

Land & Water Best Management Practice – *Challenges and rewards for achieving a profitable environment*

Stacey Spanswick

Namoi Catchment Management Authority and Cotton CRC

Locked Bag 1001, Narrabri 2390

The second Australian Cotton Industry Environmental Audit (GHD Pty Ltd, 2003) found that the development and implementation of a BMP program was “one of the most significant environment improvements in the Australian cotton industry”. Since the introduction of the BMP program in 1997, approximately 40% of the 880 growers registered with Cotton Australia have had some involvement with the program with about 11% currently accredited (Cotton Australia, 2006). The latest module, Land and Water Management, was released in 2005. The continual review/monitoring process built into the Land and Water Management module enables growers to assess both the financial and environmental performance of the farm and improve their business practices. The key area identified by growers for potential natural resource production benefits was better water management through the use of water budgets and improved application methodologies (Hassall & Associates, 2006). Review of the BMP process identified that initially growers found the documentation and level of mapping within the Land & Water Management module daunting and perceived little benefit in undertaking the module. However many found that once they had undertaken the module the benefits were much more apparent (Hassall & Associates, 2006). Recent Land and Water Management workshops run in collaboration with cotton industry organizations and local Natural Resource Management groups have helped growers meet the mapping requirements of the module as well as access technical advice, resources and funding to implement their action plans.

Introduction

The Cotton Best Management Practice (BMP) program was first introduced in 1997 to address negative public opinion of the industry and chemical contamination issues. Over the years the program has broadened to include other areas of farm management such as water, disease management, petrochemical management, soils, vegetation and riparian management.

The BMP program was designed to assist growers

- Identify and manage risks on the farm

- Improve farm designs and practices to minimize environmental impact
- Create safe farms and work places
- Optimize the use of land and water resources
- Adopt the latest research
- Ensure legal compliance

The BMP program is a whole of industry program of the Australian Cotton Industry Council. Many industry organizations (Cotton Australia (CA), Cotton Research Development Corporation (CRDC), Cotton CRC, and Australian Cotton Growers Research Association (ACGRA)) take on various responsibilities for the continuing development and implementation of the program.

The program is a voluntary initiative that provides growers with a framework in which to manage their built and natural farm resources and assists with minimizing both farm and catchment risks. The program is designed as a farm management tool that can be integrated into sub-catchment planning processes. To date approximately 40% of the 880 growers registered with Cotton Australia have had some involvement with the BMP program with only about 11% currently accredited in the first five modules, (Cotton Australia unpublished document, 2006).

The Australian Cotton Industry Environmental Audit (GHD Pty Ltd 2003) found that the development and implementation of a BMP program was “one of the most significant environment improvements in the Australian cotton industry”, indicating “a high level of stewardship by the cotton industry”. The value of the program has been its ability to provide the industry with a means to implement best practice as well as benchmark and quantify its environmental performance and provide hard data for use in satisfying the community and governments of its credibility as environmental managers, particularly of water, Hassall & Associates (2006).

There are 7 modules in the program. These include the Application of pesticides, Storage and handling of pesticides, Integrated Pest Management, Farm Design and Management, Farm Hygiene, Petrochemical storage and handling and Land and Water Management. The Petrochemical and Land and Water Management modules were introduced in the last couple of years. Growers have until 2008 to complete these modules to maintain their BMP accreditation.

This paper concentrates on the most recently released, Land and Water Management module.

BMP (Land & Water Management) as a profit and loss statement of the farm environment

The Land and Water Management module can be viewed as a profit and loss statement of the farm in terms of its ability to record the environmental performance of the farming enterprise. The continual review/monitoring process built into the Land and Water Management module enables growers to assess both financial and environmental performance of the farm and improve their business practices.

In business terms, the farm environment is a key production resource and therefore needs to be managed and maintained with the same attention given to other farm resources, such as machinery and infrastructure. Unfortunately, the degradation or depreciation of natural resources usually occurs over a longer time period than most farm infrastructure and therefore is difficult to account for. However the long term degradation of a farm's natural resources can lead to not only environmental loss but significant financial loss. For example has there been a profit to the farm in terms of improved water quality and higher crop yields or has water quality decreased causing a loss of area in production and yields.

The Land and Water module attempts to assist with this accounting process by suggesting management and monitoring strategies that enable growers to place the health of their farm's natural resources in the same context as their built assets and hence increase the capital value of their natural farm assets. It also assists in managing risks that potentially impact on these natural resources such as extreme climatic conditions, by assisting in the development of strategies that provide for a healthy environment capable of surviving these extreme events and recovering quickly.

