

**Part 1 - Summary Project Details**

**Final Report**

Report Due Date:

**29-Sept-00**

CRDC Project Number

**CSP88C**

Project Title:  
( < 15 words)

**ACRI plant breeding fibre quality laboratory**

**Part 2 - Project Contact Details**

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## Part 3 - Final Report Format

### 1. *Background to the project.*

The continued acceptance of Australian cotton on the local and export market relies on good and improving fibre quality. The CSIRO breeding program has had highly beneficial effects on the fibre quality of the Australian crop: fibre strength has been improved up to 30% in the last decade. The effectiveness of the breeding programs in upgrading quality is largely dependent on the ability to rapidly screen large numbers of selections. The significance and importance of the facility in assisting breeders is demonstrated by the progressive improvement in quality of recent CSIRO commercial releases.

### 2. *Project objectives and the extent to which these have been achieved.*

Providing fibre quality assessments for the Australian cotton breeding program and other projects. The objective each year were to provide length, strength, fineness and maturity estimates of cotton breeding and related research samples as rapidly and accurately as possible. These objectives were met each year, with all plant breeding and other research project's fibre samples completed accurately and on time.

### 3. *Methodology and a justification for the methodology used.*

Two instruments were maintained under this research project, the Spinlab HVI 900 and the Shirley FMT. These instruments are housed in a controlled environment room and are operated on an intensive basis from April to August each year, sometimes with two shifts per day. As a result a large number of samples are processed, allowing for plant breeding lines to be selected before planning for sowing the next generation. The alternative of using contract testing would mean a year's delay in selecting elite breeding lines.

### 4. *Results including the statistical analysis*

summary attached. That shows the improvement in variety fibre properties to 1999 and for possible new varieties in 2000.

### 5. *Discussion and analysis of research outcomes compared with objectives.*

The data show a consolidation of fibre properties and in some cases an improvement in fibre properties with new variety releases.

### 6. *Assessment of the likely impact of the results and conclusions of the research project for the cotton industry. Where possible include a statement of the costs and potential benefits to the Australian cotton industry and future research needs.*

Good and improving fibre properties facilitate ready marketing of Australian cotton. We do not have any data on the economic value of such characteristics, although impartial spinners are very supportive of the fibre properties of CSIRO cotton varieties (eg. paper in 2000 ACGRA conference).

### 7. *Describe the project technology (e.g. commercially significant developments, patents applied for or granted, licenses, etc).*

All new CSIRO varieties have Plant Breeders Rights.

In recent years that has been the following varieties: Sicot 289i, Siokra V-16i, Sicot 9111, Sicot 41, Siokra V-17, Sicot 53, Sicala 40 and Siokra V-16.

### 8. *Provide a technical summary of any other information developed as a part of the research project. Include discoveries in methodology, equipment design, etc.*

This project has developed a method for calculating neps from HVI and FMT data. That regression saves the necessity to use a slow AFIS neps instrument and gives us the opportunity to screen new breeding material for reduced incidence of neps.

### 9. *State the recommendations on the activities or other steps that may be taken to further develop, disseminate, or to exploit the project technology.*

We are very happy with the capability for testing segregating breeding populations. The major constraints are reliability of Spinlab hardware and software and the availability of reliable methods of measuring fibre fineness and maturity as the Shirley company appear to be in decline. The CSIRO textile group researching other methods of measuring fineness and maturity should be supported.

### 10. *Publications arising from the research project.*

(a) Plant Breeders Rights as listed above.

(b) Various conference articles (scientific and industry)

## Part 5 - Plain English Summary

**You must submit a Plain English Summary of your completed research project that is not commercial in confidence, and that can be published by the Cotton Research & Development Corporation in print or on the world wide web. An electronic copy of the plain English summary must also be forwarded by E-mail ([angela@crdc.org.au](mailto:angela@crdc.org.au)).**

This project supports the maintenance of CSIRO fibre quality testing at Narrabri. That facility mainly serves the cotton breeding program, where the fibre properties of all breeding generations are measured to ensure continued improvement in fibre properties with new releases. It is essential that these measurements be done at Narrabri where the breeding program is based.

The continued acceptance of Australian cotton on the local and export market relies on good and improving fibre quality. The CSIRO breeding program has had highly beneficial effects on the fibre quality of the Australian crop: fibre strength has been improved up to 30% in the last decade and new varieties for release in 2000 maintain or continue that improvement. The effectiveness of the breeding programs in upgrading quality is largely dependent on the ability to rapidly screen large numbers of selections. The fibre properties of new varieties are heavily dependent on this facility being kept at a high pitch of efficiency.