



Final Report

Off Farm Series | Cotton Research & Development Corporation

Part 1 - Summary Details

CRDC Project Number: CSP 170C

Project Title: Capital item: Uster HVI

Project Commencement Date: 01/07/2004 **Project Completion Date:** 30/06/2007

Research Program: Off Farm

Part 2 – Contact Details

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CSP 170C. Capital item: Uster HVI.

1. Background

Cotton fibre quality achieved in Australia in the past eight years has varied in length (short) and micronaire (high) because of generally hot and dry seasons, plus intensive management for yield, especially high fruit retention Bollgard II®. These data are shown in Figures 1 and 2 and highlight the need to breed varieties and manage the crop to optimise fibre quality. The substantial improvement in fibre length from 2005 to 2007 can be partly attributed to CSD’s excellent promotion of management of fibre length in the Sicot 71 family.

This project part funded the purchase of a new HVI to be used for testing fibre samples from CSIRO’s cotton breeding program as well as most research projects (all organisations) at ACRI and other locations such as Canberra and Kununurra. As such the project provided part funding of enabling research equipment to ensure up to date techniques are used for critical measurements of fibre quality.

The new Uster HVI was part of CSIRO Plant Industry’s fibre testing laboratory which also contained a Shirley Fineness Maturity Tester and air conditioning required for such laboratories.

Figure 1. The trend of fibre length in Australia in the past seven years (source: ACSA).

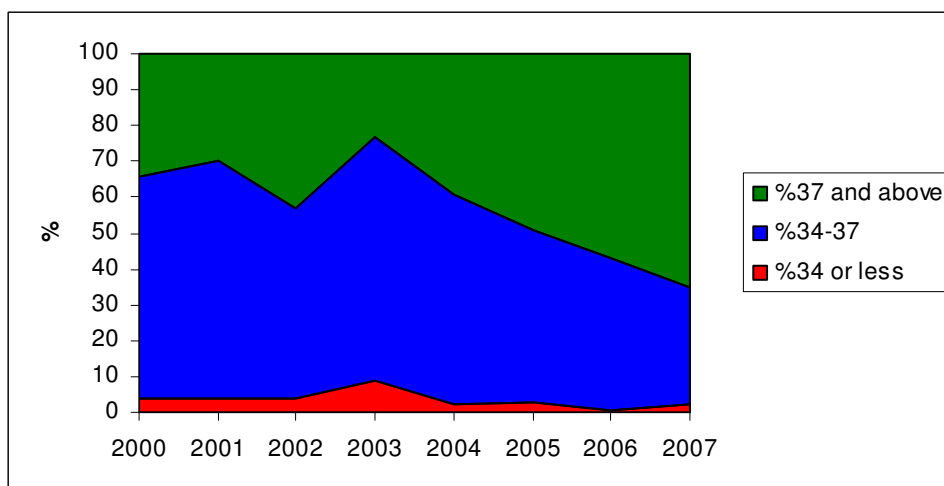
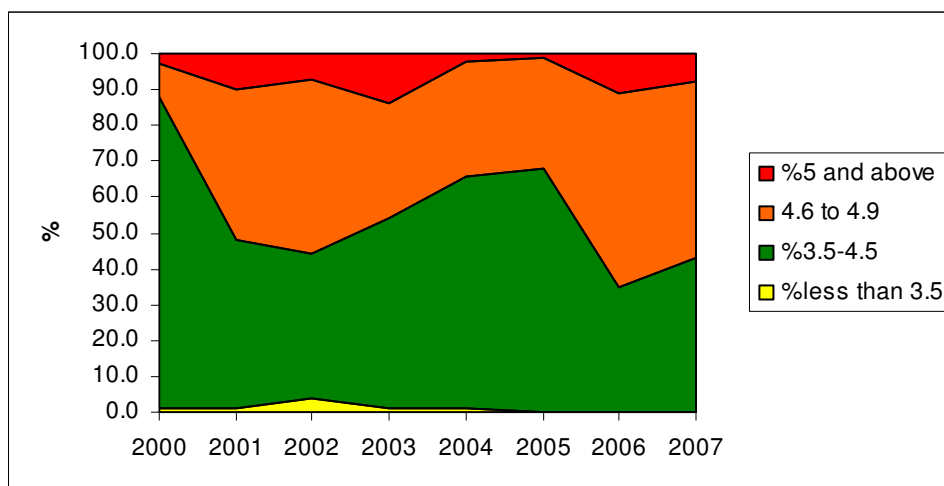


Figure 2. The trend of fibre micronaire in Australia in the past seven years (source: ACSA).



