



INTERNATIONAL COTTON ADVISORY COMMITTEE

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19th CSITC Meeting June 19, 2013 Raleigh, NC, USA

Report

The 19th meeting of the Task Force on Commercial Standardization of Instrument Testing of Cotton (CSITC) was held on June 19, 2013 in Raleigh, NC, USA adjacent to the Universal Cotton Standards Conference.

Members present:

Andrew Macdonald, AMCON Consulting, Sao Paulo, Chair of the Task Force
Zbigniew Roskwitalski, Vice President and Director of the Gdynia Cotton Association, Rapporteur
Axel Drieling, Faserinstitut Bremen e.V.
Darryl Earnest, Deputy Administrator, Cotton Program, USDA/AMS
Jean-Paul Gourlot, Director, CIRAD PERSYST LTC
James Knowlton, Chief Standardization & Engineering Branch, USDA AMS
Jolly Sabune, Managing Director, Cotton Development Organization, Uganda

Members Absent or Sending Regrets:

Romano Bonadei, Fondazione Industrie Cotone e Lino
Ibrahim Malloum, Chad
B.K. Mishra, Chairman cum Managing Director, Cotton Corporation of India
Gregory Parle, Chair of the Australian Cotton Classers Association
João Luiz Ribas Pessa, farm director of Fazenda Nova in Brazil
Manfred Schiefer, President, M. Schiefer Trading Company, USA
Ralph Schulzé, cotton industry consultant, Australia
Hakim H. Umarkhojayev, General Director, SIFAT
M.N. Vijayshankar, Chairman, ITMF International Committee on Cotton Testing Methods
Peter Wakefield, President, WIS
Bruno Widmer, Global Business Manager, Fibres, Agricultural, SGS

Observers:

Naumova Nina Borisovna, SIFAT, Uzbekistan
Jim Brand, ICA
Xiaoliang Cui, USDA-ARS
Gretchen Deatherage, USDA-AMS
Peyman Dehkordi, Uster, USA
Chris Delhom, USDA-ARS
Andrzej Drozd, Gdynia Cotton Association, Poland
Karsten Froese, Bremen Baumwollbörse, Germany
Eugene Frye, Parkdale Mills, USA
Hossein Ghorashi, Uster, USA
Steve Grantham, USDA-AMS
Teruyuki Hayashi, JCTA, Japan
Eric Hequet, Fiber and Biopolymer Research Institute, USA
Shin Hiromoto, JSA, Japan
Elke Hortmeyer, Bremer Baumwollbörse, Germany
Patrick Ilukat, Cotton Development Organization, Uganda
Robert Jiang, ICA
Gervas Kaisi, Tanzania Bureau of Standards
Hongzhi Li, Cotton Incorporated, USA
Mamadalieva Shoiragul Khoshimovna, SIFAT, Uzbekistan
Vikki Martin, Cotton Incorporated, USA
Maryam Mbwana, Tanzania Cotton Board
David Mcalister, Uster, USA
Monte Mutchler, USDA

Dominic Mwakangale, Tanzania Bureau of Standards
Mike Plonk, Parkdale Mills, USA
James Rogers, USDA-ARS
Stan Rydzenwsk, Cotton Incorporated, USA
Moumine Traoré, Cerfitex, Mali
Gao Youngun, AOSIO-CIR, China
Mike Watson, Cotton Incorporated, USA

Terry Townsend and Carolina Vilalva served as Secretariat

Next Meeting: Wednesday, October 2, 2013, Cartagena, Colombia

Report of the 19th Meeting

1. Round Trial results

Axel reported that 84 laboratories from all continents submitted results from 129 instruments in RT 2013-2. When the season variation in participation by laboratories in the Southern Hemisphere is considered, participation in the Round Trials is continuing to climb. He reported that about 40% of participating laboratories are operating for cotton producers, about 25% are operated by controllers, and only about 9% are operated by textile mills.

Axel reported that the Combined Properties Evaluation is improving significantly, and the median in RT 2013-2 was 0.45, compared with an average of 0.5 previously. He added that the interlaboratory standard deviation for micronaire and strength were the most improved. However, based on the "within limits evaluation," more laboratories fall outside the limits for strength and Rd than for the other four parameters.

Jimmy Knowlton reported that three or four laboratories are ordering color tile sets for shipment with each Round Trial. A constraint to returning tile sets to USDA for recalibration is that the laboratory would have to wait several weeks for their return. Accordingly, laboratories are urged to order two color tile sets so that the extra can be used while the first is being recalibrated. It was also noted that there is no harm in using one tile set to calibrate two or more instruments, provided the instruments are of the same generation.

2. Current Challenges in Instrument Testing

- a. Trash percent area and particle count: Should the USDA Trash Standard be adopted as a CSITC Standard?

Jimmy Knowlton reported that this issue was to be discussed later in the week at the Universal Cotton Standards Conference, and he recommended that CSITC wait to decide this issue. Hossein noted that Uster has received little market feedback on the need for trash measurements with HVI. The Task Force agreed to defer this decision until more information is available from the Universal Standards Conference.

- b. Report from Axel and Jimmy about different maturity tests from Bremen Round Trials.

Axel reported that maturity measurements using FMT and AFIS had been compared with HVI maturity measurements based on data from Bremen Round Trials using 20 observations. The correlation between the results was 0.78. Hossein Ghorashi noted that software is upgraded with every instrument upgrade, and so older HVI instruments will always give different maturity values.

- c. Report from Dr. Jimmy Rodgers, USDA, ARS in New Orleans, "Maturity and Fineness by the Cotton Scope." Dr. Rodgers has been comparing maturity measurements between HVI, AFIS and the Australian Cottonscope instrument.

