



INTERNATIONAL COTTON ADVISORY COMMITTEE

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Report of the Seventh Meeting of the Task Force on Commercial Standardization of Instrument Testing of Cotton (CSITC) March 19, 2007, Winterthur, Switzerland

The 7th meeting of the Task Force on Commercial Standardization of Instrument Testing of Cotton (CSITC) was held in Winterthur, Switzerland on March 19, 2007 in the offices of the Rieter Machine Works Ltd.

Andrew Macdonald, former President of the Liverpool Cotton Association, serves as Chair.

Members present:

Romano Bonadei, Chairman of Filati Filartex in Italy
Axel Drieling, Testing Methods Department, Bremen Fibre Institute
Bruno Widmer, Manager Cotton Department, SGS (representing Graham Fogg)
Jean-Paul Gourlot, CIRAD
Urania Kechagia, Director, cotton and Industrial Plants Institute, Greece
James Knowlton, Chief Standardization & Engineering Branch, USDA AMS
John Mitchell, President of the American Cotton Shippers Association
Zbigniew Roskwitalski, Vice President and Director of the Gdynia Cotton Association, Poland
Jolly Sabune, Managing Director, Cotton Development Organization, Uganda
Anton Schenek, Chair, ITMF International Committee on Cotton Testing Methods
Peter Wakefield, Director, Wakefield Inspection Services

Members Absent:

Darryl Earnest, Deputy Administrator, Cotton Program, USDA/AMS
Lau Cheuk-Wai, Quality Control Department of Central Textiles in Hong Kong
Ibrahim Malloum, General Manager of Cotontchad and President of the African Cotton Association
P.D. Patodia, Vice Chairman & Managing Director, Rime Textiles Ltd., India
Joao Luiz Pessa, farm director of Fazenda Nova in Brazil
Ralph Schulz , cotton industry consultant, Australia

Observers present: J rg Bischofberger, Hossein Ghorashi, J rg Grest, Rinat Gulyayev, Isabelle Hagen, Edy Hegetschweiler, Malgorzata Matusiak, Daniela Messa, Bill Norman, Greg Parle, Anja Schleth, Varadarajan Srinivasan, J rg Stahel, Sridhar Varadaraj and Jan Wellmann.

Terry Townsend, executive director, of ICAC served as Secretariat. Christian Schindler, Director General of ITMF, assisted with preparations and was in attendance.

Next Meeting:

The date and location of the Eighth Meeting of the CSITC will be held on October 21, 2007 beginning at 1:30 PM in the Hilton Hotel in Izmir, Turkey.

Background: The Expert Panel on CSITC was formed in December 2003 on the instruction of the 62nd ICAC Plenary Meeting in Poland. There is a consensus that instrument testing of cotton is superior to traditional hand classing. Instrument test results provide information to spinners that allow more efficient use of cotton, thereby enhancing demand. Instrument test results provide information to seed breeders, cotton producers and ginner, enabling the production of cotton with characteristics desired by the spinning industry. Instrument testing can also render the trading of cotton more efficient.

The objective of the Task Force is to facilitate widespread use of instrument testing systems at the producer level while upholding the standards and tolerances that maintain the integrity of high-quality testing. The Task Force is trying to facilitate the adoption of instrument testing standards and procedures utilized by the United States Department of Agriculture (USDA) by all testing centers around the world, and to introduce the use of instrument testing language in the trading of cotton so that traditional descriptions of grade or type are replaced with instrument test values.

There are 15 members of the panel representing both exporters and importers and all segments of the world cotton industry. Observers are welcome at all meetings. By tradition, decisions at all ICAC meetings are determined by consensus with full participation by observers. If it is not possible to reach consensus, decisions would be made by a vote of members present.

The Expert Panel issued two interim reports in 2004, including a report to the 63rd Plenary Meeting in India in November that identified seven actions to encourage worldwide testing of cotton with standardized instrument testing methods and procedures. The actions include 1) definition of specifications for cotton trading, 2) definition of international test rules, 3) implementation of test rules, 4) certification of testing test centers, 5) definition and provision of calibration standards, 6) specification of commercial control limits for trading and 7) the establishment of arbitration procedures. The report from the Expert Panel included specific actions and identifies responsible parties for the achievement of each recommendation.

During the small-group meeting in Bremen in April 2005 and during the 3rd Meeting in Memphis in June 2005, the seven recommendations and status of implementation were reviewed. During the 3rd Meeting in Memphis, the CSITC determined that the original tasks associated with diagnosis of problems and the development of recommendations had been achieved and that a new phase of work had begun with the implementing of proposals. Therefore, members of the CSITC agreed that the name of the panel should be changed to "Task Force" on CSITC to better describe its new role in facilitating the implementation of proposals.

During the 4th Meeting in Liverpool in September 2005, the CSITC discussed the results of a pilot round trial and considered how best to rate test centers. It was agreed at the 4th Meeting that the world cotton industry will not seek to establish an international testing center, and it was agreed that testing centers should be rated according to their performance relative to other participating testing centers in a series of CSITC Round Trials.