2. Objectives

The objective was to test fibre samples from research from a wide range of projects.

The critical milestone was to have samples processed in time for decision making for experiments the following season, or where necessary, to have results to meet deadlines for critical meetings or reports.

Performance indicators were the number of samples tested each week and for the total season and for data from calibration and round tests to show the values obtained are accurate and reproducible.

3. Methods

The fibre laboratory's peak use is during harvest and ginning each year when two shifts per day are used to ensure the 25,000 samples are completed in time data analysis and for preparation of seed by mid August for the next sowing to commence in mid September.

4. Results

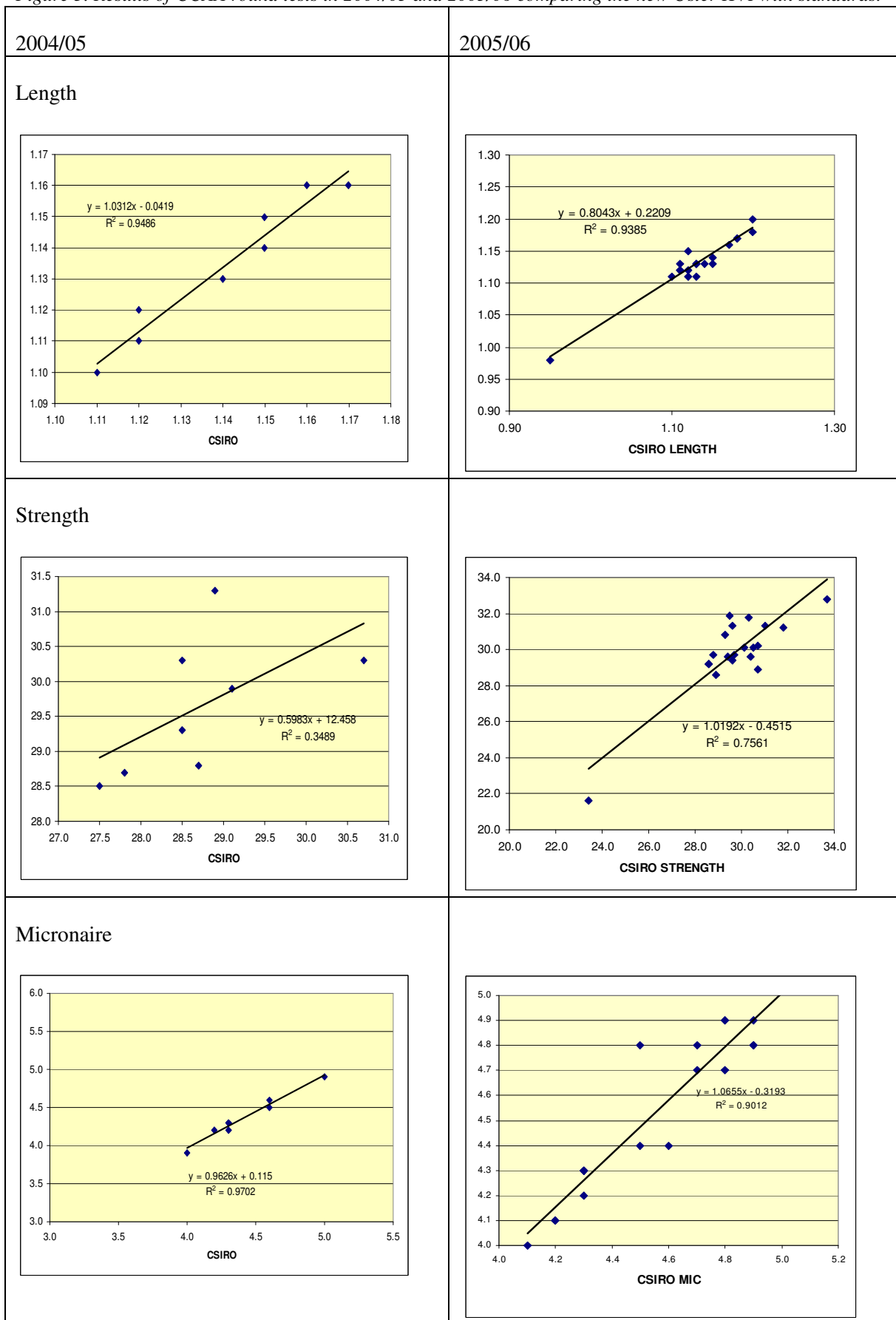
Specific fibre quality results are presented in individual reports. For example, the cotton breeding final report to CRDC in 2006 detailed comprehensive information on fibre quality of new breeding material; explained the new initiative to develop premium fibre varieties; and highlighted the negative association between fibre quality and yield which challenges progress.

