

## 1. Plain English Summary

The commonly used Micronaire value for cotton is related to both fibre fineness and maturity. There is a need for a new measurement technique to separate these. This is of particular importance to the Australian industry where varieties of fine, mature cotton have the potential to be wrongfully discounted commercially by misinterpreting a low Micronaire value as indicating immaturity in a coarser fibre.

A recent CRDC funded preliminary project (CRDC Project CSWT 1C) demonstrated that the Sirolan-Laserscan, in a novel mode of operation, is able to measure the fineness of cotton fibres independent of fibre maturity.

Following this successful preliminary study, the next stage in this research will be to undertake more exhaustive testing and trials of the approach and to examine (a) possibilities for also obtaining fibre maturity information using the Sirolan-Laserscan and (b) the scope for scaling up the technique from the laboratory to become a useful commercial measurement technique. Before embarking on this more major research phase, the current trip was designed to obtain an assessment of the commercial potential of the project. A paper on our preliminary results was presented to the US Beltwide meeting and also I visited and had in-depth discussions with the other key researchers in this area at the USDA in New Orleans. This was an ideal opportunity as cotton fibre quality is currently assessed commercially using the HVI system manufactured by Uster Zellweger in USA with significant input from the USDA.

The trip proved to be very successful.

As detailed in this report, it confirmed that current techniques for measuring fibre fineness and maturity are inadequate to say the least. Further, it is clear that there is a commercial need for these measurements as these aspects of fibre quality impinge on processing performance and end product quality.

The new approach developed at CSIRO received a very positive response both from the participants at the Beltwide meeting and from the researchers at the USDA laboratory in New Orleans. The main outcome of this trip is that there is general agreement that the new Sirolan-Laserscan approach has significant potential as a viable technique for measuring cotton fibre fineness. Further, it is thought that it might easily be possible to extend the approach to yield fibre maturity information by combining the results from this approach with the current micronaire measurement.

It was agreed that to progress this avenue of research it would be mutually beneficial for CSIRO and the USDA groups to work collaboratively. CSIRO has a potentially interesting new measurement technique and the USDA have a wealth of experience in cotton testing and ready access to cottons, other cotton measurement techniques as well as influence and links to the major cotton testing instrument manufacturer. This collaboration has already commenced informally with us already beginning to test some cotton samples that have been well characterised by the USDA groups. It is also proposed to set up a formal written collaborative agreement between the two organisations.

The report also details other interesting information that was gained from the meeting and visit.