During the 5th Meeting in Bremen in March 2006, the CSITC considered the results of a Second Pilot Round Trial and agreed to a system of evaluating test centers based on parameters for individual measurements and an overall score.

During the 6th Meeting in Goiania, Brazil in September 2006, the CSITC adopted a formula and set of scale factors to calculate a "Combined Properties Measurement" to enable testing centers to gauge their current performance and to track progress over successive Round Trials. It was decided that quarterly Round Trials should begin in 2007, with a nominal cost of US\$75 per Round Trial charged to participating test centers to cover the costs of sample shipment. The CSITC decided to include a non-U.S. cotton in the Round Trials as a "fifth sample," but the fifth sample will not be used in the calculation of the Combined Properties Measurement. Results from tests on the "fifth samples" will be used to show the in-laboratory and inter-laboratory variability on cottons from different origins. The Task Force decided that a summary of results of all participating test centers in each Round Trial will be published on the ICAC web site. However, the names of participating test centers, the results for each center, and the disaggregated results for each test parameter will be given only to each test center in order to encourage participation. Test centers will also receive detailed reports indicating their performance relative to all other test centers and recommendations for improvement. The Task Force agreed that its current structure should continue through 2007. The CSITC agreed to meet with the leadership of the ITMF International Committee on Cotton Testing Methods (ICCTM) during 2007. Progress on technical matters referred to ICCTM by CSITC (e.g., effect of trash on color readings), will be reviewed, and possible additional tests, e.g., fineness/maturity, will be considered.

Report of the Seventh Meeting

First Round Trial

Axel Drieling summarized the results of the first CSITC Round Trial (2007-1) conducted in December 2006 and January 2007: there were 70 instruments representing 55 participating labs from 6 continents. Five cotton samples of known values were mailed to each participating laboratory from USDA in December. Each laboratory tested each sample six times each day for five days. Each sample was tested for the six CSITC parameters of length, length uniformity index, micronaire, strength, Rd (reflectance) and +b (yellowness). Four of the samples represented upland saw ginned cotton; the fifth sample represented ELS saw ginned cotton. (In the next Round Trial, Indian roller ginned cotton will be used for the fifth sample.)

Only the first four samples were used in the evaluation of laboratories, but information on the fifth cotton were evaluated for the benefit of participants. Laboratories sent their results to the Bremen Fibre Institute for evaluation, and laboratories were given an overall ranking, as well as rankings for performance on each of the six tests. Rankings were based on the results of each lab in coming closest to the mean values for all laboratories participating in the Round Trial on all six measurements. All results are anonymous, with each laboratory instrument identified only by number. Detailed information on Round Trial performance is sent individually to each laboratory. Summary information showing average results, and the distribution of results, will be placed on the ICAC web site for public access so that industry participants can know what are reasonable ranges for test results among well run testing centers.

For **micronaire**, the range of values among the four upland cotton samples included in the evaluation was from 4.1 to 5.0. The average standard deviation among the participating laboratories for single tests was 0.093, meaning that two-thirds of participants came within 0.093 units of the correct reading for micronaire when testing each sample once. The average inter-laboratory standard deviation based on 30 tests was 0.077.

For **strength**, the reference values for the four upland samples ranged between 24.5 and 32.3 grams/tex (a measure of the breaking strength of a bundle of fibers). The average inter-laboratory standard deviation among participating laboratories for single tests was 1.55 grams/tex. The average inter-laboratory standard deviation based on 30 tests was 1.34 grams/tex.

For **length**, the reference values for the four upland samples ranged between 0.99 inches and 1.20 inches. The average inter-laboratory standard deviation among participating laboratories for single tests was 0.017 inches. The average inter-laboratory standard deviation based on 30 tests was 0.012 inches.

For **length uniformity** (every bundle of fibers contains a range of lengths; this is a measure of how uniform the lengths of fibers are), the reference values for the four upland samples ranged between 78.1 and 84.0. The average inter-laboratory standard deviation among participating laboratories for single tests was 0.83. The average inter-laboratory standard deviation based on 30 tests was 0.52.

For **Rd** (a measure of the percentage of white light reflected by a sample) the reference values for the four upland samples ranged between 75.0 and 80.8. The average inter-laboratory standard deviation among participating laboratories for single tests was 0.96. The average inter-laboratory standard deviation based on 30 tests was 0.74.

For **+b** (a measure of how yellow a sample is) the reference values for the four upland samples ranged between 9.2 and 11.7. The average inter-laboratory standard deviation among participating laboratories for single tests was 0.35. The average inter-laboratory standard deviation based on 30 tests was 0.29.

The **fifth sample** representing ELS cotton showed no higher variability for micronaire, but there was higher variability for length parameters and strength.

Report Formats

Axel demonstrated a sample of reports to be sent to participating labs, including a certificate of participation and tables/charts showing detailed examination of results to allow each laboratory to perform diagnostic corrections to improve future performance. There was consensus to approve the report formats as shown by Axel.

Mean Values vs. Standard Values

There was a discussion of whether evaluations should be calculated from mean values of participating labs or from the standard values determined in advance by USDA. It was noted that the mean values and the standard values were nearly identical. In future meetings, the mean values will be presented in comparison to the values established by the USDA.

