



Australian Government
**Cotton Research and
Development Corporation**

TRAVEL & CONFERENCE REPORT

Part 1 - Summary Details

Please use your TAB key to complete Parts 1 & 2.

CRDC Project Number: CMSE1209

Project Title: 31st International Cotton Conference

Project Commencement Date: 11/03/2012 **Project Completion Date:** 31/03/2012

Select Research Program (from CRDC Strategic R&D Plan 2008-2013):

Value Chain

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Ph: **Fax:** **E-mail:**

Signature of Research Provider Representative: _____

Part 3 – Travel Report

(Maximum two pages)

1. A brief description of the purpose of the travel.

Attendance at the International Committee for Cotton Test Methods (ICCTM) Meeting, the 31st International Cotton Conference Bremen and visit to the USDA cotton testing laboratory in New Orleans, USA

2. What were the:

- **major findings and outcomes**
- **other highlights**

(a) Bremen Cotton Conference & Related Meetings 9-23^h March 2012

During this week I attended the Bremen Cotton Conference and a number of related meetings. Highlights were as follows.

Monday 19th March: Meeting of Chairpersons of the ITMF International Committee on Cotton Testing Methods (ICCTM)

I attended this meeting as acting Chair of the ITMF Testing Committee Fibre Fineness and Maturity Working Group. This meeting discussed and planned the running of the technical sessions the following day including a detailed review of two proposals to recognise new instrumentation. The meeting also discussed and developed a recommendation for a new structure to facilitate both better utilisation of the technical expertise of the available chairpersons and also to provide the flexibility to for the Committee to adapt and incorporate new issues as required.

Tuesday 20th March: Meeting of the ITMF ICCTM

- Terry Townsend (Chair of the Industry Steering Committee) in an introductory overview noted that measurement of maturity is a high priority for the industry.
- Uster Technologies have installed approx. 2500 High Volume Instrumentation Instruments (HVI) and are currently working on automation of the micronaire measurement module. The Indian based company Premier have 500 units (equivalent to the HVI instrument).
- Rene van der Sluijs' presentation on the effect of quarantine treatments on cotton fibre quality was very well received.
- I presented a paper on some early work on a potential bias of Uster's HVI measurement of fibre strength due to differences in fibre length. This generated some interesting discussion and it was acknowledged that this was an important topic to study. It was interesting that in spite of an invitation from me during the discussion, the technical experts from Uster were not forthcoming regarding any specific technical explanation of the details of the operations or algorithms used in the HVI length measurement. Interestingly they did not dispute my early findings which point to a significant bias.

- I also gave a presentation on the operation and performance of the Cottonscope instrument.
- Two papers were presented on different aspects of the measurement of fibre length. Eric Hequet reported on behalf of one of his PhD students on using image analysis as a reference method for measuring fibre length on samples prepared using the AFIS instrument. In a later private discussion, it was agreed that a major limitation of this is potential sampling problems with the individualisation of fibres in the AFIS instrument. A second paper presented from USDA New Orleans, looking of a better measure of short fibre content, related the Lower Half Mean length with yarn performance data for a range of 28 cottons. More work is being done at the USDA on this topic. This is clearly an important topic and progress appears to be relative slow in this area.
- I chaired the session on fibre maturity and fineness on behalf of Stuart Gordon who was unable to attend.

**Wednesday 21st March: International Cotton Advisory Committee (ICAC)
Commercial Standardization of Instrument testing of Cotton (CSITC)**

I attended this meeting together with Rene van der Sluijs. Rene's report covers this session well and I have nothing further to add.

