

The role of agronomists in water management

By Robert Holmes and Chris Lehmann

Cotton agronomists recognise that efficient water use is essential to maximise production of cotton. With water being a main resource and becoming increasingly scarce and regulated, more and more farmers are using irrigation scheduling to estimate when they are going to irrigate their crops.

To successfully schedule an irrigation, a grower needs to know how much stored moisture is available to the plant from the soil, what the likely crop water use will be in the days leading up to the irrigation and the effect that irrigating early/late will have on the individual crop.

There are many tools in which growers and consultants can use to answer these questions. Some of the key issues in any decision are:

- Soil moisture monitoring (neutron probe, C-probe, Sentek probe, and the trusty shovel or spear);
- Crop monitoring (thermal imagery, growth rates, NAWF, number of squaring nodes);

- Prior history of fields and soil type variability;
- Weather forecasts; and,
- Experience.

With all these tools available, irrigation scheduling should be an easy task, but it is a complex issue and each decision needs to take account of all factors to ensure the most efficient and best use of this valuable resource. As the value of water increases, the value of its use in cotton production compared to other crops will be increasingly monitored by farmers.

The cotton industry began to schedule irrigations back in the late 1970s with neutron probes. Many growers and consultants are still using neutron probes with great success and have found them to be reliable in providing data on soil moisture and then relating it to the production on the cotton plant.

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More recently C-probes and Sentek probes have been used in cotton and allow for soil moisture monitoring in real time with the added advantage of easier data download. These capacitance probes were originally developed in the wine industry in South Australia with some



Irrigation management must fit in to the whole agronomic picture.

trials in cotton now over 10 years old. Other technology now available includes thermal imagery from planes and satellites which are being used more regularly to map water requirements of crops and vegetation.

Irrigation scheduling services supplied by agronomists provide growers with a date to apply an irrigation. This is the end result of effective irrigation scheduling taking into account all factors impacting on the crop.

Irrigation scheduling has been described as being an ingredient in the recipe for the crop. Firstly the irrigation scheduling commences with early season planning. It then progresses to the in-season irrigation scheduling throughout the cropping season and farming system.

Consulting agronomists provide irrigation scheduling services over a range of crops throughout the year — day to day and from farm to farm. The visual or physical sense of the crop is vitally important in balancing the tools for irrigation management within the whole agronomic picture.

A new twist to irrigation scheduling is the growth demands of GM crops which have been noted to need earlier water inputs and critical timing to obtain required yield. This also relates to the need for careful monitoring of the crop growth and structure to ensure correct decision making for the GM crop.

Members of Cotton Consultants Australia (CCA) are

well placed to aid cotton growers with irrigation scheduling. CCA members are kept up to date with new technology through an efficient communication network that involves winter meetings, faxes, regional meetings and seminars.


Leading researchers provide technical updates and training to CCA members. CCA also provides effective networking between members. Cotton agronomists and consultants have a wealth of experience that can be utilised on-farm.

Other resources available to complement irrigation scheduling services include database systems such as Hydrologic — specifically used as a tool to explore ‘what if’ scenarios, historical values, big picture questions for in-crop water management. As with all models, the more information entered into the system, the better the information/reports provided.

The consultants role in water management and indeed irrigation scheduling is to consider the bigger picture of where the irrigation fits into the cropping plan. Cotton agronomy involves nutrition, varieties, soils, climate, water, pests, weeds, diseases, rotations, long term goals — and combining them together to assist growers produce a profitable crop.

The role of the agronomist focuses on maximising profitability of crops and the cropping system. To do this

it is vital to ensure that all areas of cotton agronomy are covered, including irrigation.

Contact your agronomist or preferred CCA member to discuss your specific water requirements. CCA members are well informed and committed to servicing growers’ irrigation scheduling and crop agronomy needs — they are leaders in the field. 



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