



International Committee on Cotton Testing Methods (ICCTM)

Progress Report 2012

Proceedings of the ICCTM Meeting in Bremen, March 20, 2012

Bremen Cotton Exchange ("Sitzungssaal")
Wachtstrasse 17-24
28195 Bremen/Germany

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 industries 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. The main function of the Committee is to encourage research and development for enhanced testing methods, to recognize suitable test methods, to identify reference test methods, to harmonize cotton testing results and to discuss testing related problems.

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. About 40 people attended this year's meeting. He expressed his sincere thanks to the Fibre Institute Bremen (FIBRE) as well as the Bremen Cotton Exchange, that this meeting could take place again in Bremen in conjunction with the traditional International Bremen Cotton Conference. He welcomed also the members of the ITMF Spinners Committee as well as the observers from the ICAC Task Force on Commercial Standardization of Instrument Testing of Cotton (CSITC). Dr. Schindler presented the agenda of the meeting, this time having again consecutive sessions. No changes were requested.

A summary of the ICCTM meeting (ICCTM Progress Report 2012) was presented by the coordinators at the International Bremen Cotton Conference and later compiled and edited by Axel Drieling and Mona Qaud. The individual presentations of the meetings can be downloaded in the members section of ITMF-ICCTM (<http://www.itmf.org/wb/pages/home/committees/international-committee-on-cotton-testing-methods.php>).

Interested parties are welcome to apply for membership by sending an email to ITMF (secretariat@itmf.org).

Task Forces, Chairs, and Steering Committee

The Vice Chairman of the committee, Mr. Axel Drieling, also welcomed the participants.

He recapitulated the mandates of the committee as well as the procedure of recognition. He stated, that one main topic besides the individual group presentations was the process of recognition of two testing instruments by the committee members.

Progress Report Barcelona

Mrs. Mona Qaud reported shortly on the meeting of the coordinators in Barcelona in September 2011 during ITMA 2011. One main part discussed in Spain was on the chapters and its contents for future instrument recognitions by the committee. Furthermore, also the planning and preparation of the Bremen meeting as well as the CSITC guidelines were discussed. In the afternoon some instrument testing manufacturers were visited, such as Uster Technologies, Premier Evolvics and Textechno. The participants of this meeting were Stuart Gordon, Jean-Paul Gourlot, Axel Drieling, Malgorzata Matusiak, Mona Qaud and Christian Schindler.

Report by the Steering Committee

Mr. Terry Townsend, Chairman of the steering committee, outlined the objectives as well as the support of the steering committee. It would like to assist as well as give strategic guidance to the ICCTM. On behalf of the Steering Committee he offered to assist in finding funds which could be used to support and promote the work of the ICCTM. From the point of view of the Steering Committee the most important parameters for cotton testing are length (especially SFI), followed by neps and maturity, stickiness, and colour. Instead of having individual task forces they favour and support the idea of a joint Executive Committee. It would appreciate if presentations given were summarized in advance.

Input of Spinners Committee / CSITC

Mr. Andrew Macdonald stated that all major points that the ITMF Spinners Committee wanted to touch on are reflected in Terry Townsend's summary. The measures taken by the ICCTM are fully supported from the Spinners Committee. He invited everybody interested to attend the meeting of the ICAC-CSITC task force the next day, Wednesday, March 21, 2012.

Chairmen and Executive Committee

The Chairmen which were re-elected during the meeting are

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

In order to have more flexibility, a joint Executive Committee was proposed that should replace the individual task forces where one coordinator looked after one specific topic only. The meeting agreed to put into place this new organisational structure.