Jimmy Rodgers reported that Cottonscope[®] is a new instrument that rapidly, accurately, and precisely measures fiber maturity and fineness simultaneously in water using polarized light microscopy and image analysis, requiring only a small sample size. He reported that preliminary CSITC comparative analyses were performed on a series of 33 diverse cotton samples, 15 of which were CSITC Round Trial samples (2009, 2010, 2012). Overall, good trend agreement was observed between the AFIS and Cottonscope MR and fineness results for the 33 samples. For calculated micronaire, the best method agreement (for both R² and outliers) to HVI[™] micronaire was obtained with the Cottonscope instrument. As observed in previous evaluations, the AFIS results were less responsive (lower slope) to changes in MR, fineness, and calculated micronaire compared to the Cottonscope.

Based on the above results and previous studies, Mr. Hossein Ghorashi of Uster agreed to investigate changes to the AFIS algorithms for maturity and fineness. For these investigations, Dr. Eric Hequet of the Fiber and Biopolymer Research Institute (FBRI) will send to Uster representative samples from the set of 104

diverse cotton samples used as IAM reference cottons; the IAM values will be used as the maturity and fineness reference values. Once completed, the maturity and fineness agreement between IAM, Cottonscope, and AFIS should be much improved. In addition, interest was expressed in the feasibility of establishing the Cottonscope as a secondary reference method for fiber maturity and fineness and in establishing Cottonscope fiber standards. Discussions are underway on these subjects between Axel and Jimmy Rodgers.

3. Update on the "Guideline for Commercial Standardized Instrument Testing of Cotton."
ABRAPA has completed a Portuguese translation. Is any additional action needed?

Axel noted that the "Guideline" needs to be updated with latest information from the USDA HVI User Guide and the Australian MyBMP handbook. The update will be published on line. Changes will be highlighted and sent to translators to update each language version. The work of ABRAPA in producing a Portuguese translation was applauded. The Task Force agreed that no additional translations are needed at this time.

4. Reports from Regional Technical Centers
 - a. RTC-East Africa (Dar es Salaam)

Mr. Gervas Kasi, Quality Assurance Officer, Tanzania Bureau of Standards, reported on the work of the RTC-East. During 2012, the RTC-East had tested 289 samples from the Cotton Development Trust in Zambia and 306 samples from the Lake Zone Agricultural Research Development Institute in Tanzania. The centre has recently received an MoU from Wakefield Inspection Services requesting the centre to conduct on-site training for the Cotton Development Authority of Kenya and IAM-Mozambique respectively under CFC/ICAC/44 Project. Gervas reported that the major challenges faced by the RTC-East include power fluctuations (voltage regulators are being acquired), and the lack of support from regional partners linked to limited HVI activity in the East and Southern African region.

- b. RTC-Central Asia (Tashkent)

Ms. Naumova Nina Borisovna and Ms. Mamadalieva Shoiragul Khoshimovna of SIFAT in Uzbekistan sent the regrets of Mr. Hakim H. Umarkhojayev, General Director, SIFAT. They explained that they would prepare a report for delivery at the next CSITC meeting in Colombia.

- c. RTC-West Africa (Segou)

Dr. Traoré reported that the RTC-West had signed agreements with all the cotton associations in the West and Central Africa region. He noted that the RTC-West had tested 5,000 samples during 2012 on behalf of CMDT, 1,000 samples on behalf of the Nouvelle Societe Cotonniere du Togo (NSCT) and 700 breeding samples. He said that the Center and CMDT are discussing testing 50,000 samples during 2013/14.

- d. RTC-South America (Brazil) progress report by ABRAPA

Andrew Macdonald reported that Brazil is developing a central HVI Lab in Brasilia to be operated by Instituto Brasileiro do Algodao (IBA). The center may be operational by 2014.

5. A comparison of test results for one additional bale used in the USDA Check Tests, Bremen Round Trials and the CSITC Round Trials: any progress?

Jimmy Knowlton and Axel reported that no progress has been made on this project since the last meeting of CSITC. They explained that Bremen round tests (RTs) are conducted three times per year with only one cotton per test, with every test using cotton from a different origin. The problem is that only one of the cotton origins used for the Bremen RTs is also used in CSITC Round Trials each year. Therefore, a comparison of test results between USDA Check Tests, Bremen RTs and CSITC Round Trials can only be completed once a year. It was noted that if Bremen started using cotton from the same origin two tests in a row, so as to facilitate more frequent comparisons of test results, it would undermine the purpose of the Bremen RTs, which is to compare the performances of different instruments testing a range of cottons from different origins.

6. Next Meeting of the CSITC: Wednesday, October 2, 2013, Cartagena, Colombia

The Task Force confirmed that the next meeting will be October 2, 2013 in Cartagena. It was also decided to meet on March 18, 2014 in Bremen as part of the International Cotton Conference Bremen.

7. Other business

The Chair urged that the ICAC Secretariat reach out to ITMF members and national cotton industry organizations to encourage increased participation in the CSITC Round Trials.

End 19th Meeting

Background of CSITC and Summaries of Reports from the 1st through the 18th Meetings

Background: An Expert Panel on CSITC was formed in December 2003 on the instruction of the 62nd Plenary Meeting in Poland. CSITC is facilitating the adoption of universal instrument testing standards and procedures by all testing centers around the world. CSITC is also working 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.

The members of the panel represent 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 could 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 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 identified responsible parties for the achievement of each recommendation.

During a 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, 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, the name of the panel was changed to "Task Force" on CSITC to better describe the 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 non-U.S. cotton in the Round Trials as a "fifth sample," with the understanding that 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 would 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.

