# THE AUSTRALIAN COTTON CULTIVAR TRIAL RESULTS FOR THE LAST TWO SEASONS

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The performance of CSIRO varieties and new lines are evaluated each year in a series of regional trials, known as the Australian Cotton Cultivar Trial (ACCT). CSIRO and the QDPI have been running these trials since the 1974/75 season. Currently the ACCT comprises thirteen sites representing all the major cotton growing areas. This wide testing provides a good estimate of overall performance while also enabling assessment of whether particular genotypes perform relatively better at some environments than others.

Again, as for previous conferences, this article provides an update of the ACCT results over the last two seasons. In 1992/93 and 1993/94 48 entries were tested at each of the 13 sites (Warren, Breeza, Narrabri, Merah North, Bourke, Moree, Collarenebri, Boggabilla, St. George, Cecil Plains, Theodore, Biloela and Emerald). 28 varieties were common to both seasons. Excessive variability in the 1992/93 Theodore and 1993/94 Collarenebri trials caused their results to be discarded.

The two seasons had similar cool to mild conditions in the early part of the growing periods and hot dry weather in January. However, the 1993/94 season was much wetter, cloudier and cooler from mid-February to mid-March in most districts. These conditions caused some boll rot and appeared to bring on premature senescence in many situations. Because of this cooler period Verticillium wilt was also more prevalent in the 1993/94 trials.

Varieties have been grouped on their yield response to these two different seasons into those yielding relatively less in 93/94 than in 92/93 and vice versa (Table 1). This grouping is closely aligned to varietal susceptibility to Verticillium wilt and to their tendency to prematurely senesce under unfavourable growing conditions as crop maturation approaches. Thus the group 1 genotypes are generally much more susceptible to Verticillium wilt than those of Group 2; and all appeared to be more affected by premature senescence in the 93/94 season.

In many respects the seasonal conditions experienced in 92/93 and 93/94 respectively were similar to those encountered in the previous two seasons (90/91 and 91/92) respectively; and the varieties common to both pairs of seasons had similar responses (see the paper by Reid et al in the 1992 Conference Proceedings).

Among the okra leaf varieties, Siokra S324 (especially) and Siokra 1-4 have been most affected by the 91/92 and 93/94 seasonal conditions. Hence the development of the Vert-tolerant Siokra V-15 variety to replace Siokra 1-4 in most districts marks an important advance. Similarly the short season Siokra S324 will be replaced in the near future by a Verticillium tolerant short season okra leaf (OL).

The CSIRO breeding program has featured a relatively quick replacement of varieties by improved version. That data for yield is shown in Table 2.

**Table 2:**

**Yields of original and replacement varieties from the CSIRO breeding program in the 1992/93 and 1993/94 ACCT. Data from a total of 25 trials. Yields expressed as a % of overall means for each season.**

| Original Variety | | Replacement Variety | | Yield difference |
|---|---|---|---|---|
| Sicala V-1 | 98.6 | Sicala V-2 | 105.7 | 7.1 |
| CS 7S | 95.2 | CS 8S | 105.5 | 10.3 |
| CS 189 | 98.6 | CS 189+ | 101.8 | 3.2 |
| Siokra L22 | 96.9 | Siokra L23 | 100.5 | 3.6 |
| Siokra 1-1 | 92.8 | Siokra 1-4/649 | 99.8 | 7.0 |

In the case of Sicala V-2 and CS 8S the yield improvement has been outstanding, while holding similar quality levels. In the case of CS 189+ and Siokra L23 there were additional quality improvements.

## The Future

The continuing progress with CSIRO varieties is assured. All of the above current varieties and promising lines are being combined with the best geuetic engineering characteristics. The release of CSIRO varieties with the Bt gene is likely within the next few years. Major improvements will occur in the years that follow, particularly with combining different genetic engineering characteristics in elite varieties.

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**Table 1:**

**Yields of the 28 varieties common to both the 1992/93 and 1993/94 ACCT.**
**Yields expressed as a % of overall means for each season.**

| Group 1 Relative lint yield | | | Group 2 Relative lint yield | | |
|---|---|---|---|---|---|
| | **92/93** | **93/94** | | **92/93** | **93/94** |
| Siokra 1-1 | 95 | 90 | CS 189 | 97 | 101 |
| Siokra 1-4 | 98 | 95 | CS 189+ | 100 | 104 |
| Siokra 1-4/649 | 100 | 99 | Line 155 | 104 | 107 |
| Siokra S324 | 99 | 92 | Line 594 | 104 | 106 |
| Siokra L22 | 98 | 96 | DP 90 | 96 | 97 |
| Siokra L23 | 101 | 100 | Sicala V1 | 97 | 100 |
| Sicala 34 | 98 | 94 | Sicala V2 | 103 | 108 |
| CS 50 | 104 | 100 | Line 1111 | 105 | 108 |
| 175 - 189 | 101 | 97 | Line 613 | 107 | 110 |
| Line 337 | 102 | 99 | Line 97 | 106 | 107 |
| Line 149 | 106 | 103 | CS 8S | 103 | 109 |
| CS 7S | 96 | 95 | Line 301 | 102 | 105 |
| Line 523 | 107 | 105 | Siokra V-15 | 102 | 106 |
| DP 16 | 85 | 84 | Namcala | 83 | 83 |
| Mean | **99.3** | **96.4** | | **100.6** | **103.6** |