



Tender

July 2008 Produced by Cotton Catchment Communities CRC

Measurement to Improve the Water Efficiency of On-Farm Storages in the Cotton Industry

Proposals are invited from suitably qualified and experienced applicants to implement a project to assess the extent of seepage and evaporation losses from water storages throughout the cotton industry. The project involves the co-ordination of existing commercial consultants (agronomists) in measuring the extent of losses and working with them and growers to assess and document the cost-benefit of amelioration strategies on storages with significant losses.



The project is being commissioned by the Cotton Catchment Communities CRC (Cotton CRC) as the "Measurement to improve the water efficiency of on-farm storages in the cotton industry" project, collaboratively funded (2008 – 2011) by the Australian Government National Water Commission through their Raising National Water Standards Program and the Cotton CRC.

Background

Retaining water on-farm in ringtank storages is an important tool for efficient irrigation. On-farm storages may be used to store water for a range of reasons – capturing water during periods of high flow and/or high rainfall, and storing pumped water from slow flowing groundwater systems and recaptured tailwater.

The Australian cotton industry relies strongly on the efficient and responsible use of water with over www.cottoncrc.org.au

80% of the cropped area grown under irrigation (ACIC 2006). In 2004/05 the industry accounted for 18%, or 1,800 GL, of the total water use in agriculture, to generate approximately \$1 billion per year in export earnings.

Cotton production typically has the highest economic return (\$/ha) of broadacre cropping enterprises relying on general security irrigation water, and therefore many farmers rely on cotton production for their livelihood. The production area extends from Emerald in central Queensland to Griffith in southern NSW, with local communities in these areas being largely dependent on the economic benefits and regional flow-on effects generated by the industry.

Whilst being one of the most efficient irrigation industries in the world, the Australian cotton industry recognises that continued efficiency improvements is



Cotton Catchment Communities CRC

one the greatest challenges facing the industry. Growers, in partnership with universities, CRC's, governments and consultants have invested heavily in research to better maximise water use efficiency.

Recent research has identified evaporation and seepage from farm water storages as a potential area for achieving significant on-farm system efficiency improvements. Studies in the Macintyre valley have indicated seepage losses of between 2 and 10 % and evaporation losses of between 14 and 40 % each year. Preliminary work suggests that losses, particularly related to seepage, can be significantly reduced through appropriate amelioration works.

This project aims to implement research to improve the management of on-farm storages across the cotton industry by engaging growers and cotton consultants in the major growing regions in NSW and QLD to measure evaporation and seepage losses, and test approaches for amelioration of water losses.

A key objective of the project is to raise industry awareness of the quantum of losses, causes of problems and methods to ameliorate losses. Ultimately it will inform the development of an industry wide best management practice for efficient management of on-farm water storages.

By gathering objective data and building confidence in measurement and amelioration techniques, the project will ultimately improve the efficiency of water stored on-farm. Increased productivity will in turn lead to greater benefits for regional communities.

Reducing seepage losses from storages will help to minimise adverse impacts on groundwater and connected riverine systems. It will improve the capacity to measure, monitor, evaluate and report accurate on farm water use figures for one of Australia's largest irrigation industries.

Project Objectives

The project will monitor and improve the knowledge of water stored on cotton farms through the measurement of losses, testing of amelioration techniques and promotion to industry. The project objectives are:

1. To raise industry awareness of the quantum of losses, causes of problems and ways to measure and ameliorate losses from on-farm storages
2. Assess the significance of storage losses in a whole farm water balance
3. Measure the evaporation and seepage losses from at least 135 on-farm storages across the

Australian cotton industry (representing all valleys)

4. Measure and monitor the impact on water losses of amelioration works on 70 storages
5. Test and promote the use of cost-effective tools for measuring losses from on-farm storages
6. Identify the characteristics of efficient and inefficient storages
7. Gather essential information for the industry to develop a best management practice for efficient management of on-farm storages
8. Build capacity for effective measurement and amelioration of storage losses