During the 7th Meeting in Winterthur, Switzerland in March 2007, the results of the first official Round Trial conducted in December 2006 and January 2007 were reviewed. The Task Force approved the format of a certificate of participation and accompanying tables and charts with detailed examination of results to be provided to each participating testing center. The Task Force confirmed that evaluations of laboratory performance would be **calculated from the mean values** of participating labs rather than using the standard values determined in advance by USDA. The mean values will be presented in comparison to the values established by the USDA. The Task Force decided to **exclude obvious typographical errors** from the calculation of results from each lab, as such errors would skew results to absurd ranges, but it was decided that the reports from the Bremen Fibre Institute would 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. The CSITC agreed that the Bremen Round Trial and USDA check tests are more appropriate vehicles for investigation of methods to develop tests for Short Fiber Index, stickiness and neps. The CSITC asked the ITMF International Committee on Cotton Testing Methods (ICCTM) to study how to improve these tests. 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 Task Force decided that participating laboratories should receive a document with recommendations for good incandescent colorimeter performance. The CSITC decided to ask the ICCTM to investigate how best to compensate for trash in color measurements. Regarding the use of instrument values in arbitration of contracts, the CSITC decided to 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.** The CSITC decided that it **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. The Task Force agreed that the results of the CSITC Round Trials, especially the inter-laboratory variations, would be published and given to the cotton associations. The results will help the associations to fix commercial tolerances.

During the 8th Meeting in Izmir, Turkey October 21, 2007, the Task Force reviewed the results of Round Trials 1 through 3, noting that the **overall data and single-lab data for each parameter were consistent** from one round trial to the next, strengthening confidence in the CSITC process. No differences occurred between the inter-laboratory averages reported by participating test centers during the first three CSITC round trials and the USDA Established Results for strength, length uniformity index, Rd and +b. It was reported that work done earlier based on the Bremen Round Trials indicates that instruments from different manufacturers will give results on one common level if operated properly.

The inclusion of a 'fifth' cotton in the CSITC Round Tests was discussed, and the principle endorsed. The Task Force agreed that the fifth sample could be of any origin, but would need to be properly prepared by USDA to minimize variation between samples. To further reduce the risk of distortion of results, it would be assessed separately from the 4 test samples. There was considerable discussion on the need for interactive feedback, especially with participating test centers with results outside the statistically normal range. The ICAC Secretariat presented a 2-page Invitation/Participation form, and this was well received. All agreed that the stage has been reached where greater participation is essential. A concerted promotional effort, led by Andrew Macdonald and Terry Townsend, and covering ICAC, ITMF, all Cotton Associations, instrument manufacturers and all sectors of the trade, should be launched. The Task Force set the participation fee at US\$300 for four tests. The publication of the list of CSITC Round Trial participants was seen as a positive mechanism to encourage uptake. The CSITC effort is seen as 'good for the international industry' and as such, a good thing with which to be associated. The Task Force supported a proposal to publish the list of participating testing centers, with the proviso that those not wishing their names to be included could choose not to be listed. A 'tick box' on the forms presented by the Secretariat would facilitate this. It was emphasized that only the names of participating testing centers, and not confidential information about performance, would be made public. **A proposal to publish a list of testing centers with passing or failing performances in round trials was not supported.**

Romano Bonadei presented 'a spinners view' on neps and stickiness. There was general agreement that **CSITC should expand its focus to these and other relevant fiber quality measurements, once the current system is adopted universally, and once rapid/repeatable measuring equipment becomes available.** The Task Force on CSITC had decided during the 7th Meeting in Winterthur that the International Cotton Association (ICA), as a signatory to the Universal Cotton Standards Agreement, would petition USDA to develop calibration standards for Short Fiber Index at the next Universal Cotton Standards Conference in June 2008 in Memphis. However, Jimmy Knowlton of USDA suggested that a more constructive first step in making progress on the subject of SFI would be to organize a small group of about ten labs with HVI 1000's

to evaluate the new SFI cotton calibration. Jimmy suggested that USDA could provide “research” SFI values on special calibration cottons to these labs. The group of labs would be a subset of CSITC labs. The subset of labs would enable the SFI cotton calibration option on their instruments when they test their CSITC round test samples. The SFI data would be collected on the CSITC samples and sent to USDA with the regular CSITC test data. A separate analysis would be performed on the SFI data independent of the normal CSITC round test analysis. It was noted that China is considering the development of their own SFI standards using a different definition (16.5 mm and less) than the definition of SFI in common use elsewhere (12.7 mm or shorter). Neal Gillen observed that USDA should be encouraged to develop a SFI standard for inclusion in the Universal Cotton Standards. The Task Force **agreed that an SFI standard is needed, and there was a consensus to support the proposal by Jimmy Knowlton to use a subset of CSITC participants to evaluate the new SFI cotton calibration standard.** It was decided that the ICA should not petition the Universal Standards Conference in June 2008 to have USDA develop SFI calibration standards at this time, pending additional research.

During the 9th Meeting on April 2, 2008 in Bremen, Germany, the Task Force discussed best practices in encouraging universal participation in CSITC Round Trials. It was agreed that the list of participants should be published on the ICAC website (and possibly more widely) so that non-participants can be identified and encouraged to join the international effort.

James Knowlton reported that Short Fiber Index (SFI) reliability is being studied as an adjunct to CSITC Round Trials. He reported that under the test conditions, acceptably tight distribution curves for SFI could be achieved (as was the case for Length and Uniformity). The meeting supported further work in this area and encouraged USDA to prepare and provide the necessary calibration cottons. It also suggested to Uster that its newer machines should be enabled to be calibrated for SFI. However, Hossein Ghorashi stated that considerable work needs to be done studying the relevance of Short Fibre data derived by different techniques – HVI, AFIS, Roller Analyzer, Sutter Web Array etc. It was agreed that this should be a prerequisite before progressing too far with adding ‘SFI’ to CSITC measurements. USDA and Uster (and others) were encouraged to collaborate closely in the effort to develop and determine a single worldwide acceptable basis for reliable SFI testing/calibrating/benchmarking. The meeting also discussed the fact that, while most countries and the international trade define ‘short fiber’ as fiber under 12.5mm length, some are now advocating 16mm length as the ceiling. As the correlation between both measurements is high, the meeting saw no difficulty with the use of either, providing that the ceiling was clearly communicated. It was agreed that the world industry should work toward the adoption of one standard rather than have different parameters in parallel use.

Geoff Naylor of CSIRO, Australia, presented an update on the development of ‘Cottonscan’ to measure fiber fineness. He stated that Cottonscan had achieved speeds of 60 seconds per sample. The meeting supported further development of Cottonscan.