The Executive Committee is formed by the following persons

- Mrs. Mona Qaud: Uster Technologies, Uster, Switzerland, mona.qaud@uster.com
- Mr. Axel Drieling, FIBRE, Bremen, Germany, drieling@faserinstitut.de
- Dr. Jean-Paul Gourlot, CIRAD, Montpellier, France, jean-paul.gourlot@cirad.fr
- Dr. Malgorzata Matusiak, Institute of Textile Architecture, Lodz, Poland, malgorzata.matusiak@iw.lodz.pl
- Dr. Stuart Gordon from CSIRO, Belmont, Australia, stuart.gordon@csiro.au
- Mr. Vijay Shankar, Recron, Malaysia, vijay.shankar@recron.com

Additionally elected:

- Mr. Jimmy Knowlton, USDA-AMS, Memphis, USA, james.knowlton@ams.usda.gov

Resigned / Retired:

- Dr. Devron Thibodeaux, USDA-ARS, USA
- Mr. Jonn Foulk, USDA-ARS, USA

The Steering Committee comprises the following cotton/textile experts:

- Dr. Terry Townsend, ICAC, Washington, USA
- Mr. Andrew Macdonald, ITMF Spinners Committee, Brazil
- Mr. Darryl Earnest, USDA-AMS, Memphis, USA
- Mr. Christoph Färber, Trützschler, Germany
- Mr. Karsten Froese, Bremer Baumwollbörse, Germany

Mandates of the Committee

The Steering Committee referred again to the mandates for the ICCTM proposed in 2010, which are:

1. Encourage research into the basic science needed to develop commercially useful tests.
2. Encourage the development of enhanced testing methods.
3. Recognition of instruments and testing methods that are able to perform within allowable tolerances, and that achieve a result that correlates with a reference method.
4. Identification of reference methods.
5. Harmonize cotton testing results by means of
 - a. proposition and support for the international standardization of test methods
 - b. development of guidelines for testing
 - c. technical evaluations using world-wide round tests.
6. Discussion of problems related to testing of cotton fibre properties and their relations to cotton processing.

Tuesday, March 20, 2012, General Papers

Dean Ethridge presented a spin tester being a tool for rapid prototyping ring and compact yarns. Both direction of yarn twist Z and S were possible. The update of the ring spinner was done by implementing Suessen Elite on the unit. The study and work have been done by Prof. Urs Meyer (TEXMA and formerly ETH Zurich). He proved an increase in compact yarn strength, while having the same twist factor as in the ring yarn (prof@texma.ch).

The presentation by **René van der Sluijs** showed the effect of quarantine treatment of cotton fibres and its effect on the quality. All cottons imported into Australia must be treated either by chemical fumigation or gamma radiation. While the fumigation treatment had little or no effect on the yarn quality, the gamma radiation resulted in a drop of quality. Dramatically affected were uniformity, short fibre content, strength and elongation. Also the colour readings were affected for a period of approx. two weeks. The gamma radiation also impacted the dyeability. These effects have impacts on round test as well as on qualification/calibration cottons.

Within the CSITC Task Force guidelines for instrument testing were being compiled. The work has been done mainly by Axel Drieling, FIBRE, Jean-Paul Gurlot, CIRAD and James Knowlton, USDA-AMS. About 10 cotton experts from around the world had contributed. **Axel Drieling** presented the guidelines during the meeting. The main reason for this effort was to have one central and updated document that would replace the ITMF HVI User Guide. The guidelines are available in a short and

a long version. After receiving final corrections, the document will be ready for distribution in spring 2012. It can be downloaded for free from www.itmf.org, www.icac.org and www.csitc.org.

Translation into Chinese was discussed, and Vikki Martin from Cotton Inc was kindly offering assistance. ICAC will translate the guidelines into its five official languages French, Arab, Russian and Spanish. Also these versions will be available at the before-mentioned websites.

Tuesday, March 20, 2012, Recognition

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

Axel Drieling summarized again the aims and prerequisites for any form of recognition.

Recognition of Instruments / Methods by the ICCTM

As it was decided that the ICCTM will no longer recommend any test methods, the Steering Committee discussed a possible recognition of test instruments/methods.

Principally the following 3 distinct areas for recognition are agreed upon:

- Testing for spinning mill purpose
- Instrument cotton classification
- Reference testing

Useful information to be delivered for a **Prototype Recognition**

- Short description of the instrument and test procedure
- Key description of the usefulness of the test method
- Description of the result parameters and their definition
- Measured samples per time and amount of material needed
- Correlation to existing methods and/or reference methods
- Basic influences on the test result level
- Measurement resolution
- Repeatability based on one instrument

Additional information to be delivered for a **Method/Instrument Recognition**

- Sufficiently detailed test procedure
- Accuracy based on reference methods or widely accepted test methods
- Precision (repeatability and reproducibility) based on Round Trial results with sufficient instruments
- Measurement uncertainty compared to the necessities of the different users (processing, research)
- Laboratory based influences (operator, air conditioning)
- Maintenance (time, costs, service available)

For recognition, it is necessary to send the information early in advance (at least 10 weeks) to the responsible Executive Committee (or the ICCTM Chairman or Vice Chairman), so that the instrument can be reviewed for recognition at the next ICCTM meeting. Any costs that may arise need during this process have to be borne by the instrument manufacturer.

