

A comparison of trickle and interrow surface flow irrigation of cotton I. cotton plant development

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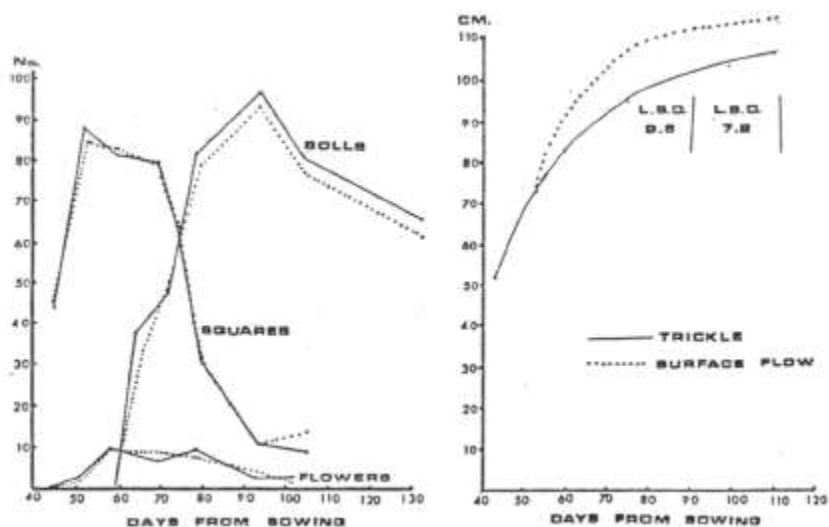
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Trickle irrigation (TI) of cotton provides an opportunity to more closely control the cotton plant's development than possible with other systems. The recent promotion and limited commercial evaluation of TI has been done without data on the development of cotton under TI despite the well documented importance of control of plant growth (I). Thus a trial to compare the effects of TI and interrow surface flow irrigation on the development of the cotton plant was conducted.

Materials and methods.

An area of clay soil more than 1 m deep at Queensland Agricultural College was used. Ten replicates of paired plots of four rows 85 cm apart, 40 m in length were used for the comparison. Subsurface trickle lines with outlets 60 cm apart were placed in the base of the row hills. Cotton (variety Namcala) was sown on 19-12-82 into soil at field capacity through the profile. To return the soil profile to field capacity SFI was applied on 5-2-83 and 27-2-83 (234 mm total) and TI was applied regularly between 5-2-83 and 13-3-83 (total 90 mm) to compensate for estimated net evapotranspiration. No further irrigation was necessary due to regular rainfall. Counts of squares, flowers and bolls and measurement of plant height were taken regularly from two x two metre quadrats from each of the centre two rows in each plot.

Results and discussion.



The effect of TI and SFI on plant height, number of squares, flowers and bolls.

Though only significantly higher on day 79, there was a consistent trend to retain more bolls in the TI treatment, probably due to more favourable plant water supply conditions. The slight (but non-significant) increase in square numbers in the SFI treatment on day 103 was associated with recommencement later in the TI treatment. The reduced level of available soil water in the TI plots after allowing for rainfall, probably delayed further vegetative growth. This supports the contention that TI can assist in control of cotton growth. Further similar studies are required in other cotton growing areas, and under modified crop management systems.

1. Hearn, A.B. (1981). Field Crop Abstracts. 34(1) 11-34.

