



Australian Government

Cotton Research and
Development Corporation

FINAL REPORT 2013

Executive Summary

Part 1 - Summary Details

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

CRDC Project Number: CMSE1307

Project Title: Verification of Australian Long Staple
Upland Cotton Spinning Performance

Project Commencement Date: 01/07/2012 **Project Completion Date:** 30/06/2013

CRDC Program: 2 Industry

Part 2 – Contact Details

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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.

There is considerable interest within the Australian cotton industry to develop Long Staple Upland cotton (nominally referred to as ALS) varieties to obtain the high premiums paid for fine long and strong staple fibre which can be used for the production of yarns in the premium yarn count range. Previous commercial processing trials have shown that it is possible to produce fine count ring spun yarns for knitting or weaving, although the yarns produced varied considerably in quality and processing performance. The main object of this study was to determine what the LS fibre is capable of when processed by a commercial spinning mill, with the fibre quality within stipulated specifications. A further object of this study was to compare fibre quality and turnout of LS cotton ginned using saw and roller ginning systems.

Researchers approached a prominent grower from St George, who has successfully grown LS cotton for a number of years and selected fifty nine round modules at random from a field that was grown, harvested and ginned, by roller and saw, under standard management practices.

By any measure, the quality of all the fibre produced can be considered as good quality and better than the Australian base grade. The fibre produced by the roller gin was classified as Strict Middling and the fibre produced by the saw gin classified as Good Middling. The UHML ranged from 1.27 to 1.24 inches, bundle strength ranged from 30.9 to 31.6 g/tex, and micronaire ranged from 3.9-4.5. There were significant differences between roller and saw ginned fibre for length, uniformity and short fibre index. With roller ginned fibre on average 1.32nds longer, with better uniformity and short fibre index with no significant differences in terms of micronaire. Roller ginned fibre had significantly fewer fibrous neps, with no significant differences in seed coat neps with roller ginned cotton containing significantly higher levels of trash, dust and visible foreign matter. Analysis of the waste found that roller ginned cotton contained 1.85% more trash than saw ginned cotton.

Commercial spinning trials were conducted during March 2014 in India which showed that this quality of fibre can successfully produce high quality 50 Ne combed ringspun hosiery yarns. The yarn results show that there were no significant differences between the yarns produced from roller and saw ginned fibre in terms of count variation, lea strength and CV% of strength as well as thin places and hairiness. There were however significant differences between the evenness and the number of thick places and neps between the yarns produced from roller and saw ginned cotton. There were also no significant differences in fabric weights, but there was a significant difference in the bursting strength of roller and saw ginned cotton, with the roller ginned fabric stronger.

The trial, however did highlight that if fine count yarns (≥ 60 Ne) are to be produced from LS fibre, irrespective of whether the fibre is saw or roller ginned, that the micronaire range must be in the 3.8 to 4.2 range to ensure that spinners can produce quality yarns without processing performance issues.