

The Large Scale CSD Irrigated Cotton Trials: Varietal Performance over a number of Seasons for various districts.

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Ten CSIRO bred cotton varieties are currently available to Australian Cotton growers through Cotton Seed Distributors (CSD) (Table 1). In broad terms these varieties vary in leaf shape (normal or okra), in maturity (early, medium or late), in tolerance to pests and diseases (eg mites, Verticillium Wilt), in quality and by their adaptation or not to the various cotton growing regions of Eastern Australia. The morphological, phenological and performance attributes of each variety is described in detail in the 1994 CSD Variety Guide Supplement.

Table 1. CSIRO bred varieties available for 1994 planting.

OKRA LEAF	NORMAL LEAF
Siokra S324	CS 8S
Siokra 1-4	CS 50
Siokra L22	Sicala 34
Siokra L23	Sicala V-2
Siokra V-15	CS 189+

CSD conducts large scale variety trials in all the cotton growing districts each season. It is well known that variety performance often differs markedly from season to season. It is therefore desirable when choosing which varieties to grow to study results for as many seasons as possible. This has been done for a number of districts using the average variety yields from all the CSD trials conducted in various districts as a percentage of the CSIRO variety, Siokra 1-4. This variety in recent years has been included as the standard for comparison in all the trials. The Pioneer - Deltapine variety Deltapine - Acala 90 (DP90), grown in Australia for a number of years has also been included in almost all the CSD trials and its performance relative to Siokra 1-4 is also included. In some cases where a new variety has only had limited testing but is closely related to its predecessor (e.g. Sicala V-1 and Sicala V-2; and Siokra L22 and Siokra L23) results are combined to allow a longer term perspective of performance.

District Performances

The Macquarie Valley (Sites: Trangie, Warren, Mt. Foster).

The Sicala V1/V2 succession with its 4% greater yield than Siokra 1-4 (the variety which was previously the highest yielder for this Valley - see Thomson 1992 Conference Proceedings) shows as being well adapted to the Macquarie Valley environment (Fig. 1).

The new Vert-tolerant CS189+ and Siokra V-15 varieties yields are only about equal to Siokra 1-4 - a result perhaps less surprising than it first looks since only mild *Verticillium* infestations have been present in the last few seasons.

Fig. 1

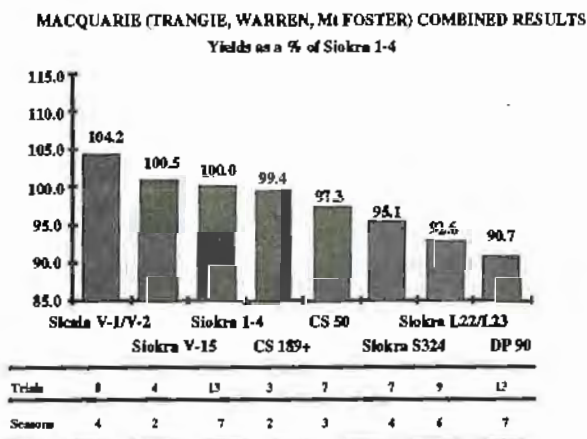
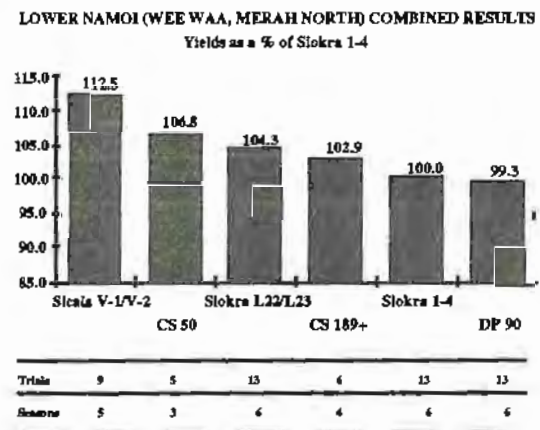


Fig. 2



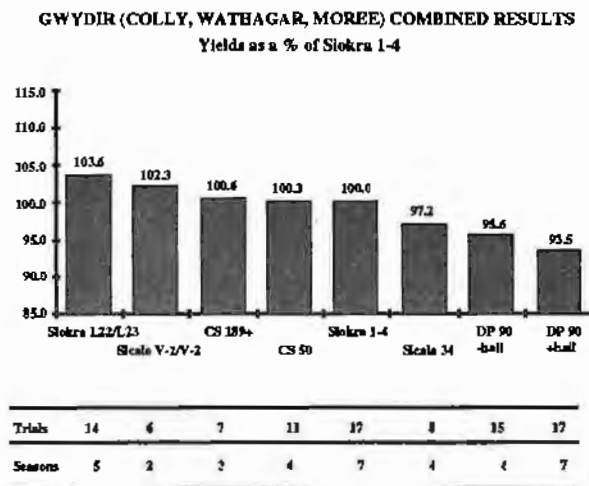
The Lower Namoi Valley (Sites: Wee Waa and Merah North).