Menahem Yogev described Israeli equipment used for rapid testing of cotton for ‘stickiness’ and neps. He demonstrated that it is possible to test high volumes of cotton for stickiness and neps with acceptable levels of accuracy and precision. However, it was noted that the instrument used in Israel is no longer being manufactured, suggesting that the technology may not be economically practical. Menahem encouraged plant breeders to select strains that are low in seed coat fragments, which can contribute to both ‘stickiness’ and ‘neppiness’.

After considerable discussion, CSITC decided that Brazil should be asked to supply a bale to serve as the fifth cotton for the next Round Trial. The importance of Brazil in international cotton trade, the structure of the cotton industry in Brazil with large mechanized operations producing most cotton and the improvement in quality of Brazilian cotton since the start of the decade were factors considered by CSITC in making this decision. On behalf of the Brazilian Cotton Growers, Mr. João Luiz Pessa offered to supply the next fifth international cotton bale. The Task Force gratefully accepted this generous offer. Mr. Greg Parle, chair of the Australian Cotton Classers Association, volunteered to supply the following international fifth cotton for the next season.

Terry Townsend presented results of a survey on the cost of instrument testing. Indicative costs, in US\$, based on 2006-7 data were:

	Developed Countries	Developing Countries
Personnel	49,000	33,000
Repair & Maintenance	12,000	18,000
Other Annual	47,000	14,000
Instrument Depreciation	51,000	36,000

Other Depreciation	6,000	12,000
Total Annual Costs	165,000	113,000

Testing fees ranged from \$1 to \$4 per sample- and the average charge was \$2.25 per sample. Assuming every bale is tested once, this equates to 0.50 cents per pound for a 500-pound bale. Participants from India commented that, as only 2% to 4% of their bales were tested, their costs per pound were correspondingly very low.

Andrew Hursthouse, President of the ICA, submitted a letter to the Task Force. He noted that the Rules Committee is working on comprehensive rules that will protect both buyers and sellers in the case of a dispute over the results of two instruments located in different places over a broad range of mechanical parameters. Zbigniew Roskwitalski reported that Gdynia is adapting its rules to accommodate arbitration procedures for instrument testing parameters.

During the 10th Meeting on November 16, 2008 in Ouagadougou, Axel Drieling reported that the 2008 results were stable across Round Trials, and that the Round Trials are serving as a very good tool to provide statistically reliable variability information between test results and between laboratories, and to evaluate and rate the performance of test centers based on their accuracy.

A report was given about the results from the "Fifth Cottons" used for research purposes in each Round Trial. In summary, the Indian roller ginned samples yielded higher variations in micronaire and length than the 24 saw ginned samples from U.S. cotton used in the Round Trials 2007-1 to 2008-2. The U.S. Pima saw ginned samples resulted in higher variations in strength and length. Accordingly, Axel suggested that roller ginned cotton and extra-fine cotton samples should not be used when evaluating the performance of testing laboratories (as is done with cottons 1 to 4).

Jimmy Knowlton provided a presentation on the CSITC SFI study. He reported that 10 testing centers with HVI 1000's (5 operated by USDA and 5 operated by non-USDA centers) participated in the SFI study. USDA distributed the SFI calibration cottons with Roller-Analyzer reference values. The results indicated that:

- Between-instrument HVI 1000 SFI levels are relatively close together;
- SFI calibration levels vary more on cottons with higher short fiber content;
- SFI measurement variation increases dramatically as short fiber content increases;
- It is uncertain why some HVI 1000's perform better than others when setups and calibrations were performed similarly.

One of the purposes of CSITC is to provide statistically reliable empirical information on variability of results from instrument testing of cotton that can be used in setting commercial tolerances for trade. In a typical commercial situation, it is not possible to know the mean (average) value of the test results across 50 or 60 laboratories for a given cotton sample. Instead, it is relevant, especially for arbitrations, to know the expected, or normal, difference between two labs chosen by contracting parties for evaluation of cotton parameters.

Axel estimated such difference based on single tests per sample, with different samples provided to each lab, based on the six CSITC Round Trials conducted through mid-2008. 95% of the results between a random laboratory and the reference, or true, result of the tested cotton would be within the following limits:

- Mic: 0.18
- Strength: 2.8
- Length: 0.034
- Length Uniformity: 1.6
- Rd: 2.1
- +b: 0.8

The numbers are stable and statistically sure for US Upland machine-picked cottons. For other origins there might be other values based on variables such as field size and methods of picking and ginning. It was noted that roller ginned and hand-harvested cotton would require separate sets of control limits, and concerns were voiced about variances in test results linked to ranges of moisture levels. **The Task Force agreed that the results should be summarized but not recommended for adoption at this time. It was agreed that Axel's work may be sent to arbitral bodies upon request.**

The Task Force on CSITC welcomed a letter from Mr. Ustyugin of SIFAT in Uzbekistan. SIFAT supports the aims of CSITC. SIFAT operates a modern system of instrument testing of cotton involving 14 testing centers operating according to the Universal Cotton Standards providing evaluation of all cotton produced in Uzbekistan. SIFAT operates a center to train operators in the use of instruments for testing cotton, and SIFAT plays an important role in regional standardization of cotton testing. Over the last twelve years, SIFAT has

trained 711 instrument operators, including 338 SIFAT employees and 81 persons from outside Uzbekistan. Mr. Ustyugin pledged that SIFAT is prepared to assume the responsibilities as the regional technical center for Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan). **CSITC was very pleased that SIFAT would continue to coordinate with the laboratories in the region. SIFAT may be designated as the Regional Testing Center for Central Asia in the future, when such criteria are approved for use in all regions. However the Task Force emphasized that the Regional Technical Centers will not certify or grade laboratories in place of the CSITC Round Trials.** The Task Force also agreed that similar regional supporting activities are welcome in other regions.

