

A comparison of trickle and surface flow irrigation of cotton III. Gin-turn out and lint quality

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Cotton farmers are paid for cotton on the basis of quantity delivered, gin turn out (GTO%) and quality of the lint. Thus, it is necessary to examine the effect of the alternative watering methods on quality as well as yield. Increased frequency of watering, as possible with trickle irrigation (TI) has an inconsistent effect on fibre strength. Early termination of water supply, possible with both TI and surface flow irrigation (SFI), reportedly reduces micronaire, probably due to stress-induced reduction in assimilate supply (1).

Materials and methods

Samples of seed cotton from a trial reported in these proceedings (2,3) were ginned out using a saw gin, and the lint assessed for staple length (DFS Length - 2.5% span length [2.5%] and uniformity ratio [DER.]), tenacity by Stelometer (Ten.[g Tex⁻¹] and elongation [%Ext.]) and micronaire for the picks taken on 172 and 185 days after sowing.

Results and discussion

Treatment	Harvest time (days)	G.T.O. %	DFS Length		g Tex ⁻¹	%Ext	Micronaire
			2.5%(mm)	U.R.			
T.I.	172	37.2	31.1	48.7	28.8	6.3	3.88
	185	36.6	30.8	44.8	26.4	6.5	3.32
S.F.I.	172	37.8	31.0	48.8	28.8	6.3	3.96
	185	36.7	30.9	45.4	26.8	6.5	3.14

There were no significant treatment effects on any of the measures taken, suggesting that cotton of comparable quality can be produced with both irrigation systems. G.T.O.% were satisfactory and generally higher than those for Namcala in recent cotton cultivar trials (4). The staple length was in the long staple category and DER. results were exceptionally good in the earlier harvest. The lower U.R., micronaire and slightly lower tenacity for the later harvest indicate immaturity for upland cotton types. These findings are attributed to low incident radiation (associated with prolonged rainfall) and low temperatures during fibre development rather than early termination of water supply or frequency of application, as temperature is the major factor affecting assimilate supply, thus thickness and strength of the cotton fibre (G. McIntyre, 1984, pers. comm.).

1. Hearn, A.B. (1976) *J. Agric. Sci. Camb.* 86: 257-269
2. 2,3 Birch, C.J. and Bright, M.J. (1985) *Proc. 3rd. Aust. Agron. Conf.*, Hobart.
3. Lawrence, P, McIntyre, C. and Morrison, I. (1982). *Aust. Cotton Crower*, July 1982, 42.