Again the Sicala V1/V2 succession with a 12% greater average yield than Siokra 1-4 is outstanding (Fig 2). CS 50, CS 189+ and the Siokra L22/L23 succession also show good adaptation to this district.

The Gwydir Valley (Sites: Colly Farms, Wathegar and Midkin).

The Siokra L22/L23 succession has on average out-yielded Siokra 1-4 by a greater margin than any of the other varieties (Fig. 3). The Siokra V1/V2 succession has also performed well but it has only been trialled for two seasons. CS 50 has shown less adaptation than might be expected in this hotter district. This result is probably related to the fact that a number of the trials in this district have suffered substantial water stress with long intervals between irrigation and/or early cessation of irrigation.

Fig. 3



The Macintyre Valley and St. George.

Generally varietal responses are similar in both areas (Figs 4 and 5) so the two areas will be discussed together.

Fig. 4

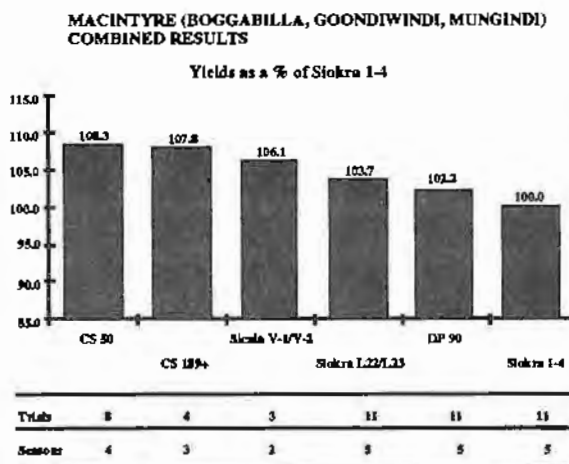
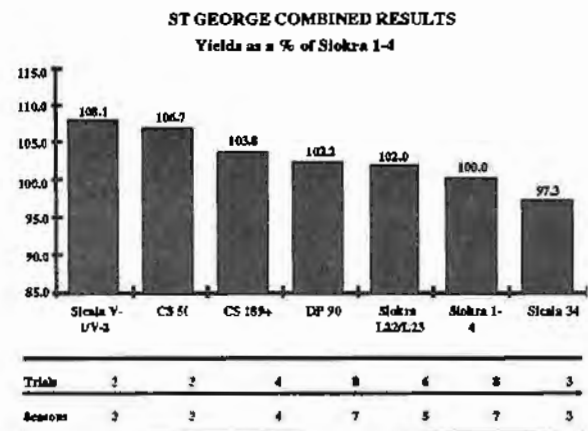


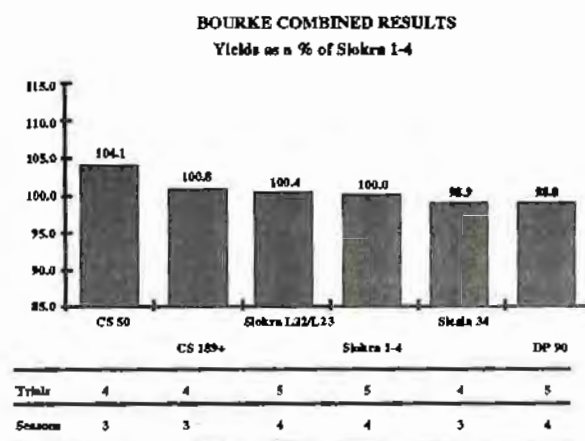
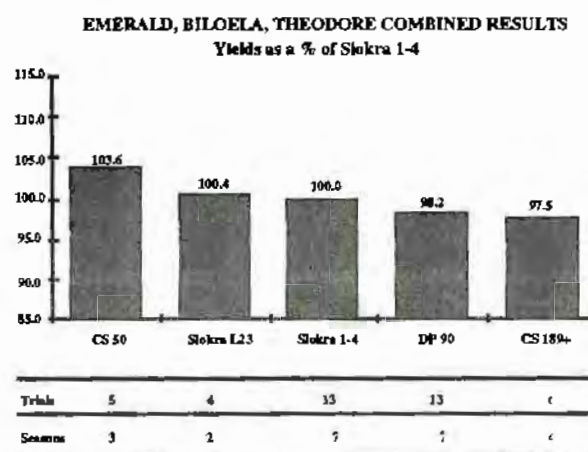
Fig. 5



