International Committee on Cotton Testing Methods (ICCTM)

Progress Report 2008

Proceedings of the ICCTM Meeting in Bremen, April 1 - 2, 2008

Chairman: M.N. Vijayshankar, Recron, Malaysia
Vice Chairman: Axel Drieling, Faserinstitut Bremen e.V., Germany

Preface

The International Textile Manufacturers Federation (ITMF) is an international association for the world's textile industries, dedicated to keeping its world-wide membership constantly informed through surveys, studies and publications and through the organisation of annual conferences, participating in the evolution of the industry's basic raw materials and their application, through specialised committees, with the overall objective of creating growth and prosperity in all aspects of industry.

The International Committee on Cotton Testing Methods (ICCTM) is a non-profit technical subcommittee of ITMF. In 2008, the ICCTM met the first time according to the revised functions and statutes of the Committee, which were developed during the last meeting in 2006.

The main function of the Committee is to critically examine and discuss existing and new cotton testing methods and instrumentation, and to provide guidelines and make recommendations to the ITMF in this regard. The Committee should also recommend research priorities and tasks to be undertaken, based upon the perceived needs of the international textile community.

Introduction

Dr. Christian Schindler, Director General of the ITMF, welcomed the members and observers of the ITMF International Committee on Cotton Testing Methods in Bremen. He expressed his sincere thanks to the FIBRE Institute as well as the Bremen Cotton Exchange that this meeting could take place again in Bremen. He welcomed also the members of the ITMF Spinners Committee as well as the observers from the ICAC.

Mr. Jan Wellmann, Managing Director, Bremen Cotton Exchange, welcomed all participants of this meeting as well. He mentioned that at the Bremen Cotton Exchange a new HVI line was installed and the inauguration would take place at the end of the International Cotton Conference Bremen this week. The Bremen Cotton Exchange developed new rules for the arbitration of all HVI properties, and will therefore proceed to finally replace the manual arbitration by classer's.

Prof. Anton Schenek, Chairman of the ICCTM, following his announcement at the meeting in 2006, resigned as Chairman of the ITMF Committee. After more than 20 years the challenge of chairing the Committee should be handed over to the „young generation". Already this

meeting has been organized by Axel Drieling and Mona Qaud as well as ITMF (Dr. Schindler).

Prof. Thomas Schneider, Vice Chairman of the ICCTM, confirmed his resignation as well, as he has accepted a professorship at the University in Berlin; he stated that the useful and fruitful combination of the ITMF ICCTM meeting and the International Cotton Conference should be continued in future.

Dr. Schindler and A. Drieling presented the agenda of the meeting. In the past it was generally expressed that more input is needed for the Task Forces. In order to guarantee more active participation, small parallel sessions were scheduled for this year's meeting. Additionally, a Steering Committee was planned, which should comprise experts from the cotton and textile (machinery) industry. Furthermore, the election of a new Chairman from the textile industry (spinner) was pursued to achieve direct input for the Committee, ideally considering the prospering Asian market.

Dr. Schindler informed the members that ITMF has created a website facilitating the exchange of information: documents and reports will be available for downloads and also an email tool for Committee members is installed.

Comparing between the ITMF ICCTM and the ICAC Task Force on Commercial Standardization of Instrument Testing of Cotton (CSITC), the different centres of gravity of both groups were explained:

- ITMF ICCTM focuses on the development of acceptable cotton testing methods, the development of instruments and the suitability of them for the textile industry. The Committee offers a forum to state existing testing related problems for the textile industry, to exchange findings, and to activate future research to solve problems.

- The CSITC Task Force focuses on the implementation of high volume cotton testing for the worldwide commercial purposes, regarding the trading with cotton as well as the subsequent use of the test results at the spinning mills.

Task Forces, Chair and Steering Committee

With small cotton related presents, Prof. Schenek and Prof. Schneider were given their farewell. The Committee thanked them for their enormous contributions in the past two decades and expressed the hope that they will remain affiliated with the Committee.

Dr. Schindler proposed Mr. Vijayshankar as successor for the chair. Mr. Vijayshankar works as technologist for Recron, Malaysia. The company produces yarns, grey fabrics and denim. He is also a member of the ITMF Spinners Committee. Therefore he has insights into the textile industry, but is also familiar with the testing methods for cotton fibres. As Vice Chairman, Mr. Axel Drieling from the Faserinstitut Bremen (Bremen Fibre Institute) was suggested.

