

# 1.1 Farm planning, WATERpak and myBMP

## Why Planning?

Planning simply means thinking ahead - vital to the success of any farming operation. Planning helps to:

- Understand farm resources, especially water, soils and infrastructure that are the foundations of any agricultural operation.
- Identify issues and potential challenges facing your business, allowing timely intervention or preparation.
- Formulate goals and strategies that can guide day to day management decisions.
- Maximise business performance by minimising risks, minimising costs and maximising returns.

The initial planning step involves assessing and recording a farms resources and then identifying what risks or management issues need to be considered. You can then develop goals, strategies and action plans for how you manage your valuable farm assets as efficiently and responsibly as possible. Good planning is essential to ensure that the wide range of potential issues and factors affecting an irrigated cotton or grain farm are taken into account.

Unfortunately there are many complicated and interrelated

factors and processes involved in water management in irrigated farming systems and extensive knowledge is required to address on-farm water losses in the areas of seepage, evaporation, deep drainage and run-off.

Fortunately, many improvements in water use efficiency can be easily gained through changes to management practices which don't necessarily require extensive farm redevelopment or irrigation system upgrades. Indeed, the experience captured within this publication demonstrates a wide array of practices and technologies that can dramatically improve water use efficiency.

The cotton industries Best Practice initiative, myBMP, can also support you in the process of farm planning by helping to identify potential risks that may be associated with a particular activity and then providing advice for managing those risks. Practices in myBMP represent a step-by-step checklist which can be used as a guide to risk management and better farm planning.

A good plan should not only allow you to maximise water use efficiency and return per megalitre: it should mean that you achieve the standard of environmental management expected by both the

industry and the community. In fact, myBMP branded cotton is becoming increasingly desirable to consumers as it demonstrates a commitment to environmentally responsible production.

WATERpak and myBMP are both excellent tools that can be used to develop a full farm plan, identify improvement options and benchmark your farms water use against industry standards.

## Using WATERpak to support myBMP

The myBMP program is fully supported by the latest information, tools and resources available from the cotton industry research and extension community meaning that growers have direct access to this knowledge from a centralised location. This makes myBMP a key delivery tool for industry research and extension.

WATERpak is a key information source supporting the water module of myBMP. This module covers topics ranging from the water source (storages, bores, overland flow and stored soil moisture) through the application of irrigation to fields to the management of potential irrigation impacts such as deep drainage, water quality and salinity. All irrigation systems are covered including surface irrigation, centre pivot, lateral moves and drip irrigation.

Once you have completed the myBMP Water module to at least Level 2 you will have achieved the following:

- used available tools to schedule your irrigations and monitor soil water levels;
- estimated your soils capacity to hold and store water for your fields and soil types;
- estimated your losses from storages and channels;
- maintained your storages to minimise leaks and seepage, particularly in dry times;
- maximised crop yields by understanding and managing bore water quality;
- calculated and recorded your irrigation water use index;
- identified problem areas in irrigation fields and addressed them;
- matched your flow rates to soil, slope and run length so furrows come out evenly;
- planned for and installed your centre pivot or lateral move with a professional so it works effectively; and,
- ensured your drip irrigation system is operating effectively.

Individual practices within myBMP provide links directly to the resources that support these practices, including the specific chapters within WATERpak. The list below provides a brief summary of each of the key areas within the water module of myBMP and the way in which WATERpak provides support.



myBMP Key Area	Description	WATERpak support
Whole farm water recording and performance	The measurement of irrigation water and crop water use is critical to understanding farm water management but can be difficult to do. Once the basic information is known, a range of performance indicators can be calculated so that performance can be improved. Developing a whole farm water balance with strategies to encourage improvements in water use efficiency are the ultimate in performance benchmarking.	WATERpak provides information on water metering, measurement of crop water use and soil water as well as water budgeting. A range of performance indicators are described along with methods for their calculation. Whole farm water balance techniques are provided for advanced managers.
Field water management and performance	Measurements of water use can also be made at the field level with the data used to benchmark and improve performance. In addition, EM surveys provide additional field information and the role of deep drainage should be understood.	WATERpak provides detailed information on metering techniques and performance measurements for different irrigation application systems. Practical information on EM surveys is also included and the theory and research into deep drainage is thoroughly described.
Crop and soil water management	Understanding crop and soil water requirements allows scheduling and crop management to be optimised. This can lead to yield improvements as well as water savings.	These sections of WATERpak have been thoroughly updated to include the latest research on Bollgard cotton. In addition, dedicated chapters for the major irrigated grain crops are included for the first time. Information on soils, scheduling and crop agronomy has also been improved and reorganised so that it better supports myBMP.
Water storage and distribution management	On-farm storages are the main source of water loss on most irrigated cotton farms, so optimising their management is critical to maximise water use efficiency.	A brand new chapter on measuring and managing water storages and distribution channels has been included in this edition of WATERpak, reflecting the latest research undertaken in recent years.
Surface irrigation systems	With the majority of irrigation in the industry undertaken using surface irrigation systems, managing their performance is extremely important. A range of practices are included to optimise management and improve performance.	The development of surface irrigation systems is covered, as well as a new section on surface irrigation performance and management. New information on recent research into bankless channel and pipe through the bank systems has also been included.
Drip irrigation systems	The design, installation and management of drip irrigation are absolutely critical to achieving high water use efficiency with this irrigation system.	WATERpak provides an overview of drip irrigation systems for cotton irrigation as well as advice on installation, management and maintenance.
Centre pivot and lateral move systems	The popularity of CPLM systems has increased in recent years, a trend which is predicted to continue. As is the case with drip systems, CPLM design and management is critical to achieving high performance and long life.	WATERpak includes information on critical design parameters, operating information and energy use as well as information on cropping systems under CPLM systems. Measurement of system performance is also included.
Bore Management	Groundwater is a major water source for many cotton and grain irrigators. Bores need to be properly maintained to ensure a long life. Groundwater quality can vary over time and should be monitored regularly to ensure it does not detrimentally affect crop growth. Similarly watertable levels should be monitored over time to identify any changes that could impact on water security in the future.	A new section on bores is to be developed and included in a future edition of WATERpak. Information on water quality and the impacts on crop growth is included in this edition.
Dryland water management	Many irrigators also grow dryland crops and myBMP includes a number of practices to enable growers to maximise rainfall capture and most efficiently convert this water into yield.	WATERpak does not have dedicated information on dryland cropping, although much of the information contained in WATERpak regarding crop agronomy and soil management is useful in dryland situations. myBMP provides a range of references to other specific dryland cropping resources.
Tailwater and stormwater management	myBMP contains practices that limit the risk of offsite impacts from irrigation properties due to tailwater and stormwater runoff.	Tailwater management is discussed in the WATERpak chapter on surface irrigation systems. WATERpak also includes further information on water quality and buffer zones as well as references to other publications that provide more detail in this area.