

Cotton cultivar response to irrigation management in a semi arid subtropical environment

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A wider range of cultivars are becoming available to the Australian cotton industry from C.S.I.R.O. and Q.D.P.I. breeding programmes. Two cultivars from the C.S.I.R.O. cotton breeding programme of Dr. N.J. Thomson, N74 367 and SICOT 3, were included with a range of genetic material being assessed in the Emerald irrigation management studies (1).

Methods

In each irrigation management strategy a 6 x 4 randomized block layout was used. Seed cotton yields and maturities were determined weekly, on open boll harvests from 3m of row. Irrigations were scheduled at depletions of 75 and 150 mm of potential crop water use.

Results and Discussion

In Table 1, harvested boll number and lint yields are presented for 4 of the 6 cultivars and 2 of the 4 irrigation strategies tested in 1983-84.

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Parameter	Boll Number/m		Lint Yields kg ha ⁻¹		% Increase
	150 mm	75mm	150 mm	75 mm	
N74 367	102	127	2227	2796	26
Deltapine 55	87	105	2019	2255	12
Deltapine 61	85	100	2023	2175	8
SICOT 3	94	105	2054	2129	4
L.S.D (5%) (based on 6 cultivars)	9.3	13.9	209	298	

For both strategies N74 367 was the earliest and SICOT 3 the latest maturing entry. Boll numbers of all cultivars increased with increasing irrigation frequency.

Under the seasonal conditions of 83-84 the okra leaf entry N74 367 had the highest yield at all levels of irrigation management. An extra 3 irrigations increased its yield by 26%. The later maturing SICOT 3 and Deltapine cultivars gave a much lower yield response to more frequent irrigation.

These comparisons of cultivar response to irrigation management will be continued and should enable the cultivars best suited to a particular irrigation management strategy to be selected.

1. Keefer, G.D., Yule, D.F., Ladewig, J.H., Nickson, D.J. 1985 Proc. 3rd Aust. Agron. Conf., Hobart.