

Lateral means literal savings

By Harvey Gaynor, General Manager Auscott, Moree

The reasons for Auscott moving to trial overhead system included:

- Reduced costs of inputs — for example, fertiliser;
- Maximising water allocations;
- Advances in agronomic knowledge;
- Quest for greater productivity gains; and,
- Greater returns on investment.

For an industry that is under the environmental spotlight as much as cotton, an irrigation system that not only uses 30 per cent less water, but can also reduce the need for nitrogen fertilisers, is a terrific good news story.

Auscott has been experimenting with lateral move (also known as overhead) irrigation systems on its properties at Moree, Narrabri and Warren with immediate improvements in water use efficiency.

The company started looking at alternatives to flood irrigation in order to maximise returns from water allocations, and uncertainty due to climate change.

We had been working on our water use efficiency under flood irrigation, and were producing between 0.8 to 1.3 bales of cotton per megalitre, but we just weren't making the gains we were looking for.

About eight years ago, we trialed drip irrigation on our Narrabri property, and while we did achieve some

SHOWTIME

Auscott's willingness to embrace new systems saw it selected to attend the Innovation in Irrigation Showcase which was held on the first day of the Australian National Council on Irrigation and Drainage (ANCID) Conference in October.

Funded through the Australian Government's \$3 billion Natural Heritage Trust (NHT) the Showcase provided an opportunity for innovative irrigators such as Auscott to share information about best practice in modern irrigation operations.

Six of Australia's leading irrigators showcased their expertise and experience.

The Innovation in Irrigation Showcase provided an opportunity for ANCID delegates to hear from people who have tested the bounds of traditional irrigation.

The irrigators represent a range of industries, from cotton to broadacre cropping, and also include two outstanding examples of best practice in urban irrigation.

They were selected because of their willingness to embrace change and new technology, or because of their innovative use of existing technology, with the ultimate goal of increasing water use efficiency.

Case studies of the six leading irrigators can be found at www.ancid.org.au.



Harvey Gaynor.

water savings, they weren't enough to cover the costs of installing the new system.

In 2002, Auscott made the decision to trial lateral move irrigation on 'Midkin'. The 14,500 hectare property has 7500 hectares developed for irrigation and 3000 hectares allocated to dryland farming, while the remainder is old grazing country set aside for native vegetation.

We installed one overhead irrigator about 700 metres wide with a run of 2700 metres and it proved to be far more cost effective than installing drip irrigation.

Operating lateral move irrigation does require the country to be well developed enough to drain in case of summer rain storms, but also enables farming to be carried out on the flat.

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One of the biggest savings was from reduced evaporation.

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Other standard flood irrigation infrastructure such as supply channels is also needed, but there are clear advantages for rotation cropping, where crops can be irrigated in the early germination stages, and then given a 'helping hand' if required during later peak growing periods.

Lateral move systems have been used in cotton before, but old technologies gave them a bad name.

Older systems used sprinklers to water the plants, and this tended to spread disease in susceptible cotton crops. And the systems often couldn't keep up enough water to the plants in the middle of summer.

The new lateral move system installed at 'Midkin' has outlets every metre, to which sprinklers can be attached to water the crop in the initial germination stage. These can then be replaced by low energy precision application (LEPA) droppers, which wet a track between 10 and 15 centimetres wide in the rows.

WATER SAVINGS

In the first two years of using the lateral move system we achieved water savings of between 19 and 42 per cent, and our water use efficiency increased dramatically because the plants were never subjected to stress from waterlogging.

Because the droppers didn't wet the whole soil sur-



The lateral system requires precise control.

face, combined with the fact that there was never any tailwater, one of the biggest savings we made was through reducing water loss through evaporation.

Although there were no immediate productivity gains, we were impressed with the water savings and called on the National Centre for Engineering in Agriculture to help with the systems design for three more overhead irrigators.

Two were placed on newly developed parts of 'Midkin',



The Midkin system has outlets every metre.

and one on an established paddock at Narrabri. During the 2004–05 cotton season, 567 hectares of ‘Midkin’ cotton country was watered by the lateral move system.

Each machine saves between 1.5 to 2.5 megalitres per hectare per year — which adds up to a total of 200 to 250 megalitres per year. We can use that water for additional cropping.

In addition, we are able to add fertiliser to the water when we irrigate which reduces our use of nitrogen fertilisers at the end of the season. This saving in fertiliser costs offsets the diesel costs of running the irrigators, which are about \$15 per megalitre.

CHALLENGES

The switch from flood irrigation to lateral move has provided several challenges, but the benefits of the system far outweigh these.

The overhead system requires far less physical labour, but it does require a different approach to managing the irrigation system. In addition to requiring more mechanics to maintain the machines, the overhead system will change the shape of our workforce over time because we will require employees with different skills.

We have also seen more variability in the crop by soil type, so we need to work towards improving the precision application of the irrigation to overcome this.

THE FUTURE

Auscott plans to install another lateral move system on the Narrabri property where the initial trial has proved successful in productivity gains as well as water use efficiency. We are also investigating niche rotation crops such as mustard or coriander to replace areas of wheat, chickpeas and sorghum to increase the return on the investment.

I would also like to look at centre pivot irrigation as a viable alternative to flood irrigation, but there is a big mind set to get past if we are going to start farming in circles. 