The instruments applying for recognition are not for classification purposes, and therefore are not checked according to ASTM D7410.

Fibrotest by Textechno

Mr. Guntram Kugler presented the application for the recognition of the Fibrotest instrument. There were several remarks and wishes for modifications:

- The instrument is not testing “absolute” measures.
- HVI is a trademark.
- The influence of brushing should be mentioned.
- The instrument is not intended for classification according to ASTM D7410.

The Fibrotest received approval for recognition without a dissentient vote. Therefore the Fibrotest received the label: “**Recognized by ITMF**”

aQura by Premier Evolvics

Mr. V. Srinivasan presented the application for the recognition of the Premier aQura 2 instrument. It was noted that this document had not been made available to the competitor Uster Technologies for review.

Several remarks and wishes for modifications were brought forward:

- It should be stated where the 1st version aQura 1 is being evaluated, and where the 2nd version.
- It should be mentioned that the length distribution is not based on weight measurement.
- The recognition should indicate that the instrument is only intended for use on raw cotton and sliver.

After including these modifications, the Premier aQura 2 was recognized and received the label: “**Recognized by ITMF**”

As these two instruments were the first ones that were going through the new scheme for instrument recognition it was put for discussion how to proceed in the future. The following steps were discussed for any new applicants/instruments.

Step One: A testing manufacturer interested in receiving recognition by ITMF contacts a member of the Executive Committee and supplies him with a first draft. The Committee identifies a member that should study the first draft and give recommendations for changes.

Step Two: The revised draft is distributed among the other members of the Executive Committee (with the exception of persons from competitors of this type of instrument). Recommendations for changes are collected and forwarded to the instrument manufacturer.

Step Three: The next draft is sent to all members of the ICCTM by email not later than 10 weeks prior to the next ICCTM meeting, allowing four weeks for review, one week for forwarding and three weeks for comments/corrections.

Step Four: At least two weeks prior to the decision the final draft is forwarded to all members of the ICCTM.

Recognition: After receiving recognition from the ICCTM the instrument manufacturer:

- will be supplied with a certificate from the ITMF secretariat
- will have the documentation of the recognized testing instrument made available on the ITMF website and
- will be allowed to use the ITMF ICCTM recognition-logo.

Confidentiality: There should be no confidentiality from first dispatch to full group (step 3).

The recognition is valid only for the given and approved version of the instrument. For new versions of a recognised instrument, the Committee has to be consulted. It will decide whether a continued recognition is granted or a new recognition process is necessary.

Tuesday, March 20, 2012, HVI Task Force

(Coordinator: Mrs. Mona Qaud: Winterthur/Uster, Switzerland)

Within the Task Force HVI **Mona Qaud** gave a **short update** on the developments in this area. Uster Technologies has so far sold over 2'500 instruments; Premier Evolvics mentioned that they have sold more than 500 instruments. The latest Uster model is the HVI 1000 and the latest Premier model is named ART2.

Some other manufacturers from India, Spain, Germany and China are building instruments for cotton classification that can test some or all parameters from low volume to high volume speeds.

Another presentation "**Fibre length influence on strength**" given by **Geoff Naylor** of CSIRO highlighted the effect of the actual fibre length of a sample to the measured strength values samples from the same fibres lead – after cutting – to different strength results. As using fibres from the same sample before cutting them, it shows that the strength measured with the HVI method is not absolute, but depending on the fibre lengths. Based on this, tests with reference methods were discussed to find the real reasons of this behaviour.

Mr. Subramaniam of India raised similar issues in questioning whether not only Indian breeders would be interested in breeding short cottons with higher strength.

