

CSIRO SMALL SCALE VARIETY TRIALS FOR 1996/97 AND 1997/98

P.E. Reid¹, G.A. Constable¹, N.J. Thomson¹, G. Mann², L.J. Heal¹ and C. Tyson¹
CSIRO Cotton Research Unit, Narrabri¹
Qld Dept Primary Industries, Biloela²

The CSIRO Cotton Cultivar Trial (CCT) has been run cooperatively by CSIRO and DPIQ for 24 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. Management is normal commercial practice including full insect control.

Entries in the CCT include promising breeding lines and commercial standards. Plots consist of three or four rows from 10 to 14 metres long. There were five replications in the 1996/97 trials and four in 1997/98. The centre rows of all plots are harvested with a modified picker, the seed cotton weighed and a subsample is taken 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.

Results and Discussion

While there were significant differences between the last two seasons in climatic conditions there were some similarities in the pattern of varietal performance. The 1996/97 season was generally cooler than 1997/98 which was very hot in all growing areas. However, in 1996/97 there was an excellent finish to the season so that in both years full season varieties generally performed well. More diseases such as *Verticillium* wilt and *Alternaria* were present in 1996/97. Because not all dryland results are available, the discussion on the last two seasons will only cover irrigated trials. To aid in interpretation the trial sites have been grouped into regions: cool (Breeza and Brookstead), central (Warren, Narrabri, Merah North, Collarenebri, Moree and Boggabilla) and hot (Bourke, St George, Theodore, Biloela and Emerald). The mean yields of a long term control (Deltapine 16), our commercial varieties and some promising new lines averaged over the last two seasons (Table 1) reveal some interesting patterns.

The overall highest yielder over the past two seasons was the new okra leaf variety Siokra V-16 which performed well in all growing regions. The next best overall performers, the new experimental okra leaf, Line 223, and the new normal leaf variety, Sicala 40, both excelled in the cooler environments though they also had strong results in the other regions. Other good conventional variety yield performances came from the possible new hot area variety, Line 805, and Sicot 189. As expected Siokra S-101 yielded well in cool environments but was less well adapted to longer season conditions. The yield of the long term control variety, Deltapine 16 was well behind the newer varieties, particularly in the cool areas, though the reduced incidence of bacterial blight and lack of Verticillium wilt in 1997/98 would have favoured its relative performance.

Table 1. Mean yields of varieties over the 1996/97 and 1997/98 seasons as a percentage of overall or regional means

Variety	All sites	cool	central	hot
Siokra V-16	105	103	108	104
Line 223	105	112	105	104
Sicala 40	105	112	104	105
Sicala V-2i	103	110	103	101
Line 805	103	99	101	104
Sicot S-8i	102	105	102	102
Siokra L-23i	102	101	102	101
Sicot 189	102	97	100	104
Sicot 50i	102	98	103	100
CS 8S	101	103	100	102
Sicala V-2	100	100	103	98
Siokra V-15	99	102	100	98
CS 50	99	90	100	100
Siokra V-15i	99	105	99	97
Siokra S-101	99	109	96	99
Siokra L23	98	89	99	98
Siokra 1-4	94	89	92	97
DP 16	82	74	81	86

The highest yielding Ingard variety was Sicala V-2i while in the comparison of the five Ingard varieties with their conventional counterparts (Table 2) the insect tolerant varieties had an advantage of 2%. The largest advantage for Ingard varieties was in the cool growing areas where the presence of the Bt gene gave a significant advantage even under fully sprayed conditions. These regions generally have large *Heliothis* problems and the result reflects the difficulty of control with pesticides.

Table 2. Mean yields of Ingard varieties over the 1996/97 and 1997/98 seasons as a percentage of conventional varieties.

	All sites	cool	central	hot
Ingard varieties as % of conventional	102	107	101	101

Conclusions

The yield results from the last two seasons of the CCT demonstrate that good yield progress is still being made in our breeding effort with a number of the new varieties and lines such as Siokra V-16, Line 223 and Sicala 40 being best overall.

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