

**CSIRO SMALL SCALE VARIETY TRIALS FOR
1994/95 AND 1995/96**

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The CSIRO Cotton Cultivar Trial (CCT) has been run cooperatively by CSIRO and DPIQ for 22 years and is used as the last stage in our breeding line evaluation. Early generation testing following single plant selection involves unreplicated progeny rows at the Australian Cotton Research Institute, further progeny row tests and multiple row replicated trials at a limited number of farm sites. At each stage, lines with poor seedling vigour, disease susceptibility, poor fibre quality or low yield are removed from further testing. The CCT involves 13 irrigated sites and three dryland sites in all major cotton growing regions in Australia from Central Queensland (Emerald, Biloela and Theodore), mainstream western areas (Bourke, Collarenebri and St. George), mainstream eastern areas (Warren, Merah North, Myall Vale, Moree, Boggabilla and Dalby) and cool season areas (Breeza and Brookstead).

Entries in the CCT include 25-35 promising breeding lines and 10-15 commercial standards (including the older Namcala, DP16 and Siokra 1-1). Plots consist of three or four rows about 13m long. Each variety/line is replicated five times. The centre rows of all plots are harvested with a modified picker, with the seed cotton being weighed before subsampling for ginning at Biloela or Narrabri and fibre quality analysis at Narrabri.

The most promising lines are retained in the scheme and also seed increased. In this way, by the time good performance is confirmed, sufficient seed is available for large scale testing and final seed increase for commercial use.

In the 1994 paper at this conference, we highlighted the importance of the effect of diseases such as verticillium wilt and alternaria on variety performance and ranking. Alternaria has spread further in the past two seasons, both in extent and severity. In some locations Verticillium wilt has reduced in severity, possibly due to the use of resistant varieties such as Sicala V-2, Sicot 189, Siokra V-15 and CS 8S. Where Verticillium was not a problem, Siokra 1-4 is still an excellent performer. The 1995/96 season had rain, waterlogging and cool weather in January and late rain delaying harvest, particularly from the Darling Downs to the Namoi.

In both the 1994/95 and 1995/96 seasons the disease tolerant Sicala V-2 and Siokra V-15 were the highest yielding commercial varieties in the CCT.

The highlights of the two seasons results were:

- Averaged over all sites within each season, there were 13 to 21 breeding lines with yields up to 7% greater than Sicala V-2 and Siokra V-15.
- Averaged over two years (25 sites), 11 lines had yields up to 6% greater than Sicala V-2 and Siokra V-15. This result emphasises the importance we place on long term means for choosing consistency in variety performance.
- In the cooler areas of Breeza and Brookstead, one line has shown a two year average of 26% yield increase over Siokra S324 and a 17% yield increase over CS 8S. This early maturing verticillium tolerant okra line has now been released as Siokra S-101 (see separate paper by Peter Reid). This new variety has

yielded TWICE as much as the genotype used commercially up to 1980 (DP16), emphasising the dramatic progress made in local adaptation.

- We are placing high priority in identifying new and better types for Central Queensland. One line from the CCT has averaged 6% higher yield than CS 50 in this area.
- For mainstream areas, two lines have averaged 6% greater yield than the current standards Sicala V-2 and Siokra V-15. Possible new commercial releases will occur in the next one to two years.

The CSIRO breeding program will continue to search for and develop new varieties combining high yield with insect tolerance, disease resistance, fibre quality and local adaptation. Those approaches have also been made to the new Ingard varieties available in 1996.

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