Profitable Environment

A profitable business is one in which we see dollar returns for our investment. The profitability of an environmental resource is often difficult to measure owing to the complexity of nature and its interactions, and the difference in scientific and public opinion on what is a suitable dollar figure for the environment.

However, there are some examples within the cotton industry where it is easier to measure an economic return from positive environmental performance such as:

- Improved water quality as a result of reduced and strategic herbicide and pesticide spraying. This provides environmental benefit to aquatic ecosystems and terrestrial biodiversity as well economic returns to the farmer through better crop performance, improved soil health, reduced cost of application and potentially reduced risks to the health of workers.
- Improved water use efficiency. Provides environmental benefit in terms of reduced deep drainage and potential salinisation in hazard areas as well as economic returns in terms of more acres per unit of water.
- Reduced green house gases through reduced application of nitrogen fertilizer. Provides environmental benefits by reducing emissions which contribute to global warming and provides the grower with reduced cost of nitrogen application and improved soil health.
- Improved riverine corridor health. Provides environmental benefit in terms of improved terrestrial and aquatic biodiversity value and water quality as well as economic value in terms of reduced erosion and loss of productive farm land, improved water quality and if managed appropriately, drought reserves for stock.

A recent report commissioned by CRDC and CA to evaluate the BMP program found that growers generally felt the key area for potential natural resource production benefits was improved water management through the use of water budgets and improved application methodologies (Hassall & Associates, 2006).

The term profitable environment can also be thought of in-terms of a non-dollar value. There are direct on farm social benefits from managing a farms natural resources for positive environment outcomes. These social benefits include reduced health risks, aesthetic enjoyment, recreational activities and a sense of good environmental custodianship. These social values are often also held by other members of the community and catchment. If the local community or general public perceive that these values are threatened by practices undertaken by the cotton industry then the future of the industry in the long-term is potentially threatened.

Challenges and Rewards

There are many challenges and rewards associated with implementing the BMP program, particularly Land and Water Management module. These exist not only for the growers but the industry as a whole. Traditionally, the BMP program has looked at more farm/production based management. The

introduction of the Land and Water Management module however, meant that the industry has had to develop new resources, technical skills, knowledge and partnerships to support growers through the implementation of this module.

Key challenges for growers and the industry in terms of the Land & Water Management module include:

- Sourcing the layers of data required for the module and finding the assistance to help implement action plans in aspects of farm management they are not so familiar with eg biodiversity management
- The generally low priority given to this module especially with low market and low water security
- The perceived large time commitment for what growers feel are little rewards
- Low prices and limited funds to spend on Natural Resource Management
- Lack of resources and technical skills in some regions to help with the implementation of the modules technical components
- The view that minimizing “environmental risk” is about minimizing the adverse impacts the environment has on continued farming as opposed to minimizing risk to the environment from farming practices

Key rewards for growers and the industry in terms of the Land & Water Management module include:

- Increased financial returns to the farm in terms of more efficient water use, reduced soil loss, improved water quality, beneficial insects, and soil health
- Proof of good custodianship of the land and other natural resources
- Acceptance by the local community and broader society as an important agricultural industry
- A whole farm management system that can be used by all employees to create not only a safe farm & work place but also an environmentally sustainable farm
- A whole farm map that can be used as a tool for farm planning
- A process that helps a grower document their farming business’s progress
- Increased flora and fauna diversity on the farm
- Reduced risk to natural farm resources

Implementation of BMP– Case study examples

The Land and Water Management module has an emphasis on mapping with growers required to map their natural resources (i.e. soils, vegetation, riparian areas etc) as well as assess and continually monitor their condition. This has been a stumbling block for many growers and has meant that industry has had to provide a great deal of resources and support to help them go through the process.

To assist growers, the industry has been running workshops with existing groups of growers such as Area Wide Management Groups and Grower Associations. This often works well as the natural resources identified on one farm are likely to occur on other farms within that group eg vegetation types. In addition, the action plans required by a grower to meet a certain ranking may be similar for their neighbours eg weed and pest management along a shared creek or river.

Land and Water Management - Callandoon Area Wide Management Group

A Land and Water Management workshop was undertaken by the Callandoon creek Area Wide Management group in December 2005 with 12 cotton enterprises (23 people) attending the workshop. The workshop was a collaborative effort between the Queensland Murray Darling Committee (QMBC), Cotton Australia, the Cotton CRC and Agforce. The aim of the workshop was to:

- Introduce growers to the Land and Water Management module
- Help growers complete the mapping component of the module,
- Enable growers to develop action plans for minimizing environmental risk,
- Place growers in contact with technical staff who can assist with implementing management/action plans

At the workshop, growers identified a number of key issues/risks that were facing their farm. One of the identified risks that were a priority for many growers was Lippia (*Phyla canescens*), an introduced weed which is highly invasive. With the help of the Cotton CRC and QMBC these growers developed individual action plans for managing Lippia on their farm. They are now in the processes of working with their neighbours and local technical experts to develop a plan for addressing this on a sub-catchment scale.