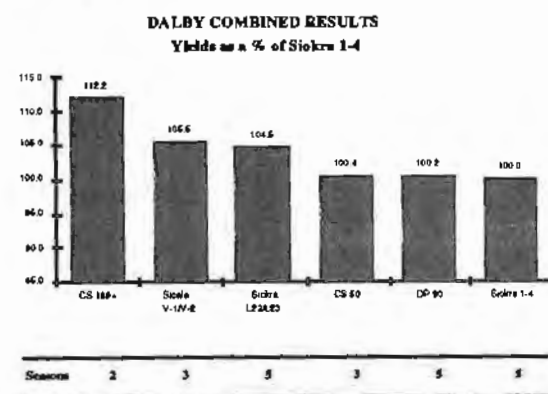
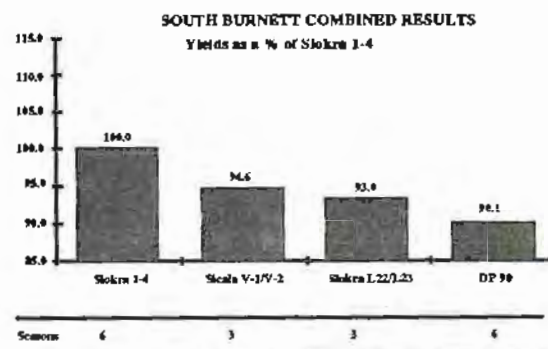
Both CS 50 and the Sicala V1/V2 succession have recorded high performances in both districts. CS 189+ also appears well adapted, especially for the Macintyre district.

Bourke and Central Queensland (Theodore, Biloela and Emerald).

CS 50 has the highest average performance in both districts (Figs 6 & 7). While CS 189+ appears adapted to Bourke, its Central Queensland performance is disappointing. The Siokra L22/L23 succession and also Siokra 1-4 are middle of the roaders in both districts.

Fig. 6**Fig. 7**Dalby

While CS 189+ has yielded exceptionally well (Fig 8) it must be emphasised this result is only based on the last two seasons i.e. its longer term performance has yet to be confirmed. The Sicala V1/V2 succession has, on average, done well over three seasons as has Siokra L22/L23 over a longer (5 years) time span.

Fig. 8**Fig. 9**

South Burnett.

Siokra 1-4 has outperformed other varieties in this district (Fig 9).

Western Short Season-Region: Lake Tandou.

CS 50 has averaged nearly 8% more than Siokra 1-4 over three seasons and the Sicala V1/V2 succession nearly 4% more but have only been trialled for two seasons (Fig 10). Siokra S324 has averaged 2 to 3% better than DP90, Sicala 33/34 and Siokra 1-4. The longer season Siokra L22 and L23 with a 4% lower yield than 1-4 are clearly not adapted to this environment.

Fig. 10

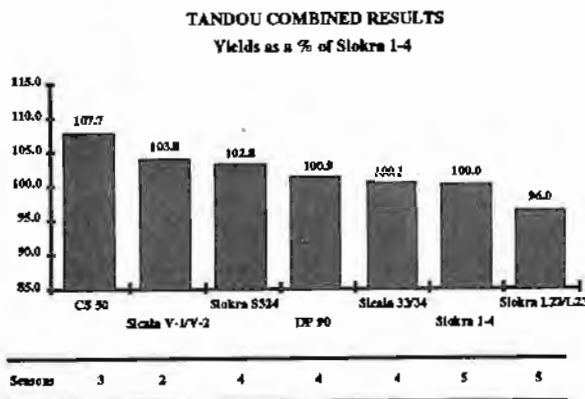
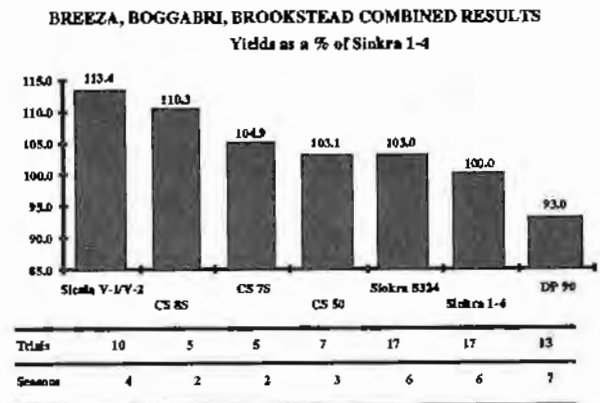


Fig. 11

Eastern Short Season Regions: (Sites: Breeza, Boggabri and Brookstead).

The Sicala V1/V2 succession has performed impressively following extensive testing in these eastern short season sites (Fig 11). CS 8S also with a 10% higher yield than Siokra 1-4 is impressive but this is only a two season average.

These large scale yet fully replicated and randomised variety trials carried out by CSD provide invaluable insights to the general suitability of varieties for various districts. It has to be reiterated though that to cope with the often quite different growing conditions associated with our variable climate and also with the differences in soil and growing practices that may occur within a region, the more seasons and sites involved, the better the soundness and reliability of the comparison. Of course, besides this, individual farms or individual blocks on a farm may have their own peculiarities e.g. be long fallowed or compacted or have a disease problem etc. In such cases the variety best suited may differ from the usual for the district. Our suite of varieties is designed to cover this range of needs and the reader is directed to the Guide for Variety Selections presented in the 1994 CSD Varietal Guide Supplement.

Acknowledgments:

These valuable results have only been made possible by the willingness of many farmers to grow trials and also the various processing companies to gin them.