Wednesday 21st March to Friday 23rd March: 31st International Cotton Conference

- This was the primary activity for the week with over 40 countries attending. All presentations were by invitation with the program carefully devised by the Bremen based organising committee.
- An interesting paper by Beda Stadler (Institute of Immunology, Bren Switzerland) re public perception of GM cotton. He noted that we have over 7,000 years experience with cotton with lots of natural variation over this period. The US has been living with GM cotton for 13 years and there is no evidence of any problems: not one rash, not one cough, not one sore throat, not one headache...By comparison the opposite is true with Organic produce where there are documented case of people dying. This is clearly a 'hot' topic in Europe.
- Eric Hequet presented a paper on predicting yarn quality. His strong belief is that information on fibre maturity and length distribution is needed for a good prediction.
- Rudiger Schaub (Bayer Crop Sci) reported on a 'cradle to grave' study that identified that GM cotton produces less greenhouse gasses due to a reduction in the need for additional chemicals.
- I presented a paper on Cottonscope which was well received and Dr Jimmy Rodgers (USDA) also reported a very positive experience using Cottonscope.
- Had a very useful meeting between Mark Brims (manufacturer of Cottonscope), Eric Hequet, Jimmy Rodgers and myself. This represents the

current main Cottonscope user's community. The feeling is that Cottonscope is a very useful instrument with a positive future. Eric noted that he is convincing one of the main US cotton breeding companies to adopt the Cottonscope. Both Eric and Jimmy feel the guillotine for sample preparation needs some improvement to both increase speed of operation and also to avoid some OHS concerns.

(b) USDA Clemson 14th March 2012

This was a useful and timely visit. USDA is in the process of closing its Clemson cotton facility and all R&D at the lab has ceased. Currently all activity is focussed on disposing of assets, etc with the aim of vacating the premises by mid June. Most of the equipment (fiber testing and also textile machinery) is being relocated to USDA New Orleans. USDA will now focus all its cotton fibre quality and textile work in New Orleans.

(The closure of the USDA Clemson is part of a significant rationalisation of USDA research labs.)

Unfortunately the scientists that we have interacted with at Clemson are not moving to New Orleans:

- Devron Thibodeaux formally retired on 31 Dec 2011, but still has an office in Clemson. He would like to remain active post June but is staying in the Clemson area for family reasons.
- Gary Gamble is moving to another USDA site and will refocus on poultry research.
- Jon Foulk has indicated that he doesn't want to move to New Orleans and is currently exploring other options.

I had a broad ranging and useful scientific chat with Devron Thibodeaux and Chris Delhom. (Chris is based in New Orleans but by coincidence was visiting Clemson the same day as myself.)

- They believe that Eric's Hequet's cross-section reference data for fibre maturity and fineness may have a significant bias as the software they used ignored very immature fibres. It is understood that Eric Hequet is having new software prepared to reanalyse his data. This may have implications for the calibration of Cottonscope. There is need for further definitive work in this area.
- Devron believes that there is need for a good study on the effect of fibre maturity on textile processing etc. Devron's recollection is that John Price did some preliminary work on this.
- There are annual US variety trials done in the US. Chris Delhom understands that to date fibre fineness and maturity have been evaluated using the Aerolometer (a very old technique of limited value). The commercial lab that

has been doing these studies has indicated that they will not be able to continue these measurements. USDA New Orleans will probably replace these measurements with Cottonscope data. There will be a one year cross-over with both Aerolometer and Cottonscope data. This should be a good 'advertisement' for Cottonscope.

- USDA has purchased the new Tech Techno Fibrotester. It will now go directly to New Orleans.
- The Cottonscan instrument is being relocated to New Orleans.
- We discussed my ideas about the HVI strength testing and the impact of fiber length. All agreed this was a very valuable area of work.

(c) USDA, New Orleans, 28-30^h March 2012

The Cotton Quality and Structure Research Unit at USDA New Orleans have 8 scientists and a total of 25 staff. Its mission is to develop and improve the methods for assessing quality and structural attributes of cotton fiber through all stage of production and textile processing. In recent years there has been a considerable change in personnel (following many retirements).