The election of the new Chairmen,

- Mr. Vijayshankar, Recron, Malaysia, as Chairman, and
- Mr. Axel Drieling, Fibre Institut Bremen e.V., Germany, as Vice Chairman

took place with no objections.

Also a Steering Committee was installed, which comprises the following cotton / textile experts:

- Mr. Terry Townsend, ICAC, Washington, USA
- Mr. Andrew Macdonald, Spinners Committee, Brazil
- Mr. Darryl Earnest, USDA-AMS, Memphis, USA
- Mr. Jan Wellmann, Bremen Cotton Exchange, Bremen, Germany
- Mr. Christoph Färber, Trützschler, Germany

The Task Forces and their Coordinators are

- HVI: Mrs Mona Qaud, Rieter, Winterthur, Switzerland
- Length: Mr Axel Drieling, FIBRE, Bremen, Germany
- Stickiness: Dr. Jean-Paul Gourlot, CIRAD, Montpellier, France
- Colour: Dr. Malgorzata Matusiak, Institute of Textile Architecture, Lodz, Poland
- Neps and Trash: Dr. Jonn Foulk, USDA ARS, Clemson, USA
- Fineness and Maturity: Dr. Devron Thibodeaux covered this time by Dr. Gary Gamble, USDA ARS, Clemson USA

Report of the Task Force "HVI"
(Coordinator: Mrs Mona Qaud, Rieter, Winterthur, Switzerland)

The Task Force Coordinator, Mrs. Mona Qaud, presented an overview on HVI instruments. Actual topics being worked on are short fibre calibration, variability of testing results, moisture control and moisture based correction, calibration cottons, CSITC Round trials and developments for HVIs, MVIs and LVIs. So far, about 2,200 HVIs were sold (including MCI, Spinlab and Uster) as well as 400 Premier instruments. Also, Shaffner is still in research and production of high volume equipment. Lintronics was changed to the company name Cottlab, which is now delivering spare parts and service for Fiberlab as well as FCT and FQT instruments. It was mentioned during the discussion that the share of cotton tested with HVI has increased from 30 to 60%, mainly based on the changes in China.

Axel Drieling compared Uster and Premier High Volume Test Devices based on Bremen Round Test Results. Approx. 80 HVI instruments and an increasing number of Premier instruments (from 20 in 2003 to more than 50 in 2007) were evaluated from Round Test, including 17 cottons. The three most important findings were:

1) For most important parameters such as micronaire, strength, length (UHML), length uniformity, no significant differences were found.
2) For colour Rd significant differences were given, which were in average 0.7 readings; colour +b showed no clear results. Work has to be done to overcome this problem.
3) For other, less important or less reproducible properties, some deviations were found such as elongation, trash content and maturity.

Dr. Iwona Frydrych presented the ITRU Fiber Tester UAK-1 by a Turkish manufacturer. Testing is done on raw cotton material, sliver and yarn as well as uncoloured and coloured synthetic fibres and their blends. Also fabric surface can be tested with that unit, so that an overall of 88 parameters are measured or calculated. It allows a direct measurement of all HVI parameters including neps and immature fibres. However, it is not known whether they

achieve comparable and stable results, and it was not compared to other systems; this should be on the agenda for the next meeting.

Gretchen Deatherage and James Knowlton, both from USDA AMS, Memphis, TN, USA, showed their evaluation of HVI 1000 moisture measurement. HVI 1000 has the possibility of moisture correction, which adjusts the length and strength results. If moisture is outside the tolerated range, samples could be rejected or corrected.

For an evaluation, 26 bales were measured with one HVI 1000. The HVI 1000 showed good sensitivity to moisture differences, so it is beneficial to measure moisture.

In a second test series, results on identical cottons were compared between a conditioned lab, an unconditioned lab and a lab with rapid conditioning. James Knowlton showed that with conditioning, the variation of moisture and strength went down drastically. On the other side, 1% of difference in equilibrium moisture appeared between these cottons, so the cottons should not be standardized to a content of 7.5% by moisture correction in properly conditioned labs. The change to fixed moisture content, ISO and ASTM standards would require major changes. James Knowlton explained that the conditioning of the calibration standard material is already reducing the input of humidity differences.