Steering Committee

A Steering Committee will be established to coordinate and oversee the performance of the project, and provide advice on communication and dissemination of project findings to key stakeholders. The Steering Committee will include representatives from the Cotton CRC, the Australian Cotton Growers Research Association, CRC Irrigation Futures, Aquatech Consulting, Central Downs Irrigators, NSW Irrigators Association, National Water Commission, Murray-Darling Basin Authority, the Department of Environment, Water, Heritage and the Arts, and Cotton Consultants Australia

Applicant Responses

A written response is required from applicants providing details of the knowledge and skills they would bring to management of this project. In particular they must provide:

- ◇ Details of their technical expertise in irrigation system management
- ◇ Details of their experience in implementing and managing research/extension projects
- ◇ Details of their knowledge of the consultancy sector within the cotton industry
- ◇ A detailed budget specifying the amount of time required to deliver the project (and cost) and associated operating costs – travel, vehicle, etc.

The selection of a consultant for management of the project will be based on their expertise, experience and cost in delivering on the project. Note that the timetable for the completion of project milestones is not negotiable.

Project Budget

A budget of up to \$121,000 per year (2008-09, 2009-10, 2010-11) inclusive of GST is available for project management.

Project Timetable

The Milestones for the Project are set out in the following tables:

No	Milestone Description (eg: outcomes, outputs, products, stages of the project and reports)	Milestone Date
1	<p>Contract signed.</p> <p>Project Implementation Plan provided.</p> <p>Risk Management Plan provided.</p> <p>Establish Project Performance Indicators.</p>	1st July, 2008
2	<p>Project officer employed.</p> <p>Project Steering Committee established and has met.</p> <p>Report made on available data defining number, area, type and location of on-farm storages involved in project.</p> <p>Measurement services contracted to consultants.</p> <p>Calls for expressions of interest undertaken and selection and prioritisation of farm storages completed.</p> <p>Evaluation tools designed.</p>	1st Dec, 2008
3	<p>Measurement of losses from 50 storages completed.</p> <p>15 case studies of storage measurement and /or amelioration completed.</p> <p>Project steering committee has met.</p> <p>Report of Year 1 participant survey completed.</p> <p>Characterisation and loss data reported.</p> <p>Calls for expressions of interest undertaken and selection and prioritisation of farm storages completed.</p>	1st July, 2009
4	<p>Measurement of losses from 50 storages. 35 remeasured after amelioration.</p> <p>15 case studies of storage measurement and /or amelioration completed.</p> <p>10 case studies of whole farm water balances completed e.g. using WaterTrack Rapid.</p> <p>Steering committee has met.</p> <p>Report of Year 2 participant survey completed.</p> <p>Characterisation and loss data reported.</p> <p>Call for expressions of interest undertaken and selection and prioritisation completed.</p>	1st July, 2010

5	<p>Measurement of losses from 35 storages, 35 remeasured after amelioration</p> <p>10 case studies of whole farm water balances completed (e.g using Watertrack Rapid)</p> <p>15 case studies of storage measurement and /or amelioration completed.</p> <p>Steering committee has met.</p> <p>Report of all participant surveys completed.</p> <p>Characterisation and loss data reported.</p> <p>Key information for best management practices documents.</p> <p>Arrangements for Evaluation Activities and Reporting for the Evaluation Period are in place.</p> <p>Workshop held to set future directions.</p>	1st July., 2011
6	Final report completed (including an evaluation of outcomes).	30 April, 2012
7	After the Evaluation Period (from 30 September 2011 to 30 September 2013) an Evaluation Report will be provided to the Commission . The evaluation will report on the Project's success at achieving its objectives and against the performance indicators established in the Project Implementation Plan.	30 Sept, 2013

Submission Date

The closing date for submissions is 5pm, Monday 11th August, 2008.

Contacts

For further information, contact:

Graham Harris, DPI&F and Cotton CRC, Toowoomba – (07) 4688 1559 or graham.harris@dpi.qld.gov.au

Consultant responses to be emailed to Lynda.George@csiro.au or posted to:

Lynda George

Cotton Catchment Communities CRC

Australian Cotton Research Institute

Locked Bag 1001

Narrabri

NSW, 2390