

Which irrigation system?

By Sarah Hood¹ and Emma Carrigan²

With an ever increasing demand for irrigators to maximise water use efficiency — for both economic and environmental reasons — and the added pressure of a dwindling labour force, cotton growers are looking outside the realms of the traditional furrow irrigation system. This is a labour intensive irrigation practice, which is further intensified through optimisation which generally requires higher flow rates (larger or double siphons) and short irrigation times (less than six hours).

There are reports that alternative systems can provide an estimated 50 per cent reduction in labour, which ideally offsets the anticipated increase in development costs and is supported by increased production from the water saved. This has been the case for those who have installed overhead and drip irrigation systems.

The current commercial alternative irrigation systems employed throughout the cotton industry include:

- Overhead;
- Drip;
- Pipes through the banks;
- Bank-less channel; and,



A bankless channel field at Bullamon Plains.

- Bank-less head ditch irrigation systems.

The motivation to investigate the alternative systems came about when a 'gap' was identified in regards to the water use of the bank-less channel and bank-less head ditch systems which are currently employed by some irrigators as a labour efficient alternative to the traditional furrow irrigation system.

The siphon-less irrigation project is being managed by Sarah Hood of Sustainable Irrigation Systems St George and Emma Carrigan of DPI&F, Goondiwindi and began prior to the first in crop irrigation of 2005–06 season. The aim was to quantify the irrigation performance of each siphon-less field and compare it to the adjacent siphon irrigated field.

The siphon-less irrigation project will provide timely information for stakeholders on:

Total (in-field) water use

- Bulk flows on and off.

Irrigation performance

- Application efficiency including deep drainage;
- Distribution uniformity (infiltration characteristics);
- Crop water use (Et);

- Yield (bales/MI); and,
- Quality.

Economic comparison

- Development costs including life span;
- Maintenance schedule and cost comparison; and,
- Gross margins (\$/MI).

The siphon-less irrigation project is partnered by Sustainable Irrigation Systems, Department of Primary Industries and Fisheries RWUE2, Department of Natural Resources and Mines RWUE2, Cotton Catchment Communities CRC, CRDC, Queensland Murray Darling Committee, Border Rivers–Gwydir Catchment Management Authority, National Centre for Engineering in Agriculture, NSW Department of Primary Industries and Aquatech.

Comprehensive trial results will be presented at the 2006 Australian Cotton Conference, with a regular feature in *The Australian Cottongrower* magazine preceding the conference.

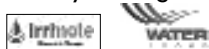
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