In the discussion, Axel Drieling mentioned that the calibration cottons only take long term variations into account. Andrew Macdonald stated that the moisture correction feature will be helpful to labs in poorer countries, as they do not have sufficient climate control. James Knowlton stated again that conditioning is the best way to go; everything else will be difficult, as it is changing the whole system.

Hossein Ghorashi presented the accuracy of fibre testing with HVI 1000, and stated that it is important for best results to test the moisture in the instrument and to correct the data to 7.5% moisture content. Corrected data shows a better and more even distribution.
Axel Drieling stated that this refers again to the basic problem of testing/correcting cotton based on a fixed relative humidity (65% r.h.) or on a fixed fibre moisture content (7.5% moisture in the fibres), as the current status is to test based on a fixed humidity. In the discussions it was agreed that it is preferable to have good and standardized laboratory conditions and that only labs that do not fulfil the requirements of ISO 139 or ASTM-D1776 should use this correction. It could otherwise implement errors, as we have a change from a defined humidity to a defined moisture content. Hossein Ghorashi mentioned that they will perform another trial, how the correction is influencing the data when humidity is controlled in the lab.

Mona Qaud presented her results regarding the use of different sets of calibration cottons

- A) Upland Short/Weak – Upland Long/Strong
- B) Pima Short/Weak – Pima Long/Strong
- C) Upland Short/Weak – Pima Long/Strong

In this comparison, Upland Short/Weak and Pima Long/Strong (C) showed the closest results and variations to the “target values” from the calibration boxes. In the case of calibration of Upland Short/Weak, and Upland Long/Strong (A), length was overestimated with about 2 mm, and also strength with 1-2 g/tex, mainly for the ELS range of cottons.

According to James Knowlton and Axel Drieling there are no definitive criteria for the selection of Upland (A) or Pima (B) Calibration. Possible, but no sufficient criteria for the international use are:

- saw ginned ←→ roller ginned
- Gossypium hirsutum ←→ Gossypium barbadense
- Fixed limits for length or strength
- Demands from the customer / user of the results

James Knowlton mentioned that ELS has a different behaviour than hirsutum varieties (also other length distribution). So it is not suitable to cover the complete range with only one type of cotton. Axel Drieling proposed that the way of calibration should be stated on the HVI printout (Upland calibration, Pima calibration, Upland-Pima calibration). V. Srinivasan pointed out that for Premier units a 3-point calibration is possible to cover the whole range. James Knowlton pointed out, that for a user of Upland only the 3 pt. Calibration is not feasible.

Anja Schleth from Uster Technologies showed the principally possible deviations based on different calibrations. Her conclusions were that cottons tested outside the range of calibration cotton standards will show larger error; Upland calibration cottons show lower variations than Pima; for the widest range of cottons tested, Upland and Pima combination provides the best set of calibration cottons, whereas a Pima-Pima combination is not recommendable.

Iwona Frydrych stated that the best way will be to have a calibration without using natural fibre calibration material.

James Knowlton gave an additional presentation about calibration. He mentioned that it is recommended to calibrate for any Upland cottons up to 1.2 inches (Upland short/weak and Upland long/strong). USDA plans that the Pima short/weak be eliminated in the future and therefore be replaced with the Upland short/weak. Pima calibration cotton is normally roller ginned, but to avoid the high variability this cotton is custom saw ginned for USDA

The decisions from the plenum according to calibration were:

- a) In future the used calibration cottons shall be named on HVI printouts
    - Manufacturers of instruments: Please include in HVI software
    - Laboratories: Please include on printouts
    - ITMF: Include this in the HVI User Guide
- b) Change for Pima calibration
    - Pima Short/Weak will have to be replaced with Upland Short/Weak, so that the calibration Upland Short/Weak – Pima Long/Strong should be used for Pima calibration.
    - USDA will discontinue producing the Pima Short/Weak material – USDA should therefore publish the date of discontinuation.

Finally, James Knowlton presented the current developments in ASTM Cotton Standard Test Methods. USDA procedure are now being noted down, so that other bodies (like in China) have the option of developing their own quality infrastructure and calibration cottons without deviating from the USDA quality and result level. The standard methods are:

- ASTM D7410: Standard practice for qualification of cotton classification instruments for cotton marketing
    - Based on USDA's qualifying specifications
    - Reason: increasing international demand
    - Use in USDA, instrument manufacturers, China Fiber Inspection Bureau, others
    - Needs USDA standards, stable moisture conditioning, experienced staff
    - For Mic, UHML, UNIF, STR, Rd, +b, trash area, trash count
    - Set of 8 cottons, 6 cottons for mic
        - option 1: new instrument;
        - option 2: yearly verification (reduced set)
- ASTM: Value Establishment of Calibration Cottons
    - to be transparent,
    - to do it in China – fitting to USDA, not on different level

Summary of the Task Force on HVI

Regarding moisture correction, it was decided within the Task Force that a properly conditioned lab is preferred to using the automatic moisture correction software. Cotton moisture monitoring is suitable for detecting deviations, but only laboratories that are not well conditioned should use a correction.

