



MODULE 2 – Irrigation and Drainage Management

What is this about?

Water drives productivity. In some situations too much is as bad as too little. Outside of the Wet Tropics, all but a few sugarcane crops receive some amount of irrigation water.

Growers in the Burdekin have access to enough water to meet the full requirement of each crop. But growers in other districts typically have limited amounts of irrigation water.

In all of these cases, efficient use of irrigation water improves productivity.

Growers with limited water have to decide when and where irrigate to have the greatest benefit.

In these districts with limited water allocations, crop productivity is strongly related to the amount of water applied. It's important then to use your allocation as efficiently as possible. Also, not using available water when the crop is water-stressed is often false economy.

Sometimes, too much water is an issue on farms. Most farms have areas where there's poor internal drainage which is made worse by heavy rainfall or over-irrigation. You can also modify surface drainage to ensure excess water moves off your paddocks within a few days.

Why is it important?

There are many examples of benefits from either changing irrigation systems or improving the efficiency of existing systems. As water drives most chemical and physical processes in soil, plants and the atmosphere, efficient water use is a win-win situation for both the crop and the environment.

Increasing efficiency means power savings, water savings, and reduced risk of chemicals and nutrients leaving the paddock. Automating irrigation systems reduces labor costs and saves time, especially with furrow systems.

In poorly drained situations, sub-surface drainage that lowers the water table below the root zone is critical for productivity and using nutrients efficiently.

What's next?

REVIEW AND DISCUSS

If you'd like to document or review your irrigation and drainage practices, you can access Module 2 at smartcane.com.au. The module records your current practices, and the checklist format helps to identify options for further improvement.

Your district facilitator or productivity officer can help you follow-up on additional information, training or expert advice.

If you'd like more information, the following resources are available for free on the SRA website, sugarresearch.com.au:

- Irrigation of sugarcane manual
- Surface drainage and maintenance

GET INVOLVED IN SMARTCANE BMP

Smartcane BMP has modules that cover all aspects of the cane farming business. It includes the option to become accredited in the farming practice modules (Modules 1, 2 and 3). Participation is entirely voluntary, and your facilitator can talk with you about what's involved and put you in touch with local growers who are also part of the program.

Contact your district facilitator to get involved.

What's in the module?

INDUSTRY STANDARD	ABOVE INDUSTRY STANDARD
CALCULATING THE AMOUNT OF WATER TO APPLY	
Using district-specific data to calculate water requirements and irrigating in line with soil water holding capacity	Calculating crop requirements and soil water holding capacity using farm-specific tools
CALCULATING HOW OFTEN TO APPLY WATER	
Using simple monitoring tools and district-based soil data to inform irrigation frequency	Applying water based on monitoring infield soil moisture and using weather forecasting tools to inform irrigation decisions
SEASONAL WATER ALLOCATION MANAGEMENT	
Developing a water use strategy based on seasonal forecasts and historical data, and monitoring water use throughout the season	Predicting water supply based on seasonal climate forecasts and data from farm-specific tools and calculators
RUN-OFF AND DEEP DRAINAGE MANAGEMENT	
Managing irrigation to minimise run-off and deep drainage by matching application volumes to soil water deficit	Capturing run-off in tail water systems and recycled on farm
RECYCLE PITS	
Designing pits to capture all irrigation run-off and some rainfall run-off and ensuring pumping capacity is sufficient to reuse water quickly	Designing pits to capture all irrigation run-off and significant rainfall run-off, and managing storage to capture water from most storm events
IRRIGATION WATER QUALITY TESTING	
Testing irrigation water quality at a frequency dependent on water quality and seasonal context, and considering limitations when planning seasonal allocation	
USING EFFLUENT WATER FOR IRRIGATION	
Implementing a recycled water management plan that accounts for the nutrients supplied by water and minimises salinity	Implementing an ongoing water monitoring program and tail water recycling
SYSTEM MANAGEMENT	
Maintaining and managing systems to minimise run-off and deep drainage	Assessing system performance and distribution annually, and implementing automated or precision irrigation technologies
SURFACE DRAINAGE SYSTEM DESIGN	
Developing a whole-of-farm drainage plan where water is removed within 72 hours while minimising erosion and downstream flooding	Using a sediment retention basin to filter sediment and chemicals
SUBSURFACE DRAINAGE SYSTEM DESIGN	
Implementing a drainage system to remove excess water from the root zone, and following legislative requirements that relate to sulfate soils and saline drainage	
SUBSURFACE DRAINAGE SYSTEM DESIGN	
Maintaining headlands, drains and fallow ground covers	Constructing and using sediment traps

We will showcase Module 3 in the next edition of the magazine.