Jimmy Rodgers, the Research Leader, would like to develop closer linkages with the CSIRO Geelong cotton group as we have many similar research interests. We had broad ranging discussions:

- They have a strong interest in colour measurement. This includes:
 - relating the HVI Rd and +b measurement to the more usual L*, a* and b* colour parameters
 - Evaluating commercial hand held instruments for mill use to measure the colour stability of cotton – feedback from China has indicated that the colour of US cottons appears to be changing over time in storage as it doesn't match the originally supplied USDA HVI data.
 - Jimmy believes the group have the ability to look at the effect of small changes in maturity on the colour of dyed fabric – this is clearly an area of common interest.
- They have worked on the impact of conditions (eg working outside normal RH levels) on HVI measurements.
- Joe Montalvo has developed a new reference method for determining moisture content of cotton samples. Existing oven dry methods were all susceptible to error due to loss of volatile components other than water. This new procedure has been developed into an ASTM test method. Joe would be interested in collaborating with CSIRO to look at the possible effect of fibre maturity on moisture content.
- Jimmy Rodgers has purchased a Cottonscope instrument and is very pleased with it. We had detailed discussions around the currently inter-laboratory trial that we are jointly undertaking.

- Chris Delhom has responsibility for installing the new fibre processing mill equipment from Clemson. He would like to replicate the mini processing procedures that Rob Long has published. Chris would like to explore the possibility of running comparative mini-processing trials to compare our two systems.
- They will be installing the new Tech Techno Fibrotest instrument in the next months. They also have several HVI instruments. This may be a good area for collaborations around the performance of the HVI Strength test.
- We discussed opportunities for both groups to form closer links and collaborations. In particular we agreed that opportunities for exchanges should be explored.

3. Detail the persons and institutions visited, giving full title, position details, location, duration of visit and purpose of visit to these people/places. (NB:- Please provide full names of institutions, not just acronyms.)

As noted above as well as attending the Bremen Cotton Conference and associated satellite meetings I also visited The USDA Cotton Laboratories at Clemson and New Orleans. These visits proved to be very beneficial both in terms of the technical discussions and also in terms of building linkages and potential collaborations etc.

In the original travel proposal I had envisaged visiting Prof Eric Hequet at Texas Tech University in Lubbock. When I discovered that Eric Hequet would be attending the Bremen conference I modified my schedule and instead of visiting Lubbock, I was able to add a visit to the USDA Laboratory in Clemson, which was not originally planned. This visit to Clemson proved very beneficial as indicated above, and due to its closure and the retirement of Dr Devron Thibodeaux, it may have been the last opportunity for in depth discussions with Devron who has a wealth of experience and expertise of relevance to the CSIRO cotton group in Geelong. The discussions with Devron were certainly invaluable.

**4. a) Are there any potential areas worth following up as a result of the travel?
b) Any relevance or possible impact on the Australian Cotton Industry?**

The ongoing presence at CSIRO at these key international cotton conferences eg The Bremen Conference and the Beltwide conferences is proving invaluable in both raising the profile of the value chain research being undertaken in Australia and also more broadly is a clear demonstration to the world cotton community of the ongoing commitment of Australian cotton to improving quality and being responsive to industry needs and requirements.

Specific potential items for follow up are:

- With the closure of the USDA Clemson laboratory, it has become apparent that research expertise in cotton quality and textile research is shrinking with CSIRO Geelong and USDA New Orleans now being the two remaining laboratories. Both laboratories are keen to establish closer scientific interactions. Several good research topics were identified where collaboration would be fruitful. Both laboratories have agreed to explore opportunities for scientific exchanges as a good mechanism for building the relationship.
- The proposed project on the effect of fibre length on the HVI Strength measurement is clearly important and relevant to industry (feedback from a range of sources as identified above). I will certainly be encouraging the CRDC to fund this small but important project initiative.
- There are concerns about the fibre preparation and sampling of the AFIS instrument which is used widely in both the research community and also by spinners. It would be beneficial to consider a redesign of this instrument.
- There is need to develop a new snippet preparation device for the Cottonscope. It is clear that the current guillotine is a significant issue. This feedback is in line with similar feedback obtained in the Cottonscan development. It may be possible to quickly and efficiently adapt the Cottonscan 'minicore' snippet preparation module.

5. How do you intend to share the knowledge you have gained with other people in the cotton industry?

As well as this report, the information gained has been disseminated amongst the relevant CSIRO cotton researchers particularly as parts relate to active projects at CMSE.

6. Please list expenditure incurred. (Double click inside the table to enter the data)

Date	Description	Amount excl GST	GST	Total
	Travel Bremen	7,544.93		7,544.93
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