Calibration ranges should be as wide as possible to cover the samples being tested.

As the production of Pima short/weak calibration cotton will not be continued, it will be replaced by Upland short/weak (for a calibration when Pima is tested), and will therefore cover a wider range. When testing only Upland varieties, still the Upland-Upland calibration should be taken.

The ITMF Task Force on HVI recommends to state the calibration cottons (Upland or Pima) used on any reports. As this might influence test results, this should also be implemented and taken into account in guidelines such as the HVI User Guide by USDA or ITMF. This fact was also reported in the ICAC Task Force on Commercial Standardization of Instrument Testing of Cotton (CSITC).

As the HVI Task Force still has some unresolved issues and topics, it will continue its work and welcomes any input from the industry.

Report of the Task Force "Length"

(Coordinator: Mr Axel Drieling, FIBRE, Bremen, Germany)

The Task Force Coordinator, Axel Drieling, gave an overview about length testing. Length testing with HVI is fully accepted. Inter-laboratory variations in the CSITC Round Trials showed about 1% CV based on 30 tests per lab, or 1.5% CV based on single tests in each lab. For the uniformity index, the CV is even lower.

Testing of length distributions with instruments like Uster AFIS, Premier aQura, Almeter, etc. is giving more information, but additionally resulting in a higher CV% (approx. 5% in Bremen Round Tests).

The most outstanding problem is testing of the Short Fibre Content. All instruments show CVs of about 20%, which is not tolerable, reasons being the strongly varying material, the statistics and the test methods. One main reason for the variation between instruments for SFC is the calibration.

Besides the variation of the Short Fibre Content results, the next open question is which definition should be taken for the Short Fibre Content (e.g. 12.7 or 16mm), and which reference should be taken (based on AFIS or Suter Webb or Roller Method).

All these questions are of utmost importance, as the aim of all is to have Short Fibre Calibration Material for HVI testing as soon as possible to reduce result variability. This is for example strongly recommended by the ICAC Task Force for Commercial standardization of instrument testing of cotton (CSITC), too.

Hossein Ghorashi from Uster Technologies gave a presentation on HVI Short Fibre Measurement. His findings were that the Roller Analyser Data (originally used in China) and Suter Webb results show a strong relationship, and HVI 1000 SFI results indicate good relationship to both methods. It seems that HVI can be calibrated to either instrument. Attention must be paid that the calibration cottons to be developed correspond to the data from methods used in the trade today.

After this, James Knowlton showed his work on the development of Short Fibre Index Cotton Calibration Standards. The SFI results for the reference bales used are based on AFIS SFC measurements, which are based on Suter Webb measurements in the 1980s. His open questions to the Committee were: Is AFIS a good reference; is there a better reference method, should the Chinese Roller Analyser be studied, what will China do, should 16mm be considered as basis length?

Romano Bonadei stated that the Short Fibre Index is a quite important parameter for spinners. Urania Kechagia raised the question about the best basis length for the Short Fibre measurement: 12.7mm or 16mm or half length, or half effective length. Regarding the Suter Webb, Urania Kechagia and Darryl Earnest emphasized the dependence of the system from the experience of the operators. Regarding AFIS, it was asked whether AFIS shows sufficient range within SFI.

In the controversial and intense discussion it became clear, that any decision now will be an important decision, and will have an impact e.g. to avoid different / separate levels of SFI in different regions of the world. The definite aim of the Task Force is to avoid different levels. On the other side, it is not possible to waste time. Therefore, it was agreed, that it will be beneficial

- To regard 12.7mm and 16mm in parallel for the preparation of standard material, although future standards should not obtain both results
- To regard different standard test methods
  - Suter Webb despite the operator's influence. Other labs like USDA New Orleans or other experienced labs should be included. Labs are welcome to support.
  - Roller Analyser, perhaps also including work from the China Fibre Inspection Bureau (CFIB) and USDA, New Orleans.
  - AFIS strongly related to one of the methods named above.
- Additionally Image Analytical Reference Methods are developed by TTU and Bremen.

