, labelled to produce exclusively sticky cotton while some of its production may not be contaminated. The current studies were undertaken to determine methods capable of separating various degrees of sticky cotton from non-sticky cotton on a commercial scale and to find economic ways of spinning sticky cotton.

THE OBJECTIVES OF THE PROJECT

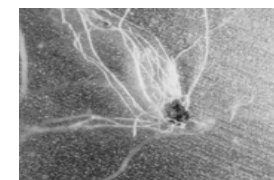
One central objective:

Propose Solutions to deal with sticky cotton.

Two main objectives:

- increase grower returns through development of effective methods for measuring the stickiness level of bales produced;
- establish an operating threshold for processing of contaminated cotton.

WHAT IS STICKINESS ?



Stickiness is defined as the presence of honeydew deposits on cotton fibers. A cotton bale is declared "sticky" if during spinning or any one phase of its preparatory processes, its stickiness level disturbs processing, leading to a lower performance of spinning machines and/or reduced quality of the final products.

WHAT CAN BE EXPECTED FROM A MEASUREMENT OF STICKINESS?

To assess stickiness, it is necessary to have a reliable and rapid measurement device, the results of which are well correlated with the efficiency and the incidence of breakage in a spinning mill, and the quality of the yarn produced. This measuring device can serve different purposes, including cotton classification on stickiness criteria.

FEASIBILITY OF COTTON CLASSIFICATION FOR STICKINESS THROUGH SEVEN OUTCOMES OF THE PROJECT.

1. H2SD: a measuring device able to predict stickiness manifestation during spinning

It was first necessary to see if any measuring device could be efficient for a classification process. Among the tools evaluated, namely HPLC, Thermodetector SCT and H2SD, the latter was found to be the best adapted to measure stickiness in classification conditions. H2SD results are more predictive of troubles in the spinning process (OE, RS, and combed RS), and it is fast. Also, being fully automatic, it is free of human intervention and operator memory effects however, the SCT can still be used at a laboratory scale).



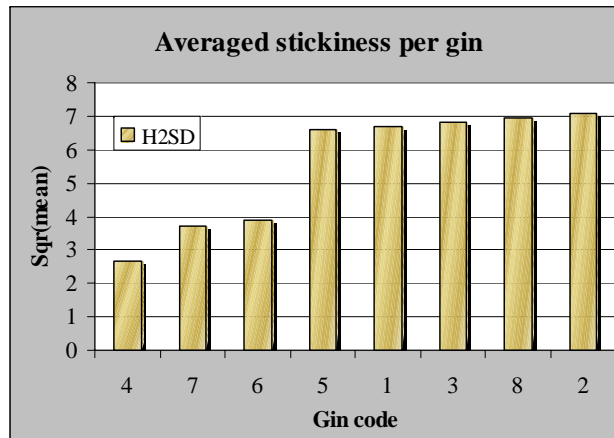
Credit (respectively):
ITC, Lubbock, TX, USA
CIRAD, France.

2. No universal stickiness threshold for a classification procedure

The qualitative classification procedure (to classify cotton in only two classes, sticky and non-sticky) requires classing based on a threshold above which cotton could be considered sticky. As an essential part of this investigation, the effects of stickiness on productivity and quality during the spinning process were tested. The study revealed that a unique global threshold to separate non-sticky from sticky cottons, for all processing conditions and in any spinning mill in the world, is not practical, since targeted products and processing technologies are always different. The threshold will have to be negotiated for each contract between the seller and buyer.

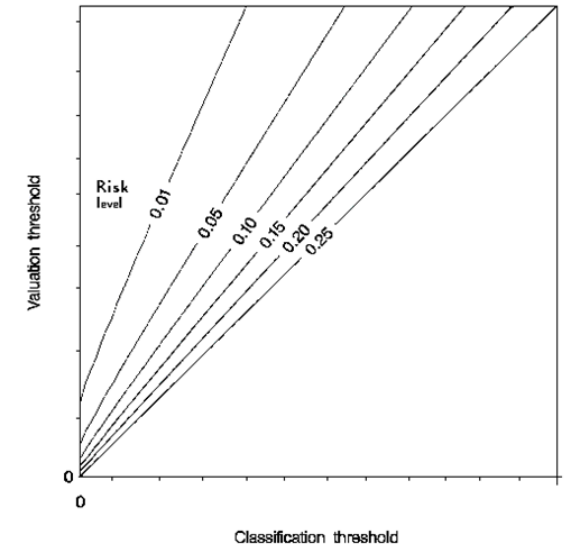
3. Result of a classification feasibility study, some production zones can be stickier than others

During investigations of cotton's stickiness in Sudan, some production areas were found to produce cotton which was non, or only slightly sticky. However, stickiness is highly variable among bales, lots, blocks and gin areas. Nevertheless, the distribution of the number of sticky points in bales could be fitted into a negative binomial distribution pattern, but with a rather wide confidence interval, and a relatively low percentage of bales could be considered as non-sticky.



4. Commercial risks have to be evaluated when using a classification procedure

Due to the production conditions prevailing in Sudan during the testing period, and the high degree of variability, it was not practical to deduce a level of litigation risk between the seller and buyer that can be of value.



5. A stickiness classification should be accompanied by a specific production organization

In this study a methodology is proposed to manage production and to classify sticky cotton for marketing. Such a classification requires a measuring tool, proper conditions for that tool, and a sound cotton production system.

6. A classification procedure for stickiness is economically viable in specific conditions

The project also studied the economic viability of classification for stickiness. This qualitative classification would be viable only if the stickiness distribution is centered on low levels of stickiness, and if the basic assumptions made on the distribution for the number of sticky points are valid.