Tuesday, March 20, 2012, Length Task Force

(Coordinator: Mr. Axel Drieling: Faserinstitut Bremen, Germany)

Axel Drieling referred to the topics that were stated as being important in 2010. The issues raised then were – Lower Half Mean Length (LHML) and other short fiber parameters – a follow up of short fiber index calibration as well as investigations on reference methods for length measurement.

With the recognition of both the aQura and the Fibrotest two instruments for length testing were recognized.

In regard to the topic reference method on length **Dr. Eric Hequet** from the Fiber and Biopolymer Research Institute in Lubbock, TX gave an update on **image analysis as reference method**. He referred to the difficulties in connection with the time required for testing as well as the large image size needed. He stated that it is a priority to reduce calculation time. He mentioned that while AFIS is measuring a higher fiber length after the drafting process, the image analysis does correctly measure a shorter length. It was decided that the work on image analysis as a reference method should be continued.

In a second presentation **James Rodgers** of USDA-AMS in New Orleans showed results given by Leon Cui, who looked into an **update of LHML and their findings**. The aim is to have suitable short fiber parameters that are correlating to the true short fiber content, that do reflect increased short fiber amounts independently from the given UHML, and at the same time have a lower variation of the results. Also a good correlation to the spinning behavior of the fibers is requested. By comparing six different short fiber parameters it was shown that the LHML gives better correlations than the other possible parameters. It was concluded, that the LHML is less variable

and shows to be useful, therefore work should be continued in evaluating it. **Hossein Ghorashi** explained that one reason for the lower variability is that a higher reference length is considered than for SFI.

For 2014 more feedback from spinners is required as to what is most important to them when defining short fiber content.

Regarding the SFI calibration, which is available for HVI 1000 instrumentation, and the data that USDA-AMS is providing for SFI in calibration material (on request only), James Knowlton stated that there is only limited interest from laboratories. It was decided that laboratories should be strongly encouraged to do the SFI calibration. The improvement as a result of this calibration will be monitored with the CSITC Round Trial.

Tuesday, March 20, 2012, Colour Task Force

(Coordinator: Mrs. Malgorzata Matusiak, Institute of Textile Architecture, Lodz, Poland)

After an introduction by **Dr. M. Matusiak, Mr. J. Knowlton** from USDA shared an update on USDA Color measurement activities and reasons for variability in the field.

Mr. J. Rodgers from the USDA, USA presented at-line cotton color measurements by a portable color spectrophotometer. The aim was to determine the feasibility of using portable color spectrophotometer to measure cotton color in remote locations. The HVI 1000 line and HunterLab MiniScan EZ have been applied to measure color of AMS tiles, cotton standards and cotton samples. An excellent linear agreement between the HVI +b and MSEZ b* has been achieved for all measured objects: AMS tiles, AMS cotton biscuits, and routine cottons. Investigations confirmed that portable spectrophotometer enables rapid, precise and accurate measurement of cotton fiber yellowness.

In the following presentation **Dr. G. Kugler** from Textechno, Germany informed the Committee about the cotton color measurement by Medium Volume Instrument (MVI). Medium Volume Instrument by Textechno uses spectrophotometer for determination of color characteristics in the CIELab system. On the basis of the results from the spectrophotometer the values of reflectance (Rd) and yellowness (+b) are calculated using equations previously elaborated in investigations conducted in the context of the Task Force on Color.

Dr. Malgorzata Matusiak from the Textile Research Institute, Poland presented her investigation of the dyeability of cotton. The performed investigation confirmed that maturity of cotton influences its dyeability. Nevertheless, on the basis of the results it was also stated that the immature fiber content is the crucial parameter from the point of view of cotton dyeability. The correlation between the IFC and color parameters is very strong and it is much higher than the correlation between the Maturity Ratio and color parameters. The investigation showed that fiber arrangement significantly influences the values of color parameters measured by spectrophotometer.