Darryl Earnest finally stated that there has to be an acceptance and an agreement of the industry to the basis length as well as to the reference.

Another topic that was already mentioned by Allan Heap 4 years ago was the Relative Short Fibre Content. A Relative Short Fibre Content should be the same for different samples with varying fibre lengths. Mr V. Srinivasan from Premier showed a practical and suitable definition for spinners purposes (which is 30% of the 5% length as a length limit), and showed the better correlation of this parameter to processing and yarn properties than the usual Short Fibre Content. This parameter is now included in the Premier aQura instruments. The Task Forces is asked to proceed on this work for the benefit of spinners.

Summary of the Task Force on Length

The calibration of the Short Fibre Index on HVI is the most important task to be covered. It was shown that calibration will reduce the variability of this parameter, which is important for spinners.

The basis length will have to be fixed, either at 12.7mm or 16mm. Regarding the necessary reference, a decision between AFIS and Suter Webb and Roller Analyser has to be found, although all methods have their weaknesses.

Relative Short Fibre Content results proved to be helpful for spinners and should be included in test instrument software.

The Task Force on Length will continue its work, and welcomes any input to solve the mentioned problems.

Report of the Task Force "Stickiness"
(Coordinator: Dr. Jean-Paul Gourlot, CIRAD, Montpellier, France)

The Task Force Coordinator, Dr. Jean-Paul Gourlot, gave an interesting introduction into the topic of cotton stickiness. Stickiness originates from various sources: vegetal parts, oil traces, waxes, plant sugars and insect sugars. The most important cause of stickiness is due to these entomological sugars. Honeydew has become one of the main contaminants present in cotton. Sticky points remain in the cotton from the field up to the textile processes where they cause production and quality losses. The behaviour of contaminated fibres during processing is highly dependent upon the quantity and the type of the main sugars present in fibres.

Various techniques may be used to estimate a possible contamination of fibres by honeydew. These techniques are more or less predictive of the stickiness behaviour of fibres during their processing. These techniques may be categorized into four categories (figure 1): chemical methods (mostly measuring sugar contents), physical, mechanical and thermo-mechanical techniques (mostly measuring stickiness contamination).

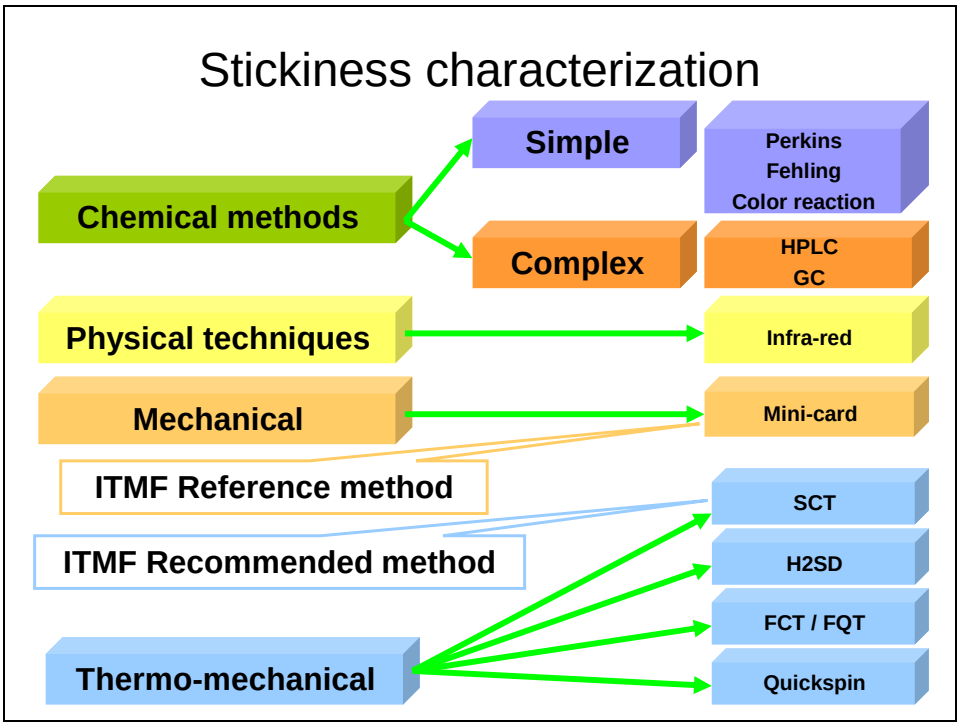

Figure 1: Possible means to estimate sugar content and/or stickiness.

