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The WRC operates in terms of the Water Research Act (Act 34 of 1971) and its mandate is to support water research and development as well as the building of a sustainable water research capacity in South Africa.

TECHNICAL BRIEF

Irrigation efficiency

Irrigation efficiency training material

A newly-completed Water Research Commission (WRC) study sought to develop a range of intervention strategies to build on the diverse aspirations and skills of rural women, particularly focusing on water and agriculture.

Background

South African water resources will be coming under severe pressure in the next few years. The main drivers of envisaged water shortages are population growth and global warming, which in combination are leading to both greater demand and reduced supply of water.

Making better use of our available water is now becoming imperative. As users within the biggest water sector (in terms of annual volumetric use) in South Africa, irrigation water managers are often called upon to 'improve efficiency', however, when the question is asked what this request practically implies, answers are not as forthcoming.

Major constraints include the lack of a common understanding of the term 'efficiency', inadequate information available for water effective management because of a lack of measurements, the perception that any efficiency initiative will cost the water user money but the benefit goes to the authorities, and also the fear or reduced water use allocations if greater efficiency is achieved.

Training material

In practice, it has been found that commercial farmers and irrigation scheme management are quite willing to invest in practices and technologies that make business sense. However, lack of knowledge on technologies and insufficient human capacity in agricultural water management often prevent this from happening.

As a result, the WRC funded the development of training material to assist both water users and authorities to obtain a better understanding of how irrigation water management can be improved, thereby building human capacity, so that targeted investments can be made with fewer social and environmental costs, by introducing the water balance approach to improved system performance.

The material is the result of more than ten years of research funded by the WRC. Using lessons learnt during the WRC projects, best practices and technologies are introduced and illustrated.

Contents of learning material

The learning material aims to provide a step-by-step guide for improving the performance of irrigation infrastructure by applying the water balance framework.

It comprises the following chapters:

- Understanding irrigation water management
- In-field irrigation systems
- On-farm water conveyance systems
- Irrigation schemes
- Measurements for data collection
- The water balance

The water balance framework can be implemented using a newly-developed spreadsheet based tools of which irrigation water measurement and data collection are key inputs.

Learning outcomes

At the end of this learning experience, the learner should:

- Have a good understanding of the management levels and infrastructure found in irrigation water management systems

- Understand the importance of improving irrigation system performance at all levels
- Know the characteristics of efficient in-field, on-farm and on-scheme irrigation systems
- Have a good understanding of the types of water measuring devices used for irrigation water measurement and their application
- Be able to compile a water balance and make recommendations for improvements of irrigation infrastructure based on the results of the water balance.

More information and updated can also be obtained from the project website, www.waterbalance.org.za

Further reading:
To obtain the report, *Irrigation efficiency training material* (**Report No. KV 342/1/15**) contact Publications at Tel: (012) 330-0340; Fax: (012) 331-2565; Email: orders@wrc.org.za or Visit: www.wrc.org.za to download a free copy.