

IRRIGATION STRATEGIES IN A LIMITED WATER ENVIRONMENT

AUTHORS Rose Brodrick | Michael Bange
ORGANISATION CSIRO Agriculture Flagship

17th **australian** **COTTON** conference
Our Fibre. Our Focus. Our Future

Outline

One of the key challenges growers have when they have water for a limited number of irrigations is confidently knowing when to use this water to optimise yield, quality and water use efficiency. Irrigation timing is critical to minimise negative impacts on yield and fibre quality. New Research is underway to develop irrigation strategies for cotton in a limited water situation and with various row configurations (e.g. solid, single skip row and 2m, 80 inch, 1 in 1 out).

Results

Measuring soil water to determine irrigation timing is very difficult in these systems, we are investigating canopy temperature as a measure of crop stress and as a trigger point for irrigating in limited-water situations. A detailed field experiment at ACRI compared crop and plant stress responses, yield and quality for crops grown under different row configurations

(solid, single skip and 1 in 1 out) that were irrigated at different growth stages with staggered irrigations. Canopy temperature measurements showed that wider row configurations had fewer hrs of stress over the growing period in both fully-irrigated and partially-irrigated treatments (Figure 1).

Summary

Recent research in fully irrigated cotton has successfully applied an accumulated stress time threshold using canopy temperature for solid row configurations, these experiments and future research are evaluating the use of crop stress trigger points using canopy temperature in partially irrigated crops grown under different row configurations for optimising yield, WUE, and profit. Ultimately the outcomes of this research will identify key growth stages and crop stress 'trigger points' to get maximum benefit from a limited number of irrigations.

Prepared by CRDC on behalf of the 17th Australian Cotton Conference

www.australiancottonconference.com.au

Further Information

Dr Rose Brodrick,
02 6799 1500
rose.brodrick@csiro.au

Acknowledgements

Thank you to Jane Caton, Darin Hodgson, Louise Munday and the farm staff at ACRI.



Australian Government
Cotton Research and Development Corporation

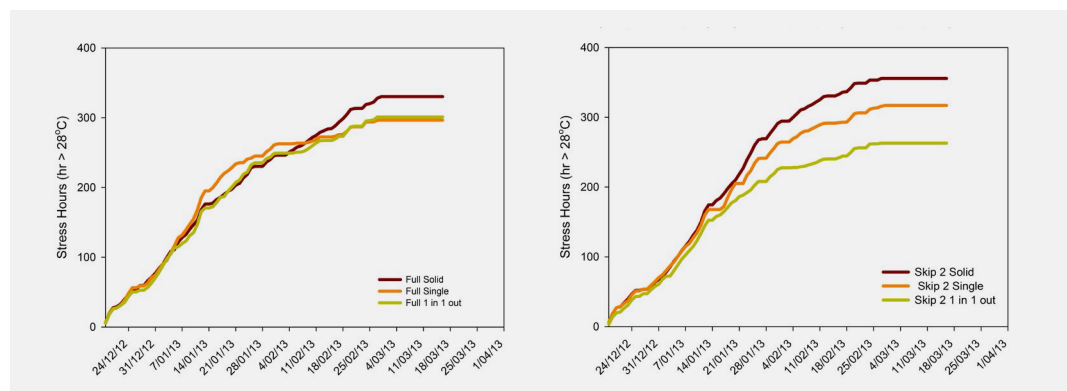


FIGURE 1. Cumulative stress hours in solid, single skip and one in one out row configurations - fully irrigated (left) and two irrigation skips at flowering (right), ACRI, Narrabri 2012-13.