Rychard Frydrych from CIRAD prepared a bibliography on stickiness for this working group. This bibliography lists 214 references registered between 1960's to 2007.

Gary Gamble presented seed meat contamination as one of the factors contributing to stickiness. Honeydew contamination remains the most common source of stickiness in cotton, but seed meat contamination due to shattering of weak seed coats is another relatively common source observed at the USDA-ARS Clemson laboratory. Heat and sugar-based detection methods are ineffective for this type of stickiness, which requires the use of a pressure-based method such a mini-card or FCT, for determination of sticking propensity.

Eric Gozé explained the quality of count measurements. The observation of repeatability of number of neps, trash, and sticky points shows that standard deviation and CV are not fixed quantities; rather they are functions of the mean (data analysis were made using SAS®/Stat). These apparently complex functions can all be derived from simpler function. We then propose not to use the CV as a single figure for the diagnostic of precision of measurements based on counts (like for trash, neps, seed-coat fragments, thin and thick places on yarn).

In another presentation, Eric Gozé showed the results of a comparison of stickiness results from different instruments, whereby the observations are based on an International Round Trial. 12 raw cottons and 8 mixed cottons were tested on minicard, FQT, H2SD and SCT, in a fully randomized design in four blocks. Considerable differences were found between different copies of the same instruments, showing some serious calibration problems (data analysis were made using SAS®/Stat/Proc Genmod). Eric Gozé expressed his thanks to participating laboratories.

On behalf of Dr. A. Amara, ENSISA, France, Jean-Paul Gourlot presented the stickiness behaviour of honeydew – how to measure this sticking behaviour? The study was made thanks to fundamental studies of the adherence of individual sugars on various supports. It was required to design several new measuring methods on fibre and on machines parts to compare with industrial processes. Results show that the adherence of honeydew decreases with water content, increases with speed of separation, and is affected the most by surface characteristics and the type of sugar, alone or in a mix to mimic true honeydew.
Dr. Richard Frydrych reported about fibre conservation in the frame of the creation of reference materials for stickiness testers. From the international round-test on stickiness, he observed the need of calibration or checking materials for levelling out results between measuring devices. However, if we would like to create these reference materials, they have to be stored in conditions insuring the optimal stability of its stickiness level during time. This opens a new field of research.

Dr. Joong-Sik Yang from KOTITI (Korea Textile Inspection and Testing Institute), presented an evaluation method of cotton stickiness using colour reaction. The principle of this new method is to develop brown colour spots on colour reaction paper by applying pressure to transfer the honeydew of the sample web to the colour reaction paper in several steps, before developing it and grading stickiness. This method is registered on Korea industrial Standard, on PCT and was approved for developing a new standard under ISO/TC38 WG.

Jean-Paul Gourlot stated that

- Sydel and SOSEA made an announcement mentioning that Sticky Cotton Thermodetector (SCT) and High Speed Stickiness Detector (H2SD), first designed by CIRAD, are now commercialised and serviced by SOSEA, Cotton Department in Le Havre, France.
- Quickspin is commercialised and serviced by Süssen, Germany.
- For FCT / FQT from Lintronics, Cottlab is servicing the existing equipments in place.

Summary of the Task Force on Stickiness

From the presentations and the discussions, the group envisaged the following perspectives of studying:

- The possibility/necessity of calibration for Stickiness Instruments
- The necessity/methods to produce stickiness reference materials
- The necessity/methods to store stickiness reference materials properly
- The necessity to learn more about other components of honeydew enhancing stickiness problems
- Ways of getting information / support from the industry.

The Task Force on Stickiness will continue its work.

Report of the Task Force "Colour"
(Coordinator: Dr. Malgorzata Matusiak, Institute of Textile Architecture, Lodz, Poland)

The Task Force on Colour was established in 2006, with Dr. Matusiak as the Coordinator. During the first meeting of Task Force on for Colour 4 papers were presented and discussed.