It was noted that the GCA General Assembly endorsed changes to its By-Laws and Rules for arbitration procedures for disputes involving instrument test results at its June 2008 meeting. It was reported that the ICA had also approved a relatively simple procedure for arbitration of instrument values that allow any laboratory agreed by the contracting parties to do the testing. In the ICA procedures, no control limits are specified but may be agreed by the contracting parties. Members of CSITC expressed the hope that arbitral bodies would work toward harmonization of the rules for trade in cotton and arbitration of instrument values.

It was noted that some laboratories have requested to participate in CSITC Round Trials with stand-alone instruments to measure individual parameters. The Task Force was asked if this is to be allowed. **It was agreed that testing centers are evaluated based on testing results, not methods, and therefore the use of stand-alone instruments in CSITC Round Trials is acceptable, but not encouraged.** An indispensable prerequisite is that all participating instruments provide results on the fixed CSITC criteria, mainly the calibration based on Universal Calibration Standards provided by the USDA and a sufficient number of specimens tested from each sample for a sufficiently low variability.

During the 11th Meeting, May 26, 2009 in Washington, DC, Andrew Macdonald noted that a letter had been received from Mr. V.E. Ustyugin of the Uzbek Center for Certification of Cotton Fiber (SIFAT) requesting that SIFAT be identified as a Regional Testing Center (RTC) for Central Asia. (See the Report of the Tenth Meeting.) **With minor modifications, the proposed set of criteria was approved by CSITC.**

A suggestion had been received from Cotton South Africa to grade laboratories based on their performance in the Round Trials. However, members of CSITC were concerned that thresholds chosen for grades would be arbitrary. It was also noted that CSITC evaluates the performance of instruments, not laboratories. It was decided that **CSITC should continue to provide results on an instrument-by-instrument basis.**

Jimmy Knowlton reported that there is still no consensus on the reference method for measuring Short Fiber Index, AFIS 12.7 mm or Roller Analyzer 16.5 mm or 12.7 mm. He said that USDA and the China Fiber Inspection Bureau (CFIB) were conducting a study in 2009 to assign reference values to calibration cottons. CSITC thanked Jimmy for his work and endorsed additional SFI sub-round trials in 2009. Jimmy was urged to work with Uster Technologies to collect SFI and maturity data provided on HVI 1000s during the 2009 Round Trials.

It was noted that the Central Institute for Research on Cotton Technology (CIRCOT) has reported that it is producing calibration cotton for use with HVI systems. Members of CSITC recalled the minutes of the Third Meeting of CSITC in June 2005 in Memphis:

“The CSITC agrees that the Universal HVI Calibration Standards for all six measurement parameters (length, length uniformity, strength, micronaire, Rd, +b) are the official standard of the CSITC.

It was reported that Chinese authorities have indicated that they will eventually develop their own domestic calibration cottons, but they agree in principle to the importance of maintaining a single world reference standard for calibration cottons based on the Universal Standards prepared by USDA. USDA plans to establish a standard for value setting of calibration materials under the American Society for Testing Materials International (ASTM) to cover the procedures used by USDA in creating calibration standards. The CSITC agreed that calibration standards must be referenced to the USDA reference material.”

Darryl Earnest reported that the ASTM standard would be developed by the end of 2009.

Axel Drieling reported on a new database for CSITC Round Trial results being developed with support from the Common Fund for Commodities. The new database will be tested from RT 2009-3 on, and Axel plans to implement the new database beginning with RT 2010-1.

CSITC agreed that laboratories registering for participation in Round Trials would be considered registered for each Round Trial until they withdraw.

During the 12th Meeting, September 8, 2009, Cape Town, South Africa, the Chair noted that SIFAT had been acknowledged as a Regional Technical Center. A proposal for the CSITC Structure and Duties drawn up by Jean-Paul and Axel Drieling was accepted. It was confirmed that neither ICAC nor CSITC would, or could, approve or not approve, any labs for cotton testing. It was agreed again that it is up to the individual organizations responsible in each country to set their own standards, and stand by it against any claim or legal action that might occur from such a decision.

Jimmy Knowlton and Axel Drieling made a presentation of the results of SFI and Maturity tests that had been voluntarily included in the results submitted by labs in recent Round Trials. The variation that exists between labs indicates that SFI measurements are insufficiently reliable to be included as an official part of the round tests. As regards maturity, although the results were highly consistent between the participating labs, the scale of measurement was such that overall accuracy created a serious obstacle to utilizing the information on a commercial basis. However as with SFI, the round trials would continue with the option of including the maturity readings so as to permit further analysis during future round trials.

Jimmy Knowlton described the procedures for the production of calibration cottons, and the fact that some countries were in the process of producing their own calibration cottons, but, that to achieve standards compatible with the current Universal Standards (the accepted world standard) adherence to the correct procedures would be required. USDA is documenting its complete calibration cotton production procedures for publication as an ASTM (American Society for Testing and Materials) standard. The document is currently in draft stage within the ASTM process but should become finalized as an ASTM standard sometime in 2010. Jimmy Knowlton said the current draft is now available for review by CSITC Task Force members.

Axel Drieling reported on the progress in developing a web based database system for the CSITC Round Trials.

The Chair noted that the costs of operating the round trials was increasing and at present the contributions of each lab only covered the cost of preparation and shipment of the samples for the round tests, and that these cost had increased. The current charge was US\$400 per annum and it was proposed to increase this from 2010 to US\$600. This was approved. Axel Drieling explained that he estimated the costs for the fiber institute at US\$500 per year per participating instrument so that further increases must be expected in the future unless the Task Force can convince other labs to participate.

During the 13th Meeting, March 24, 2010, Bremen, Germany, the results of the four Round Trials conducted during 2009 were summarized. Standard deviations among the measurements and variations between inter-laboratory results were stable. Standard deviations among instruments in single tests were: mic, 0.09; strength, 1.33; UHML, 0.017; UI, 0.82; Rd, 1.11 and +b, 0.41. The results from an independent part of the regular CSITC-RTs, including all kinds of instruments, conducted during 2009 showed that inter-laboratory standard deviations and coefficients of variation were too high for use in cotton classification for SFI and Maturity. It was reported that unofficial and developmental calibration cottons for SFI will be available from USDA beginning in April of 2010. There was agreement that without consistent and reliable procedures and standards in place to ensure accurate testing, SFI measurement reliability would always be in question.