Typographical Errors

It was decided to exclude obvious typographical errors from the calculation of results from each lab as such results would skew results to absurd ranges, but it was decided that the reports from the Bremen Fibre Institute will inform labs of such errors so that data-handling procedures can be improved. Acceptance ranges for each of the 6 parameters were approved. If results reported by testing centers fall within each range, the results will be used in the evaluation of laboratory performance; results falling outside each range will be excluded.

Additional Parameters

It has been noted that spinners and many producers, especially those from Africa, insist that additional parameters be included in the evaluation of testing laboratories, including tests for neps (knots of fibers), trash (usually leaves and other plant parts left over after picking and ginning), maturity (a measure of the thickness of the cell walls of each fiber, a very important factor in finishing and dyeing), Short Fiber Index (SFI) or Short Fiber Content (a measure of how many fibers in a sample are shorter than a given threshold.) African producers are particularly interested in these measures because their handpicked cotton will tend to demonstrate better results than cotton that is machine picked.

Jimmy Knowlton showed data from internal USDA check tests showing that the coefficients of variation (CVs) for the 6 standard parameters are less than 5%, but the CVs for neps, SFI and elongation are above 20%. Development of calibration standards for SFI would help reduce variance in test results. Romano Bonadei reported that SFI is highly correlated with comber waste and is very important. It was agreed that SFI is important to spinners, but it is too early to include SFI in the CSITC round trials because a practical measurement tool has not yet been developed. The CSITC agreed that the Bremen Round Trial and USDA check tests are more appropriate vehicles for investigation of methods to develop tests for these parameters. The CSITC asked the ITMF International Committee on Cotton Testing Methods (ICCTM) to study how to improve these tests.

Calibration Standards for SFI

It was agreed that the International Cotton Association (ICA), as a signatory to the Universal Cotton Standards Agreement, will petition to have USDA develop calibration standards for Short Fiber Index at the next Universal Cotton Standards Conference in June 2008 in Memphis.

Rd Measurements

It was noted in the 2nd Pilot Round Trial (2006) that there were persistently lower Rd measurements using HVI 900 or HVI Spectrum versus the newer HVI 1000 instruments (all instruments are manufactured by Uster Technologies. The mean difference was an Rd value of 1. The same effect was found in Round Trial 2007-1 again, but with lower differences (0.6). Hossein Ghorashi of Uster presented a schematic of the color measurement chamber in both the HVI 900/Spectrum and 1000 instruments and said that variations in color measurements could be due to degradation of color tiles used for calibration, the pressure used to place the cotton sample against the glass platen, intensity changes in the light source or HVI malfunction. He suggested that calibration tiles be updated or recalibrated as necessary and kept clean, that platen pressure be checked, that old bulbs be replaced. Participating laboratories will get a document with recommendations for good incandescent colorimeter performance for Round Trial 2007-2.

To help laboratories to produce accurate color results, CSITC might inform labs with high systematic deviations and suggest them to contact their instrument manufacturer.

Differences Between Instruments

Peter Wakefield asked about possible evaluations of result differences between instruments from different manufacturers. This will be possible as soon as sufficient instruments from the different manufacturers (as Uster, Premier or Lintronics) are participating. For this reason the manufacturers are asked to request their customers to participate in the CSITC Round Trial.

Trash Measurements

The manufacturers of some instrument have indicated that there are ways to measure trash in samples and to adjust color measurements for the percent area in a sample accounted for by trash. However, the CSITC has noted that such measurements cannot be conducted quickly and accurately enough to be included in large-scale testing programs. Nevertheless, the importance of this measurement was acknowledged, and the CSITC asked the ICCTM to investigate how best to compensate for trash in color measurements.

Arbitration Procedures

Jan Wellman of the Bremen Baumwollborse (BBB) made a presentation on behalf of BBB, the Gdynia Cotton Association (GCA) and the International Cotton Association (ICA) about the role of instrument testing in arbitration procedures. Instrument values are increasingly included in contracts for trade in cotton, and test results will be a component of quality arbitrations. The CSITC agreed that it will continue to conduct round trials and provide results to participating labs. Those labs that wish to be certified for arbitration purposes should apply to an arbitral authority for certification. This will allow any test center to apply for certification. This means that the CSITC will not establish certification procedures, but each arbitral body will decide their own certification standards, and labs will apply to the arbitral body, not the CSITC for certification.

Commercial Tolerances

At the request of the ICA, the question of giving commercial tolerances was discussed. It was agreed that the results of the CSITC Round Trials, especially the inter-laboratory variations, will be published and given to the cotton associations. These results will help the associations to fix commercial tolerances.

Summary Tables Available on the Web

Summary tables from the first regular CSITC Round Trial are available on the web site: www.ICAC.org. The summary includes:

- Inter-laboratory averages and variability and in-laboratory variability for each of the 6 properties and each of the five cotton samples.
- Graphs showing the distributions for every property and each cotton.
- A summary list of the combined properties evaluations.
- A summary list of the evaluations for each property.

Full reports of previous meetings of the CSITC are available on the ICAC web site.