James Knowlton reported about reference methods for Rd and +b. USDA AMS uses two master colorimeters located in Memphis, Tennessee, USA, for setting values on all HVI colour calibration tiles and cotton colour standards. Mr. Knowlton explained the reference methods used on these instruments to maintain the standard colour levels for Rd and +b. Calibration of the master colorimeters is accomplished with the use of master tiles. In order to monitor long term colour calibration accuracy, master cotton colour reference standards are kept in cold storage – so called "Freezer Cotton Standards" – that are measured by each master colorimeter on a quarterly basis.

USDA AMS is working collaboratively with USDA ARS to develop methods for referencing the master colorimeters to a NIST traceable spectrophotometer. Spectrophotometer values have been established on the master tiles and now progress is being made to devise a method for measuring the master cotton colour reference standards directly by spectrophotometer. The used instrumentation is: Spectrophotometer (L*, a*, b*), HVI 900 Master Colorimeter, HVI 1000 Mater Colorimeter, 1000 Master Tiles.

In the discussion, it was mentioned that it is not possible to keep the standard when based on tiles only… "we have to go back to cotton". Residuals (for spectrophotometer to colorimeter) are for Rd higher than for +b. The next step will be to measure cotton colour standards with spectrophotometer.

Hossein Ghorashi showed the influence of trash on colour measurement. In the frame of the investigation a set of USDA Colour Grade Standards were manipulated by adding trash particles systematically and then the colour parameters Rd and +b were measured. High correlations were noticed between the reduction of Rd values and increment of trash content in cotton. +b values were not impacted by adding trash. The relationships developed as a result of the investigations can be used to correct HVI colour measurement based on the trash content.

In the discussion it was mentioned that any corrected result should be distinguished from the regular trash, e.g. stated as "RD pure" or as "Trash corrected Rd". J. Knowlton mentioned that trash was evaluated on surface only. In reality the trash is covered. This impact should be evaluated as well.

Malgorzata Matusiak presented her results concerning the colour grade agreement of classers grading and HVI classing. The comparative assessment of cotton classers' grading and HVI classing was done in the frame of the cooperative investigations of the Textile Research Institute from Lodz, the Gdynia Cotton Association, the Faserinstitut Bremen and Wakefield Inspection Services.

32 cotton samples of different origin and quality were classified into colour grade by both subjective assessment by cotton classers and instrumentally according to HVI measurement. 2 devices HVI 900 located in two laboratories were applied to measurement. Differences were stated in both: between the instruments as well as between particular instruments and classers. Agreement between classers' grading and HVI classing was at the level 55 - 75 %.

In the discussion it was mentioned that only classes were shown, and that cottons which are at borders to other classes are likely to mis-match. James Knowlton experienced that also with two manual classers he achieves a 70% reproducibility (experience value).

In a second presentation, Malgorzata Matusiak compared colour measurement between HVI and spectrophotometer. In the frame of the project carried out in Textile Research Institute, 68 cotton samples were measured for colour parameters by HVI 900 and by spectrophotometer Datacolor 650. Strong correlation was stated between colour parameters from both applied instruments. It was also found that cottons which were classified into the same colour grade according to HVI differ between each other in the range of L*, a* and b* from spectrophotometer. Investigations confirmed that spectrophotometer can be applied to the assessment of colour parameters for cotton. It is possible to determine the ranges of colour coordinates with the spectrophotometer for particular colour grades according to Universal Standards.

Summary of the Task Force on Colour

All investigations presented during the meeting of Task Force on Colour are going on. Discussion showed some new aspects and directions which should help to find the best solutions in all presented topics. The Task Force on Stickiness will continue its work.

Report of the Task Force "Neps and Trash"
(Coordinator: Dr. Jonn Foulk, USDA ARS, Clemson, USA)

Dr. Jonn Foulk, presented the results of a 2007-08 Large Area Trash Study in cooperation with USDA AMS and ARS. 200 cotton samples were tested in a wide range of colour grade, leaf grade and bark/grass combinations. 12 different classing offices were included with HVI 1000's with a 9 in2 window, Scanner and Computer with 24 in2, and experienced human classers. Identifying what kind of trash is causing problems can help so that within the ginning process the particular trash particles could be removed.

Current technology has a potential to replace the human classer – and hopefully in the long run will be more consistent. Goal is to move towards instrumental measurement of trash and leaf measured accurately.