It was agreed that Axel will be asked to provide more information on inter-laboratory results in future meetings, while taking care to maintain the confidentiality of individual laboratory results. An earlier decision by the Task Force to not establish commercial tolerances among laboratories was reinforced. It was also agreed that the Task Force would not issue lists of "acceptable" laboratories; market forces will determine which labs are performing to an acceptable commercial standard.

It was reported that ABRAPA is requiring all labs in Brazil to participate in CSITC Round Trials and provide their results to ABRAPA for evaluation.

It was reported that USDA has developed an ASTM standard for production of calibration cotton. It is expected that the standard will be officially adopted later in 2010. The proposed standard was available for review and comment until June 2010. Members of CSITC recalled the minutes of the Third Meeting of CSITC in June 2005 in Memphis:

"The CSITC agrees that the Universal HVI Calibration Standards for all six measurement parameters (length, length uniformity, strength, micronaire, Rd, +b) are the official standard of the CSITC. The CSITC agreed that calibration standards must be referenced to the USDA reference material."

It was recalled that CSITC had decided earlier that each sample set could be used on a maximum of two instruments for participation in CSITC Round Trials. The logic behind this rule was that each sample is tested 30 times per instrument and that the samples become ragged and unusable after a certain amount of handling.

However, Jimmy and Axel reported that in tests completed in Memphis and Bremen, CSITC samples had been used for more than 4 instruments per RT, and there had been no observable deterioration in mean values or standard deviations when samples were used on 4 instruments = 120 tests. **CSITC agreed, that while using samples on more than two instruments is not advisable, there was reluctant agreement that the limit for use in Round Trials would be expanded from 2 instruments per sample set to 4 instruments per sample set.**

A proposal had been received to provide a quantity discount to Regional Testing Centers for participation in Round Trials. This proposal was rejected.

Axel reported that CSITC RT 2010-2 will be done with the new database system and web site developed with the support of the CFC. The new system will provide extensive diagnostic information for individual laboratories through secure on-line registration. The web site contains an imbedded training video to enable users to take advantage of the enhanced features.

Jean-Paul summarized progress under the CFC/ICAC/33 project, funded by the CFC and the EU, (see www.csitc.org or www.icac.org).

The Chair reported that there was a consensus that there should be one instrument-testing manual based on a harmonization of the existing ITMF and USDA guidelines. **It was agreed that the task of harmonization will be done in cooperation between the CFC/ICAC project partners, the ITMF ICCTM, the USDA-AMS and with the input of the instrument manufacturers. The new ASTM Standard Test Method for HVI testing will serve as a basis for harmonization of guidelines.**

During the 14th Meeting, held in Lubbock, USA in September 2010, the Task Force authorized Axel Drieling and Jean-Paul Gourlot to continue efforts to edit a single instrument-testing manual based on a harmonization of the existing ITMF and USDA guidelines.

Noting systematic differences in Round Trial results for micronaire between instruments calibrated with the older International Cotton Calibration Standards and the newer Universal Micronaire Calibration Standards, the Task Force reaffirmed that **laboratories should be using only Universal Micronaire Calibration Standards**. USDA will begin providing Micronaire Calibration Cotton reference materials free of charge together with the round-test samples.

The Task Force reaffirmed that **calibration cottons and test cottons should be conditioned in the same manner** so as to ensure that both reach the same moisture equilibrium.

Axel Drieling presented a new method of Round Trial evaluation that shows where a lab stands in comparison to acceptable tolerances. **It was agreed that the evaluation will be calculated in 2010-4, and may be included from 2011 on.**

A proposal to use only Reflectance (Rd) and Yellowness (+b) in cotton classing was discussed, and it was agreed to investigate the color topic more deeply during the next session.

Andrew Macdonald described progress in Brazil under the leadership of ABRAPA to use CSITC Round Trial results to motivate laboratories to maintain and improve their testing practices. He encouraged other countries to follow the Brazilian example.

Jimmy Knowlton proposed to include trash count and trash area as optional parameters in the CSITC Round Trials, in order to get more information on these parameters. **The Task Force agreed to include trash parameters in the Round Trials without evaluating laboratories based on the results.** Participation with trash results will begin with the 2010-4 CSITC Round Trial, and participation will be voluntary as is the case with the other optional CSITC measurements (SFI and maturity).

The Task Force voted unanimously for Andrew Macdonald to continue to serve as Chair of the Task Force for a two-year period starting at the next meeting.

During the 15th Meeting, held in Washington, USA in May 2011, Axel Drieling reported that participation in the Round Trials is trending upward, and the median Combined Properties Measurement had remained between 0.45 and 0.60 from the first round trials in 2007. Axel reported that systematic deviations in micronaire results seem to be related to the use of outdated calibration material.

Axel demonstrated a new evaluation method that allows laboratory operators to easily see if their results fall within measurement limits for each parameter. **The Task Force agreed that the new evaluation method will be included in RT evaluations and will be used to inform each participating laboratory confidentially how many results for each parameter fall outside measurement limits.** The agreed limits for the time being are:

Micronaire	0.2 units
Strength	2 g/tex
UHML	0.03 inches
Uniformity	2 units
Rd	1.5 units
+b	1 unit

Jimmy Knowlton reported that trash count and percent area had high coefficients of variation, and that there were significant differences in area and count measurements by instrument. **It was agreed that trash measurements are not ready for approval as CSITC parameters.** Nevertheless, it was agreed that comparisons to the interlaboratory averages for trash, SFI, and maturity could be provided to laboratories that are voluntarily participating in such measurements.