Tuesday, March 20th, 2012, Neps and Trash Task Force

(Coordinator: Dr. Jonn Foulk, USDA-ARS, Clemson, USA)

Since the USDA laboratory in Clemson, USA has been closed, Jonn Foulk was not able to attend and chair the meeting on Neps and Trash. Therefore, Dr. J.P. Gourelot chaired this session during

which two presentations were given. **James Knowlton** from USDA-AMS, Memphis presented a paper titled "Instrument leaf grade". He summarized the history of classification in the USA and when the various technological characteristics were included in the everyday classification operation results. Leaf grade characterization is the latest to be included successfully in 2011. The evaluation is based on an equation linking together the %area and the particle count obtained by the Trashmeter based on 4 images per sample. The comparison made on the last crop showed that traditional evaluation match very well with instrument evaluation and this with full respect to the Universal Leaf Grade Standards. Measurements are considered as consistent by users.

James Knowlton also presented a paper titled "The preliminary NIR models for the classification of leaf grades in lint cotton". In this study 500 cotton samples from two crops covering the range of the seven existing grades in USA were divided in two groups: one group for calibration on the NIR instrument and one group for validation. A classification of those 500 cotton samples was made according to five NIR spectral regions. Results show that the best match between the true classification and the NIR results is obtained in the range of 1125-1700 nm. As a conclusion, the overall classification of leaf grades using NIR seems feasible even though progress still could be made.

Tuesday, March 20th, 2012, Fineness / Maturity Task Force

(Coordinator: Dr. Stuart Gordon, CSIRO, Belmont, Australia)

As Dr. Stuart Gordon from CSIRO could not attend the meeting, Dr. Geoff Naylor coordinated this group. Dr. Geoff Naylor conveyed greetings from Dr. Devron Thibodeaux, Dr. Gary Gamble and Dr. Jonn Foulk. During the period since the last meeting two years ago Dr. Gordon, on behalf of the Task Force, has made contact with new manufacturers of instruments in India and China using the double-compression airflow technology.

Two presentations, one by Dr. Geoff Naylor and one by Mr. Srinivasan from India were given.

Dr. G. Naylor presented an update on the Cottonscope instrument. This commercially available instrument incorporates two technologies for separately and independently measuring fiber fineness and maturity. The instrument also delivers a micronaire value. Fibers snippets are individually measured as they pass the field of view of a partly submerged microscope. The measurement time is approximately 25 seconds. Currently the sample preparation extends the practical test time to approximately one minute. A major international inter-laboratory trial of the instrument is currently in progress and the results will be reported in due course.

Mr. Srinivasan from Premier gave an interesting presentation on behalf of Dr. Venkatakrisnan of CICOT, India. He presented the results of a study measuring maturity using the ART2 instrument manufactured by Premier. This instrument measures maturity in the micronaire module. Correlation with image analytical cross-section data done independently at the Bremen Fiber Institute validated the calibration of the instrument. Examining the influence of maturity identified that maturity effected mechanical properties of fabrics (e.g. compression recovery and extensibility as well as fabric color). Furthermore, a yarn spun of two cottons with different maturity values resulted in color defects in the final fabric.

Fineness and maturity remained an important area of concern for the industry and therefore should remain a topic for interest to this technical committee.

Tuesday, March 20th, 2012, Stickiness Task Force

(Coordinator: Dr. Jean-Paul Gourlot, CIRAD PERSYST LTC, Montpellier, France)

Dr. Jean Paul Gourlot presented an overview on origins and also a bibliography on stickiness. Stickiness originates from various sources: vegetal parts, oil traces, waxes, plant sugars and insect sugars. The most important and problematic cause of stickiness is due to the entomological sugars from insects. Stickiness induces production and quality losses as sticky points remain in the material from fibers in the field to the textile processes. We know that the behavior of contaminated fibers during processing is highly dependent upon the quantity and the type of the main sugars present in the fibers. Various techniques may be used to estimate a possible contamination of fibers by honeydew. These techniques are more or less predictive of the stickiness potential of the fibers during their processing. These techniques may be categorized in four categories: chemical methods for measuring sugar contents, physical, mechanical and thermo-mechanical techniques (mostly measuring stickiness contamination). However, no manufacturer asked for any instrument recognition is this working group.

A bibliography on stickiness has been updated so that anyone can learn from the research made on the topic since the 1960's. A decrease in the number of publications in the recent years could be observed.