In addition to CSIRO's cotton breeding program, samples from the following projects or project leaders have been processed in the last three years.

2004/05	2005/06	2006/07
Katherine	Katherine	Kununurra
Kununurra	Kununurra	Neilsen
Neilsen	Neilsen	Bange
Duggan	Duggan	Wilson
Bange	Bange	Pendergast
Wilson	Wilson	Rochester
Pendergast	Pendergast	Deutscher
Goynes	Rochester	Yeates
Rochester	Deutscher	Hulugalle
Deutscher	Yeates	Ruan
Yeates	Hulugalle	Orford
Hulugalle	Ruan	Richards
Ruan	Orford	Eberhard
Al Ghazi	Richards	Mensah
Bourke (Extension)	Eberhard	Knox
	Mensah	Long
	Carroll, Auscott (Extension)	Charles

We have participated in CCAA round tests in all seasons (data from 2006/07 still not complete) and that data for the new Uster HVI are shown in Figure 3. All results are very good except for fibre strength. We continue to work with Uster technicians to overcome those problems. Data from 2006/07 are better (data not shown). Standard errors for fibre strength in replicated experiments are about 0.5 g/tex which is satisfactory as it definitely allows us to identify fibre with premium strength (>34 g/tex) or discount strength (<28 g/tex) from normal varieties with strength of about 30 g/tex.

Figure 3. Results of CCAA round tests in 2004/05 and 2005/06 comparing the new Uster HVI with standards.



5. Conclusion

This new instrument kept the laboratory up to date with modern equipment and facilitated the measurement of fibre quality in research.

6. Staff

Greg Constable, Chris Tyson, Kellie Cooper and trained casual staff.

7. Extension opportunities

Information on extension of each project is presented in each annual and final report. Cotton breeders participate in many extension activities, especially in promotion of new varieties and their management but also in many other issues of management of varieties in the farming system. Grower adoption of our research is in adoption of our varieties.

8. Publications

See each project report. The following are examples from CSIRO breeding.

Constable, G.A., Reid, P.E. and Stiller, W.N. (2004). CSIRO cotton varieties - performance in 2003-2004 and new developments. In 'CSD Variety Trial Results 2004', pp.75.

Reid, P.E., Constable, G.A. and Stiller, W.N. (2005). CSIRO cotton varieties - performance in 2004/05 and new developments. In 'CSD Variety Trial Results 2005', pp.91.

Reid, P.E., Constable, G.A. and Stiller, W.N. (2006). CSIRO cotton varieties - performance in 2005/06 and new developments. In 'CSD Variety Trial Results 2006', pp.91.

Stiller, WN, Reid, PE, Constable GA. (2006) Lessons learnt in developing transgenic cotton (*Gossypium hirsutum*) varieties. *Proceedings of the 13th Australasian Plant Breeding Conference*, Christchurch NZ, 18-21 April 2006.

Constable, G, Reid, P, Llewellyn, D and Stiller, W (2006). Breeding – what's in the pipeline? In: Product, production, profit – Progressing our natural advantage, Proceedings 13th Australian Cotton Conference (Gold Coast, 8-10 August, 2006) 8 pp

Part 4 – Final Report Executive Summary

Provide a one page Summary of your research that is [not commercial in confidence](#), and that can be published on the World Wide Web. Explain the main outcomes of the research and provide contact details for more information. It is important that the Executive Summary highlights concisely the key outputs from the project and, when they are adopted, what this will mean to the cotton industry.

This project part funded the purchase of a new HVI to be used for testing fibre samples from CSIRO's cotton breeding program as well as most research projects at ACRI and other locations such as Canberra and Kununurra. As such the project provided part funding of enabling equipment to ensure up to date techniques are used for critical measurements of fibre quality in research. The new Uster HVI was part of CSIRO Plant Industry's fibre testing laboratory which also contained a Shirley Fineness Maturity Tester and air conditioning required for such laboratories.

The new instrument was commissioned for the 2005 harvest and has completed three harvests to this time, with an average of 25,000 samples tested each season.

The instrument has ensured modern testing and fibre quality data has been successfully applied to research in a number of subject areas from breeding to agronomy and pest management.

The new HVI Classing model in operation in CSIRO's fibre testing laboratory at ACRI. The instrument to the far right is a Shirley Fineness Maturity Tester. PVC tubing is for dust/fibre extraction.