Axel Drieling demonstrated that the Round Trial results for Rd are distributed bi-modally. **The Task Force approved a request from Axel to exclude the color results from identifiable groups of instruments/laboratories whose results are outside the range of expected results for Rd** when calculating the Reference Values for each Round Trial evaluation. The Task Force agreed that other methods for determining the Rd/+b reference points (now determined by inter-laboratory average) should be studied, given the recent bimodal distribution problem.

Mr. Charles Ekelege, Director General, Tanzanian Bureau of Standards and Mr. Dominic Mwakangale, Director, Tanzanian Bureau of Standards reported that the RTC East has improved its performance in Round Trials and **now scores better than the median of all instruments** on the Combined Properties Measurement.

As determined at the CSITC meeting in Cape Town in 2009, the annual **cost of round trial participation will rise to \$1,000, or \$250 per trial**, in 2012 when support from the Common Fund for Commodities expires.

During the 16th Meeting, held in Buenos Aires, Argentina in September 2011, Axel Drieling demonstrated the new evaluation system that shows the number of evaluations falling within measurement limits for each parameter. **The evaluation was done for the averages of 30 test results as well as for each single test result.** There was agreement that **the new evaluation format and the new format of Round Trial reports should be continued.**

Jimmy Knowlton reported that Rd remains a challenge because of systematic level differences between Uster 1000s and 900s and between Uster and Premier instruments. He noted that there is not a similar problem with +b. Jimmy suspected that the problem lies with the use of outdated color tiles by 900 users. Given that the master colorimeter sets the values on all Universal Cotton Standards for Rd/+b, the **Task Force agreed that it should be recognized as a primary point of reference.** Hossein Ghorashi suggested that **Uster could provide a software update to 900 users** to correct for the systematic difference in levels for Rd. The Task Force accepted this suggestion. It was agreed that Axel Drieling will confer with Uster on the offset to be provided in the software update. CSITC agreed to send a letter to Uster formally requesting Uster to provide the upgrade so as to standardize results between all instruments. Hossein Ghorashi said that Uster would implement the proposal promptly after receiving the request from CSITC and conferring with Axel.

Bruno Widmer suggested that CSITC should recommend to laboratories and governments that testing laboratories should become ISO/IEC 17025:2005 certified to ensure the implementation of appropriate management systems for quality, administrative and technical operations. Bruno provided a memo on the subject that had been circulated.

Members of the Task Force agreed that ISO 17025 certification is useful, but expensive. The estimated cost of compliance was \$60,000 per year. It was noted that CSITC is focused on results, not process. Ultimately, the Task Force agreed that ISO 17025 certification is optional for laboratories and is neither recommended

nor rejected by CSITC.

Jimmy reported that a special set of USDA calibration cotton standards could be purchased and delivered with CSITC Round Trial samples. The Task Force discussed this proposal and agreed that **the special set of calibration cotton standards should be made available** to laboratories participating in Round Trials.

It was noted that the Guideline is being developed cooperatively by FIBRE, CIRAD and USDA-AMS, with six other organizations contributing.

During the 17th Meeting,

1) Axel Drieling reported the percentages of laboratories testing within limits in each RT 2011-3 and 2011-4:

Mic 96% / 93%
Str 83% / 84%
Len 91% / 90%
UI 99% / 93%
Rd 77% / 76%
+b 89% / 93%

The tests that were the most difficult to maintain based on USDA reproducibility criteria from 2001 and CSITC RT scale values were Micronaire, Rd and +b. However, if CSITC commercial Limits were used, the tests that were the most difficult to maintain were Strength, Rd and length.

Jimmy Knowlton reported that of the CSITC reported measurements, the color measurement in the RT has the worst performance relative to classification measurement performance at USDA. Jimmy also showed CSITC RT color results indicate that overall no particular instrument model is performing well.

Jimmy cited several reasons for the poor color measurement performance, including use of dirty calibration tiles, infrequent calibration and/or calibration checking and color heads in need of servicing. Jimmy then gave some recommendations for improving color measurement performance:

1. Calibrate at least once per day (more often for non-Xenon)
2. Verify cotton testing level after calibration and throughout the testing day (w/ tile or cotton)
3. Wash color tiles regularly (frequency depends on use)
 - a. Use only water with a mild liquid detergent added
 - b. Use a soft cloth
 - c. Allow complete drying
 - d. Do not allow water to contact back of tile
4. Color tiles: Re-establish at least once per year
5. Perform a thorough color measurement verification at least once per year or following major repairs
 - a. Use USDA 6 or 12 cotton biscuit sets with established Rd/+b values.

Jimmy **proposed to give CSITC RT participants the option of purchasing a color tile set** that would be shipped with the RT samples. The proposal was accepted. Additionally, Jimmy said he would include recommendations in RT 2012-2 aimed at improving color measurement performance.

2) Update on the "Guideline for Commercial Standardized Instrument Testing of Cotton."

Axel presented the full text for final approval, and there was a consensus among Task Force members to approve the Guideline. ITMF and ICAC will publish the finished Guideline.

Andrew Macdonald, Task Force Chair, thanked Axel, Jimmy and Jean-Paul Gourlot for their excellent service and hard work in shepherding the Guideline through the editing and approval process. Andrew noted that nine additional authors had contributed to the Guideline, and that the Common Fund for Commodities (CFC) and the European Commission (EC) had provided funding for preparation of the Guideline as part of project CFC/ICAC/33.

Andrew recalled that Dr. Lawrence Hunter had proposed to create a unified guideline for HVI testing to replace the existing USDA and ITMF guidelines at a Task Force meeting in South Africa during the 2009 ICAC Plenary Meeting. Andrew observed that publication of the Guideline represented a significant step toward the goal of universal use of standardized instrument testing to determine cotton quality.

3) Report from Dr. Moumine Traore, Director General, Cerfitex, Mali, on the activities of the RTC-West, including its future organization, services provided and actual performance.