On behalf of **Dr. Amara** and **Dr. Harzallah**, ENSISA (France), the coordinator presented the paper "Peel test to assess stickiness". The study was designed to better understand the fundamental mechanisms of cotton stickiness before developing any instrument for evaluating the stickiness potential of cottons. Adhesion is the tendency of dissimilar particles and/or surfaces to cling to one another, and adhesion in this case is measured thanks to a peel test. A peel test consists of extracting a tape from a surface where the peeling force can be measured and the adhesion energy can be deduced. An experiment was made using combining various substrate surface types (aluminum, steel), various individual sugars alone or in mixes to mimic true honeydew, and various levels of room relative humidity. First results confirm that honeydew stickiness in cotton depends strongly on relative humidity, which seems to be the most relevant parameter, but also on the type of sugar or compositions of mixtures too. It also appears that the adhesive behavior of a sugar mixture can be quite different from the individual sugars constituting this mixture. No significant influence on adhesion of the nature of the substrate surface for steel and aluminum was observed. The coordinator also presented a study on the impact of five CFC/ICAC projects ten years after the project's completion. Between 1997 and 2001, the CFC/ICAC/11 project "Improvement of the Marketability of Cotton Produced in Zones Affected by Stickiness" was funded by the Common Fund for Commodities. Ten years after the project's completion, the conclusion is that the project CFC/ICAC/11 has enabled Sudan to isolate the problem of stickiness. In the past, all cotton was discounted because of the risk that some was sticky. Now merchants are able to confidently buy and sell non-sticky cotton and thus avoid general discounts. This problem was solved thanks to important activities like training sessions (extension services, workshops for the improvement of stakeholders' practices), innovation transfer, cooperation within and between countries, research results and transfer of these results into the "real" world. All these activities helped to improve the reputation of cotton production in Sudan which is beneficial to the Sudanese cotton producers. The ultimate goal of a project is the efficacy of the applications of its findings. After the end of the Project CFC/ICAC/11 its findings have been applied successfully in a time span of ten years. The overall gain is estimated at USD 95 millions.

The meeting discussed the results of the ITMF Cotton Contamination Survey and the required necessity to create and market reliable and fast instruments for measuring stickiness. Production of non-sticky cotton is possible if great care at the production level is applied and if better incentives for such production are given.

The Committee was informed that:

- SYDEL, Montpellier, France the company that was manufacturing the SCT and H2SD was closed. Production, marketing and service of these instruments was transferred to PRODEV in Montpellier, France (contact@prodev-system.fr).
- KOTITI has prepared an ISO standard which is currently under international vote.

Proposed activities of the group are:

- Study the means of proper conservation of reference materials such as stickiness reference materials.
- Recognition of existing instruments.
- Study of the stickiness behavior.

Closing Plenary Meeting and Final Remarks

The Executive Committee stated to present their summaries within the main conference on Friday morning, and it was agreed upon not do the summaries at the end of the meeting.

The Committee thanked Dr. Jonn Foulk, who resigned from the Committee and as Chairman of the Task Force "Dust and Trash" after the USDA institute in Clemson, South Carolina, USA was closed, for his contribution to the activities of the Committee in general and as the Chairman of the Task Force "Dust and Trash" in particular.

The Committee Chairmen, the Steering Committee members and all Coordinators were re-elected. As an additional member of the newly established Executive Committee, James Knowlton was elected.

The next full Committee meeting is planned to take place again one day prior to the Bremen Conference in 2014. The Committee and its Chairmen will be happy to see all interested people at the next full meeting. **The next International Bremen Cotton Conference will be held in Bremen from March 19th and March 21st 2014.**

With a closing remark, relating to the CSITC Task Force meeting on the following morning, Wednesday 21st, the meeting was concluded. Dr. Christian Schindler thanked everyone for the fruitful discussions, the participants for their valid inputs, and the presenters for their contributions.

Dr. Schindler thanked the Chair for the preparation and conduct of the meeting in a very efficient manner and the Task Force Coordinators for their efforts.

ITMF appreciates the following sponsors of the ICCTM-website from the cotton and testing instrument manufacturer industry:

- Cotton Foundation
- Premier Evolvics
- Rieter
- Uster Technologies

A. Drieling and M. Qaud