Using SOI for better irrigation decisions

By Gordon Collie

A computer model that uses long-range weather scenarios is helping farmers with difficult crop planting decisions in a dry season.

Development of the *Flowcast* decision support software is one of the outcomes of a major research project that focused on the key Border Rivers catchment.

The Murray Darling Basin Commission supported the work of a team of scientists from the Queensland Centre for Climate Applications and the Department of Natural Resources and Mines.

Team leader Yahya Abawi said the scientists were using climate records going back 100 years, the Southern Oscillation Index and emerging longer range climate research to forecast water availability.

Irrigated cotton was selected to demonstrate the benefits of seasonal forecasting (for example, Figure 1) because of its high economic importance to the catchment straddling Queensland and NSW.

OZCOT, a crop simulation model developed by CSIRO, was used to obtain the yield response to varying levels of water allocation.

Yahya said the research provided information on likely water supply and associated risk to allow for better management of water resources. An extension program to improve the adoption of risk management strategies is also part of the project.

Goondiwindi cotton farmer David Turner says any tool that can help with difficult planting decisions is welcome.

Information on water availability can be provided as early as May each year, several months ahead of the cotton irrigation demand peak.

The research showed a strong relationship between the inflow into Glenlyon and Pindari dams and climate phenomena such as El Nino and La Nina events. This enables water managers to make more-informed decisions on water allocation and environmental flow management.

Significant opportunities exist for the further development of a new generation support tool for water managers and users, Yahya said.

Environmental flows

Another research project is now underway to examine the use of seasonal climate forecasts in decision-making on environmental flows and the resulting socio-economic impacts.

This work has high relevance to the current water reform process underway in both Queensland and New South Wales.

Goondiwindi cotton farmer David Turner was closely involved with the forecasting research as a member of the project steering committee. David, who normally grows about 1000 hectares of cotton on the property Macintyre Downs said any tool which could assist with difficult planting decisions was welcome.

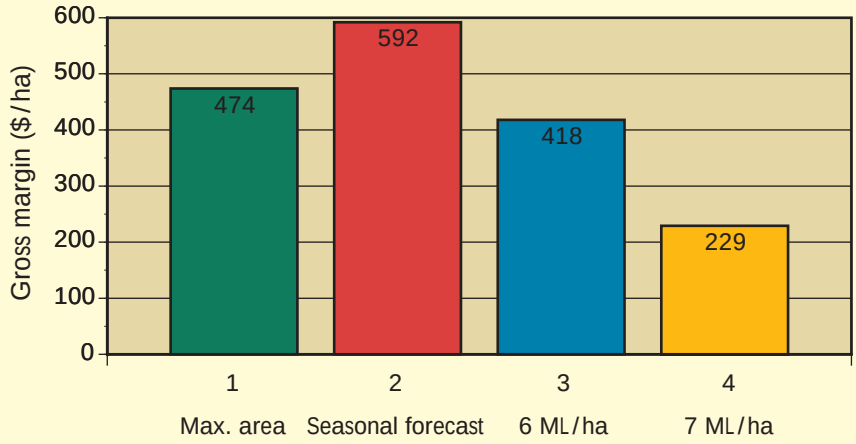
"It's been particularly relevant this year when we've had so little rain," he said. "With restrictions on, we've been conservative and only planted about 20 per cent of our area."

David has an allocation from Glenlyon dam which is at less than 50 per cent capacity. He also extracts water into farm storages during periods of high river flow.

"We got some water from a few days of high flow at Easter to get our crop started. Our water position is inherently unreliable so we follow weather forecasting developments closely," David said.

For more information see:
http://www.ncea.org.au/qccawater

FIGURE 1: Gross margin results of various cotton irrigation strategies versus an irrigation decision based on seasonal climate forecasts



The values represent the average gross margin results from a number of irrigation management strategies on a hypothetical farm:
1. Planting the maximum area to cotton each year.
2. Base the planted area on the seasonal climate forecast each year.
3 & 4. Plant only what you can guarantee to supply with six or seven megalitres per hectare.