Jean-Paul reported on behalf of Dr. Trarore that an agreement between the RTC-West and the African Cotton Association (A.C.A.) had been prepared, and that separate agreements with each of the major cotton companies in the region were being developed. He said that all principals had agreed to support the agreements.

4) Report from Rene van der Sluijs, impacts of fumigation and radiation on cotton quality

Rene provided alarming data showing that irradiation substantially changes the quality characteristics of each sample. He said that Cotton Australia is working with customs authorities to change the practice of irradiation of cotton samples.

5) A comparison of test results for one bale used in the USDA Check Tests, Bremen Round Tests and the CSITC Round Trials

Axel reported that, for the one bale used in the three tests, there were no critical differences in average test results between the CSITC Round Trials, the Bremen Round Tests and the USDA Established Results. And, he said that a comparison to the USDA Check Test will be done as soon as the data are available.

Axel proposed that Fibre and USDA-AMS should make additional comparisons between the tests and trials using additional bales.

8) Other business

João Luiz Ribas Pessa reported that the Brazilian Cotton Growers Association (ABRAPA) is planning to create an independent laboratory as a Regional Technical Center to provide support to South American HVI testing. The RTC-South America would be modeled after the regional technical centers in West Africa and East and Southern Africa that had been developed under CFC/ICAC/33. Axel and Jean-Paul offered to provide support to the effort by ABRAPA based on findings from the project.

During the 18th Meeting,

1) Axel Drieling reported that participation in Round Trials is trending upward, including 83 labs with 143 instruments in 2012 RT-3. He noted that the Combined Properties median score is improving, despite the increase in participation. Based on the Within-Limits evaluations, strength measurements are the weakest of the six CSITC parameters.

2) Jimmy Knowlton provided information about measuring trash percent area and particle count. Axel Drieling presented information about maturity results using HVI and Premier instruments. He noted that maturity is typically not measured directly but is instead derived from correlations with micronaire, strength and elongation. However, some new instruments attempt to measure maturity using a method of double compression.

3) The Task Force affirmed that the English language copy of the Guideline is normative. The Chinese, French, Spanish and Russian translations are complete and are available on the ICAC and CSITC web sites. The Task Force agreed that the ABRAPA translation would be accepted as the official CSITC Portuguese translation after validation.

4) Gervas Kaisi reported on the work and progress of the RTC-East located in Dar es Salaam. He reported that the Combined Properties measurement for the RTC-East was better than the CSITC mean in recent Round Trials. He noted that few cotton companies in the region are yet using the weekly check-lot services of the RTC, but that agreements were being developed to do so during 2013.

João Luiz Pessa reported that a central laboratory is being established in Brazil to serve as a RTC for South America.

5. A comparison of test results for one additional bale used in the USDA Check Tests, Bremen Round Trials and the CSITC Round Trials: any progress?

Jimmy Knowlton reported that there are not level differences between the USDA Check Tests, Bremen Round Trials and the CSITC Round Trials.

6) After extensive discussion, a proposal to report averages of the combined properties score over four RTs was rejected. Individual laboratories can make their own calculations if desired. The Task

Force confirmed that the role of CSITC is to provide data on laboratory performance, but evaluation of performance was the purview of the private sector.

7) A fifth sample was originally included in each Round Trial package to provide an opportunity to test different kinds of cotton and to allow countries to submit bales for use. However, in practice, few countries have been interested in repeatedly submitting bales for Round Trial testing. It was decided to keep open the option of including a fifth sample in Round Trials, and countries are invited to provide bales of cotton representative of national production. **However, fifth samples will not be included in future Round Trials without a specific reason to do so.**

8) Axel Drieling reported that during the CFC/ICAC/33 project, six extra-fine cotton round trials were conducted with up to 12 participants. This service was free of charge during the project duration, but would have to be charged for a possible continuation. Although some laboratories explained their interest, it is unlikely that the revenue received from the participating laboratories will cover the costs, as only a limited number of laboratories are involved in extra-fine cotton testing. **The Task Force determined that CSITC would not conduct quarterly extra-fine cotton Round Trials as part of its scope.**

9) Axel Drieling reported that a change of 10% (+/-5%) in relative humidity in a laboratory resulted in a change of 1% in sample moisture content already within minutes, and this in turn affects instrument test results, mainly for strength (approximately 2 g/tex) and length (approximately 0.02 inch). The Task Force agreed that laboratories must be informed of this relationship so as to eliminate sources of short-term fluctuations in relative humidity. The Task Force agreed that samples must be conditioned "from the dry side" (samples must be dried to less than their moisture equilibrium (6.75% moisture content) and then exposed to properly conditioned air (65% r.h.) to bring sample moisture within the tolerance range).

10) Jean-Paul Gourlot reported that the CSITC project that had been funded by the CFC and the EU had been completed in 2012, and a final seminar was conducted in Tanzania in January 2012. He noted that all the technical objectives of the project had been achieved, including the establishment of Regional Technical Centers, training of personnel across Africa, purchase and installation of temperature and humidity recorders in all major cotton producing countries of Africa, research was conducted to propose sampling and testing procedures respecting international tolerances, and the conduct of CSITC Round Trials to ensure international standardization of instrument testing. However, he noted that the project participants had not been successful in fully mobilizing an understanding of the value of instrument testing among African producers, especially the importance of contracting with Regional Technical Centers to sustain the technical support in the African Regions. However, Jean-Paul reported that some companies had purchased and installed their own instrument testing facilities during the Project time, while other countries had started to improve their own testing facilities based on the Project findings.

11) Bruno Widmer and Peter Wakefield reported that some **couriers operating in a few countries refuse to carry cotton samples, which they regard as hazardous**. Controllers are asked to draw percentage samples, pack them and then ship to labs or client offices, and difficulties presented by courier companies can disrupt transactions. The Secretariat was asked to conduct research to confirm that cotton samples are not considered hazardous or self-combustible, and to circulate this information to associations of airlines and carriers and to governments to implement into their transport regulations. It was noted that shipping lines do not consider cotton to be a hazardous cargo.

End.