COTTON RESEARCH AND DEVELOPMENT CORPORATION

Project Title : Cotton strain and cultivar testing in Queensland (1995/96 - 1997/98)

Project Code: : DAQ74C

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Introduction

Australia produces approximately 2.4 million bales of cotton per annum at a value of over $1 200 million. The main commercial cultivars are Sicala V-2 (40%), Sicot 189 (20%), Siokra V-15 (18%) and CS50 (5%).

A breeding program is normally expected to increase the yield or quality of new cultivars by approximately 1 – 2 per cent per annum which would be worth approximately $12 million per annum to the industry.

Cotton producers require new cultivars with increased yield and improved fibre quality, especially fibre strength. The inclusion of Queensland sites for early generation testing will improve the efficiency of the selection process and assist breeders to identify high yielding cultivars with high fibre quality and other desirable attributes suited to "local" conditions.

Objectives

The aim of this project is to evaluate annually a large number of cotton breeding lines and cultivars for yield and quality characteristics in Queensland in collaboration with the CSIRO cotton breeding programs at Narrabri. The following trial program provides the milestones for this project.

1. Australian Cotton Cultivar Trials (4 irrigated sites - Brookstead on the Darling Downs and Theodore, Biloela and Emerald in central Queensland, plus 2 dryland sites- Dalby on the Darling Downs and Biloela in central Queensland.

2. "Short Season" Trials on the Darling Downs (1 site - Brookstead)

3. "Full Season" Trials in central Queensland (2 sites - Biloela, Emerald)

4. "Hot Area - Material" Trials in central Queensland (1 site - Emerald)

5. "Ingard" Variety Trials (Emerald in central Queensland and Brookstead on the Darling Downs).

Results

A further series of trials were conducted successfully in 1997/98 in collaboration with the CSIRO cotton breeding programs at Narrabri.

Queensland trials in the Australian Cotton Cultivar Trial Series produced some promising lines. At Brookstead, 8 lines outyielded the highest yielding commercial variety by up to 6 per cent. In central Queensland, one very promising line was the best yielding entry at Biloela and Emerald and second best at Theodore.

The Dryland cotton variety trial at Dalby on the Darling Downs, even though achieving good results, would have achieved its potential shown in early December, if significant rainfall had occurred between December and February. However, the Dryland cotton variety trial in central Queensland, with 75mm of "supplementary irrigation" at maximum fruit load in early January, showed that some fair yields can be achieved.

Strain trials to evaluate advanced breeding lines were grown at Brookstead (short season), Biloela and Emerald (mid-long season). Seven new short season lines showing promise outyielded the highest yielding commercial variety by up to 4 percent. In the mid-long season trials, 48 lines outyielded the best commercial variety by up to 17 percent.

A strain trial to evaluate breeding lines suitable for the "hot areas" was grown at Emerald. Thirteen of these lines outyielded the best performing commercial variety by up to 13 percent.

Five promising "Ingard" lines outyielded the best "Ingard" variety for central Queensland by up to 6 percent. At Brookstead 10 promising "Ingard" lines outyielded the best "Ingard" commercial variety by up to 8 percent.

These evaluations have met the aims of this project in 1997/98. The results from these trials indicate that genetic improvement in yield and quality is still being made in new cultivars.

Progress over the last three years has been tremendous with many varieties released commercially for use in various situations as follows:

Short Season Varieties	Siokra S324, Siokra S101
Full Season Varieties	Siokra L23, CS50, Sicot 189
Verticillium – Wilt - Tolerant Varieties	Sicala V-2, Siokra V-15
Ingard Varieties	Sicala V-2 (*i*), Siokra V-15 (*i*), Sicot L23(*i*)

Three new commercial varieties will be released for the 1998 plantings. Siokra V-16 will replace Siokra V-15, Sicala 40 will replace Sicala V-2 and Sicot 189*i* is a new Ingard variety which should prove popular in central Queensland.

Funding

Cotton Research and Development Corporation:

- 1995/96 - **$56 337**
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