Skills

On Farm Series: People & Knowledge | July 2009 | Produced by Cotton Catchment Communities CRC

Measurement to Improve On-Farm Storages

Do you want your storage losses measured, free-of charge?

Expressions of interest are sought from managers of on-farm water storages on cotton farms

The purpose of this expression of interest is to identify a total of at least 50 cotton farm water storages which will have measures of seepage and evaporation loss conducted by consultants contracted to the project during the period September 2009 – June 2011.

To be considered under this expression of interest, applicants must:

- Own or operate an on-farm water storage on a property which includes cotton as part of the farming system (even if cotton is not currently being grown).
- Intend to use the storage to hold water during the period September 2009 – June 2011 (measurements can only be undertaken when the storage contains water)
- Be willing to have a contractor, as appointed by the project, organise to come onto your property to undertake the measurements.
- Be willing to authorise publications (case studies, magazine articles, etc), as appropriate, which increase awareness of issues regarding the measurement process, the magnitude of losses, or the success of remediation strategies. (Your approval will be sought before publishing any article in which you may be identified and in some situations, anonymity may be sought if required).

In return, the project will pay for the cost of an initial Irrimate™ Seepage and Evaporation assessment, to be undertaken by a local consultant who is contracted by this project. If you decide to implement some remediation strategy after this initial assessment, in order to reduce losses, the project will pay for an additional assessment following remediation to allow you to assess the success of this strategy.

Expression of Interest submissions must provide details as contained within the submission form included and complete the grower agreement.

Please note that water availability will determine which storages can be measured during the coming measurement period. For this reason, it is possible that some storages may not be able to be measured because of lack of water during this period, or because other storages have been assessed in a more timely fashion.

For additional information or to submit completed application forms please contact via email, fax or phone:

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Project Manager

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Expression of Interest Submission Form

ATTENTION: David Wigginton

Name: _____

Property Name: _____

Postal Address: _____

Phone Number: _____

Email: _____

Section 1: Storage Details

Storage Location (if different to address above): _____
_____

Storage Volume: _____
Storage Depth: _____

Does the storage currently hold water and/or is it expected to contain water at some time during the measurement period of September 2009 – June 2011 (at least 2m)?

Do you have any typical annual storage holding and extraction patterns (e.g. Storage is used mainly for summer crop; storage is constantly topped up by bore, etc.)

Have you had a storage survey undertaken since the storage was constructed (a survey of actual capacity - not design plans)? Yes No

	Minor		Moderate		Major
How much loss do you think there is from this storage?	1	2	3	4	5
How significant do you feel water losses from storages are in general?	1	2	3	4	5

Section 2: Investment in Water Use Efficiency

Please give a brief list of the activities that you have already undertaken on your farm to improve your water use efficiency (not just on your storage):

From your understanding, do you think information is readily available regarding the quantity of losses from storages and how they can be measured?

Yes Perhaps No Haven't looked

Have you ever had your storage losses measured? Yes No

If so, what technique was used?

*What level of **seepage** losses from storages do you consider to be unacceptable?*

more than _____ mm/day Don't know

From your understanding, do you think information is readily available to help you decide on amelioration options?

Yes Perhaps No Haven't looked

If it proves to be cost-effective, how willing are you to invest in amelioration works?

Not very Moderately Will do it if possible Will be sure to do it

What do you think would be the maximum you would currently be prepared to invest in seepage / evaporation saving technology ($ per ML water saved per year basis)

< $50/ML/yr $100/ML/yr $250/ML/yr $500/ML/yr $1000/ML/yr Dont know

Have you already investigated amelioration options on any of your storages? Yes No

Have you already applied an amelioration option on any of your storages? Yes No

If yes, what have you done?

How willing are you to change the way you manage water in this storage to minimise losses?

Not very Moderately Will do it if possible Will be sure to do it

Do you already manage your storage to minimise evaporation or seepage? Yes No

If yes, how?

What are the main things that might prevent you from undertaking amelioration?

- ☐ Cost
- ☐ Practicality
- ☐ Lack of information
- ☐ Other (please list)

Note: *Amelioration techniques are those practices which might be employed to help reduce storage losses (covers, monolayers, cells, compaction, storage management, etc.)*

Grower Agreement

The Cotton Catchment Communities CRC, through the project 'Measurement to improve the water efficiency of on-farm storages in the cotton industry', will pay for an Irrimate™ seepage and evaporation evaluation on your storage, with the following conditions:

1. Data is collected through the existing confidential Irrimate™ commercial network, except that:

    a. The National Centre for Engineering in Agriculture will have access to the entire dataset in order to identify broad trends or themes. However individual data will not be identifiable in reporting and result presentation.

    b. The project will produce a number of publicly available case studies throughout the life of the project in order to promote awareness of the scale of losses and the effectiveness of the evaluation process. Whilst these case studies may focus on the results from an individual evaluation, the landholder will have the opportunity to review the case study before publication. If required, specific details of the landholder name and property name may be removed from these case studies.

2. If the landholder decides to undertake amelioration of losses identified through the initial evaluation, the landholder will permit the project to undertake a second follow up evaluation following completion of the amelioration works. This evaluation will also be provided free of charge.

3. The landholder will need to complete a simple pumping record during the period in which the equipment is installed (typically about 5 weeks).

4. The project contracts specific consultants to undertake evaluations in each region – landholders will be matched with consultants from their region who will negotiate the evaluation process.

I, _____ (name), as the authorised representative of _____ (property/company) agree to have a storage evaluation conducted as part of the project, noting the conditions specified above.

Signed _____

Information Sheet – Irrimate™ Seepage and Evaporation Service

Since approximately 2002, significant work has been undertaken by a number of organisations across Australia to better understand the nature of seepage and evaporation losses and to investigate potential solutions. Some of this work has been funded by and conducted in the cotton industry.

Much of this research was conducted by the National Centre for Engineering in Agriculture, who quickly discovered a need to accurately measure and separate seepage and evaporation losses from storages. They subsequently developed equipment and data analysis techniques to obtain these measurements, and after initial use within the research environment, this equipment was commercialised with Aquatech Consulting as the Irrimate™ Seepage and Evaporation Meter.

Irrimate™ Seepage and Evaporation Meter

The Irrimate™ Seepage and Evaporation Meter (Figure 1) was designed to be able to estimate seepage and evaporation losses from an entire storage, and is believed to be the only equipment available to achieve this. Most other methods for measuring evaporation and seepage (such as atmospheric flux techniques or infiltrometers) rely on point source measurements and do not give a value for the entire storage.

Figure 1 - Irrimate™ Seepage and Evaporation Meter

The meter includes a highly accurate pressure sensitive transducer (PST) (Figure 2) which is installed under the water and is able to measure very small changes in water level.

Figure 2 – Pressure Sensitive Transducer

The PST will measure changes in water level every 15 minutes. Data is recorded and can be downloaded using