In this case study the process of undertaking the Land and Water Management module provided many growers with an opportunity to participate in the development of a sub-catchment plan to address the priority issues that were facing them as a group.



Photo 1 Members of the Callandoon Area Wide Management Group mapping their riparian areas at a Land and Water Management workshop held at Goondiwindi

Due to the success of this workshop others are being run in catchments such as the Namoi and Gwydir in collaboration with the Catchment Management Authorities in those areas. With the assistance of these regional natural resource management groups growers will be able to access satellite imagery, maps, technical advice as well as funding for audit costs and the implementation of their action plans.

Not all growers want to undertake the Land and Water Management module in a group format, some prefer to sit down with their GSM or consultant and go through it on a one-on-one basis. For many growers this has been a daunting process as the initial expectation is that significant detailed mapping is required as well as significant amounts of their time for what is initially perceived as little benefit. However many have found that once they had undertaken the module the benefits, outlined previously, were much more apparent (Hassall & Associates, 2006).

Wider Community benefits of the Cotton BMP program

The biggest impact that the cotton industries approach to Best Management Practice has had is in the dramatic reduction of pesticides in rivers and creeks. The high endosulfan levels recorded in the rivers triggering wide community concern about the cotton industries impact on the environment in the late 80s early 90s have since dramatically reduced. The best practice guidelines for chemical handling and pesticide use contained within the BMP program helped growers to minimize contamination risk on farm as well as work with their neighbours to coordinate application and minimize risk of contamination. The value for the industry and the individual grower has not only been improved

public opinion (mainly in local cotton communities) and improved environmental health but also potentially economic gains in terms of reduced drift and wastage/cost of chemical and improved water quality for crop health and yields.

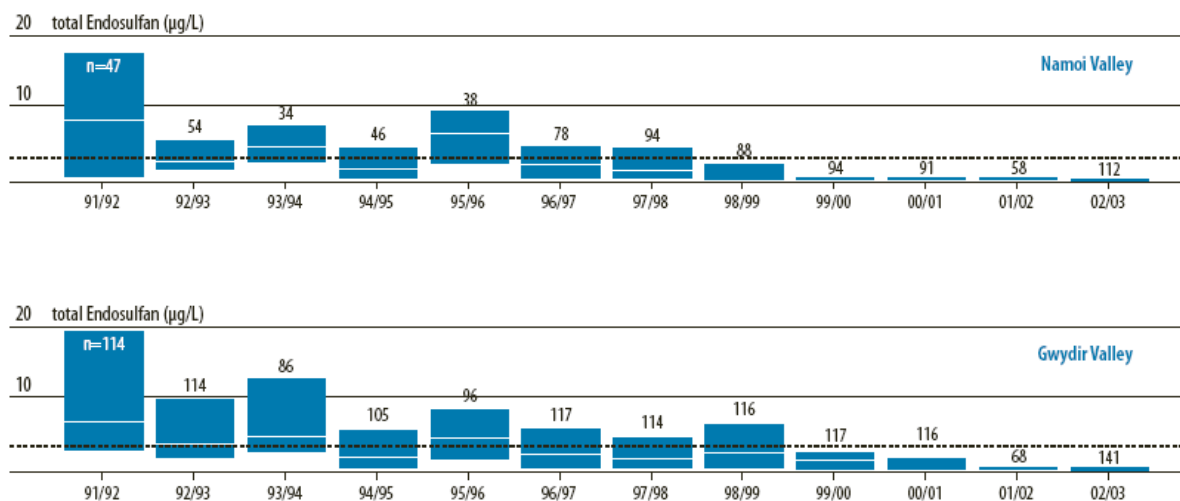


Table 1 Endosulfan levels recorded in the Gwydir and Namoi Valleys between 1991 and 2003.

References:

Cotton Australia (2006) Background information for Industry BMP Review Meeting June 2006.

Unpublished document.

GHD Pty Ltd (2003) Second Australian Cotton Industry Environment Audit. Prepared for Cotton Research Development Corporation

Hassall & Associates Pty Ltd (2006) Evaluation of the Australian Cotton Industry's BMP Process.

Prepared for Cotton Research Development Corporation and Cotton Australia