Mr V. Srinivasan from Premier Evolvics, Coimbatore, India, presented the newly developed Gravimetric Trash Measurement in Premier ART. The Gravimetric Trash is a separate module that individualizes the fibres from the trash content. Underneath the module the trash is collected on a balance. Whereas Shirley is repeated up to 3 times – Premier ART requires only 1 pass. The process is fully automatic, sample size is 10 grams, and the testing time is 3 minutes. Correlations with the Shirley Analyser were quite good. Mr Srinivasan stated that no calibration is needed from the customer side. The performance can be assessed by checking lint and trash box, as no fibres should be left in trash, and no trash in the fibres.

Jonn Foulk explained that they created a FTIR cotton trash data base and simulate ginning and textile processing at various temperatures. He mentioned that moisture contents differ among trash types. Trash is reduced into raw trash, pepper and powder demonstrating FTIR differences. With a 5 year study, performed using ring, vortex, and rotor spinning, it was shown that trash influences many yarn properties.

Report of the Task Force "Fineness and Maturity"
(Coordinator: Dr. Devron Thibodeaux covered this time by Dr. Gary Gamble, USDA ARS, Clemson USA)

Geoff Naylor from CSIRO in Australia presented a paper entitled "Technical Performance of Cottonscan: An Instrument for Determining Average Fibre Linear Density (Fineness) of Cotton Lint Samples". The paper included the results of an international round trial that was

designed and implemented according to ITMF guidelines. The resultant 95% confidence limits were +/- 16.3 millitex for average fibre linear density and +/- 0.066 for average fibre maturity ratio.

Geoffrey Naylor followed the Heap/Hequet procedures for recommendation of instruments for their trials, and raised the question whether the instrument could be recommended, though the new Statutes of the Committee do not foresee such recommendations. Therefore the Task Force appreciated the development of the Cottonscan and recommended to continue this work, as it will be valuable for the textile industry.

Stuart Gordon from CSIRO in Australia reported an approach to characterize the camera and optical components of the Siromat, a method that directly measures fibre maturity using polarized light microscopy. Significant variation in the colour space response of the camera CCD and compensator plate that is mounted between the specimen and polarizer in the microscope setup was observed. Further characterization of the Siromat camera and optical components will be an important step to achieving acceptable inter-instrument variation.

Closing Plenary Meeting and Final Remarks

The closing plenary meeting gave the possibility for the Task Force Coordinators to present their Task Force summaries.

From the Fineness and Maturity Task Force, the question about a recommendation of the COTTONSCAN instrument in the Full Plenary Meeting was raised. The ITMF International Committee on Cotton Testing Methods appreciated, additionally to the Task Force, the development of the COTTONSCAN and recommended to continue this work, as it will be valuable for the textile industry. A continuation on the development can especially focus on the reduction of testing time.

Each Task Force was asked whether there are still important topics to be solved – and therefore whether the different Task Forces should continue to work:

- The Task Force HVI will continue
- The Task Force Length will continue
- The Task Force Stickiness will continue
- The Task Force Colour will continue
- The Task Force Neps and Trash will continue
- The Task Force Fineness and Maturity will continue

The Committee found no need for any new group at this time.

The Steering Committee of the ICCTM met for its first time on Wednesday morning for 45 minutes. To further facilitate contacts between the members, conference calls are suggested in addition to the biennial meetings, where all members are attending. A first discussion topic will be on the input of the Steering Committee within the ICCTM.

The question was raised how the parallel sessions, organised for the first time this year, were perceived by the Committee's members. It turned out that consecutive sessions rather than parallel ones are preferred in order to enable members to participate in all sessions.

To find sufficient time, a time limit for each presentation will be enforced in future. The presentations need to state their intention/objective, whether it is information only, or is asking for approval by Committee members. A summary from the author before the meeting will be mandatory for the next meeting.

Regarding the date and the duration of the Committee meeting, the decision was to have a full 2 day meeting again. Nevertheless, the combination with the CSITC meeting should be kept as many participants are in both groups, and both groups benefit from each other.

The Committee and its Chairmen will be happy to see all interested people at the next ICCTM meeting, which will again be in conjunction with the International Cotton Conference in Bremen in March/April 2010. In the meantime

- The Task Force Coordinators will collect important topics and will coordinate the work on these topics;
- The Steering Committee will care for enhanced input from the textile industry's view.

ITMF thanked the following sponsors of the ICCTM-website from the cotton and instrument machinery industry,:

- Rieter
- Uster
- Premier
- Cotton Foundation

A. Drieling and M. Qaud