

# The focus turns to water

By Emma Carrigan, DPI&F/Cotton CRC, Water Use Efficiency Officer, Goondiwindi

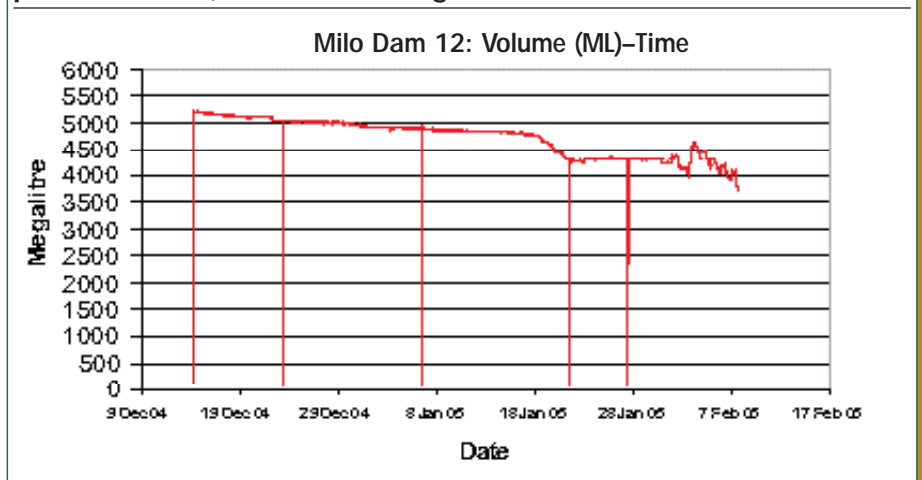
The focus for cotton producers throughout Australia is changing. Peter Birch, an agronomist from B&W Rural, describes it as a natural progression. Bollgard is allowing growers, consultants and industry alike to move from "chasing bugs" to fine tuning nutrition, soil health and water.

The change in focus offers an opportunity for producers to maximise production and minimise the use of water — their most precious resource — through measurement and improved management.

With the industry implementing practices to improve water use efficiency, Tony Bailey, who manages 5000 hectares of irrigated cotton on the Australian Food and Fibre property "Milo", Moree has decided to get on board.

"Water is without a doubt our most valuable resource, and with increasing pressure on water security, we need to measure this resource to enable us to bet-

**FIGURE 1: Continuous monitoring of storage levels, with Odyssey pressure sensor, converted to megalitres**



ter manage it. In doing so we can ensure the longevity of a sustainable irrigated cotton production system."

The drought, although devastating for

most, offered this innovative farm an opportunity to start the process of measuring their water stored on-farm. The team set about 'Beelining' the dry water storages, using their own equipment to determine the volume of the dams.

The volume of water stored in the dams, is calibrated to an Odyssey pressure sensor which enables the storage depth, in-flows and out-flows to be continuously monitored. Currently this data is downloaded manually but there will be a move in the future to the use of telemetry, so they can access up to date information from the office. The depth of storage is converted to megalitres of water stored. Figure 1 shows the data from Dam 12 on 'Milo' this season.

Knowing how much water you have in on-farm storages empowers the grower and creates opportunities to fine tune its use.

Peter explains that Tony already employs a number of practices to minimise on-farm losses of water by reducing the amount of water stored on-farm, accumulating water resources to a minimum number of storages and, where possible, applying water ordered straight to the field.

The monitoring of levels in storages adds another dimension to the management of water on-farm at Milo. Improved water budgets with accurate water balances enables Milo to fine tune their area of production, the amount of tail-water recovered and the amount of water applied in-field.

“We will adopt improved technology as it becomes commercially available to measure evaporation and deep drainage losses from storages and transportation losses (from river to storage and storage to field). This will enable us to identify and implement cost effective management options to increase the efficiencies in the system” says Tony.

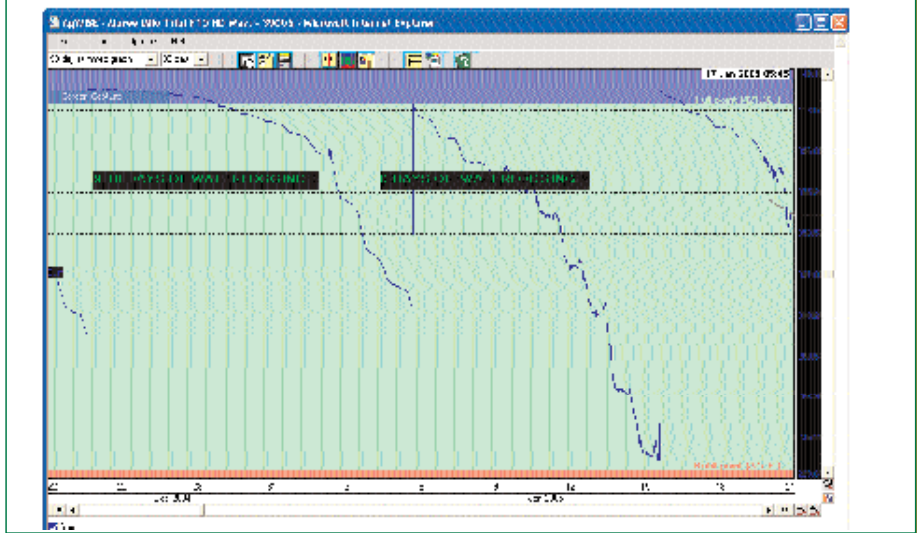
At this stage he uses the continuous monitoring of the dam levels to help calculate the water applied during an irrigation event. A trial this season has been run to compare the application efficiencies and distribution uniformity of:

- Single three inch siphon;
- Double three inch siphons; and,
- Double 2.5 inch siphons.

In-field evaluations are run for each trial, using Irrimate flow meters, advance meters and flume meters from Aquatech Consulting to evaluate the amount of water applied, amount of tail water run, distribution uniformity and application efficiency.

Agrilink C-probes are used to analyse irrigation events and to monitor and assess water use. The C-probe data highlights the impact on plant water use for each irrigation cycle, including when waterlogging occurs. Plant cell density maps and yield maps are also used to

**FIGURE 2: C-probe data, highlighting the extended period of waterlogging event associated with the single three inch siphon compared to the next irrigation event with a double three inch siphon**



compare the differences between the three irrigation set-ups.

Initial results highlight the ability to reduce water logging by changing from the single three inch siphon to double three inch siphons.

“The aim is to employ a whole farm approach on Milo by improving WUE of in-field applications, transportation and

storage of water on-farm,” says Tony.

The Milo team believe they will make significant savings by reducing losses from the system and gain from increased production through better control and understanding of their irrigation system.

For further information please contact your local Irrigation officer or Emma Carrigan  
RWUE2 Extension Officer, Goondiwindi.

