

Guidelines set to train new generation of extension officers

A newly-published set of training guides on irrigation water management from the Water Research Commission (WRC) aimed at extension officers is set to vastly improve the knowledge base of this imperative link in the agricultural sector.

Article compiled by Lani van Vuuren.



All types of irrigation farmers, whether they operate on a small or large commercial scale, require advice from time to time to remain profitable and improve the sustainability of their operations. For many of these farmers, but especially smallholder farmers, the source of that advice is the agricultural extension officer.

The advancement and expansion of South Africa's agricultural base – particularly small-scale agriculture – remains an important objective of national government. It is an aim that requires improving and extending skills development and training in the agricultural sector, including entrepreneurship training. This should include the training of a new corps of extension officers that will respond effectively to the needs of smallholder farmers and contribute to their successful integration into the food value chain.

LACK OF TRAINING = LACK OF CONFIDENCE

Successful irrigation farming requires much more than just the right irrigation equipment. The science of irrigation management is complex and comprehensive, and therefore the irrigation extension officer requires comprehensive technical knowledge and skills in irrigation management as well as appropriate knowledge and understanding regarding human behaviour in order to serve his farming community effectively.

There are around 390 extension officers currently serving small-scale and commercial irrigation farmers. The extension services offered vary from advisory services for sustainable income generation; providing and facilitating access to agricultural information for improved planning and decision-making; facilitating access to technology and, where possible, providing these technologies; providing and facilitating access to advice on sustainable agricultural production as well as on skills

development; and strengthening institutional arrangements.

Unfortunately, WRC-funded research has found that the extension link has deteriorated in recent years, and that, generally, the current level of training presented by organisations to extension workers for the tasks that they have to perform on irrigation schemes is inappropriate in many cases. "We found that there was no systematic, practical, in-service training provided to extension officers working on irrigation schemes," reports WRC Executive Manager: Water Utilisation in Agriculture, Dr Gerhard Backeberg.

The better the extension service, the better the smallholder irrigation operation. Unfortunately, the opposite is also true. "Smallholder farmers rely first and foremost on extension officers as a source of information, guidance and advice. With extension services lacking or collapsing, this essential support services cannot be provided. In turn, this obviously contributes to less productive smallholder farming, which is in most cases performing below potential."

Information is presently available on various biophysical and socio-economic aspects of irrigation management, and various irrigation courses are offered at universities of technology and agricultural colleges. However, there is a general feeling among extension officers involved in irrigation that this information is not presented in the required format and that the courses do not prepare them adequately for the tasks they have to perform on irrigation schemes.

Essentially, this means that extension officers are generally not equipped with the necessary knowledge base and skills to perform their critical role in the agricultural sector. For many extension officers this results in a lack of confidence, a decline in their credibility and a withdrawal from the communities they are meant to serve. An urgent need was therefore identified to

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GUIDELINES IN THIS SERIES

- *Training material for extension advisors in irrigation water management Volume 1 (Main Report) (WRC Report No. TT 539/12)*
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 - *Part 2: Assessing of soil resources (Report No. TT 540/2/12)*
 - *Part 3: Agro-climatology (Report No. TT 540/3/12)*
 - *Part 4: Irrigation water management (Report No. TT 540/4/12)*
 - *Part 5: Irrigation engineering (Report No. TT 540/5/12)*
 - *Part 6: Irrigation legislative context (Report No. TT 540/6/12)*
 - *Part 7: Irrigation economics (Report No. TT 540/7/12)*
 - *Part 8: Irrigation crop and fodder production (Report No. TT 540/8/12)*
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All farmers, whether operating on a large or small scale, require irrigation advice from time to time in order to maintain sustainable and profitable operations.

restore the self-esteem of these individuals and to improve the service delivery of the extension profession.

TURNING THE TIDE

A first step in rectifying the situation was to define a 'knowledge profile' for the training of extension officers, in other words, to identify the essential, basic knowledge they would require to advise effectively on irrigation water management, Dr Backeberg explains. The WRC therefore initiated a research project to design and test the required learning modules for training of extension officers in mainly the provincial departmental service.

In a project led by the University of Pretoria (UP), learning material was consequently developed for the eight learning areas identified to form the 'knowledge profile' of the extension officer. "This training material covers the main elements which directly or indirectly inform irrigation water management.

Knowledge about these issues will provide the necessary confidence for extension officers to respond to enquiries by farmers and to correctly refer questions for more detailed answers to subject matter specialists," explains Dr Backeberg.

The aim of the learning material is to support tertiary training organisations, such as agricultural colleges and universities of technology, offering agricultural programmes on a NQF Level 5, as well as to support training providers offering short courses in irrigation management. The project has been co-funded by the Department of Agriculture, Forestry & Fisheries.

This set of guidelines is the fourth in a series of research reports compiled by the WRC in partnership with UP on extension in irrigation water management in recent years. "It further demonstrates the productive research output by following a thematic and programmatic approach to investment in research by the WRC," Dr Backeberg points out.

The latest educational offering, consisting of nine parts, is set to help build the necessary skills and competencies required of extension officers to assist irrigation farmers in the learning process they need to undergo regarding irrigation water management. A total of 93 learning modules have been included in the material, which have been divided into technical- and extension-related modules.

The learning package covers the entire spectrum of irrigation water management, starting with a brief overview of the soil-plant-atmosphere continuum, then moving on to agri-climatology, irrigation water management, to irrigation engineering, the irrigation legislative context and irrigation economics. The package also covers irrigation crop and fodder production and general skills required for productive agricultural extension.

According to Dr Backeberg, this research output fills a major knowledge gap by making comprehensive training modules available for in-service training of extension officers. "It is a timely contribution to the priority identified in the Vision for 2030 of the National Development Plan, namely to train a new corps of extension officers for practical support to smallholder farmers."

A focused drive is planned between July 2013 and June 2014 for knowledge dissemination, in which agricultural colleges, FET colleges and AgriSETA accredited and registered training providers will be targeted. This will not only raise awareness of the existence of the new guides, but also encourage the application of the training modules for practical training of extension officers on all smallholder irrigation schemes in South Africa.

Armed with the necessary knowledge and skills a new generation of extension officers will be ready to play their critical part in developing sustainable irrigation agriculture in South Africa. ■

TOPICS COVERED BY THE EXTENSION TRAINING GUIDES ON IRRIGATION WATER MANAGEMENT

- **Soil-plant-atmosphere-continuum:** The soil-plant-atmosphere relationship recognises that all components of the irrigation field should be taken collectively into account when decisions are made regarding irrigation water management. This section serves as an introduction to concepts such as dynamic field balance of water and energy that is required for the flow of water and helps the learner understand the whole picture.
- **Assessing of soil resources:** The objective of this technical guide in soil science is to provide learners with a comprehensive understanding of the soil factors required for land suitability evaluation and land use planning for irrigated agriculture. Specific attention is given to soil requirements (ideal conditions) and tolerances of crops grown under irrigation.
- **Agro-climatology:** This learning material consists of ten modules. The aim is to provide learners with a general overview of the agro-climatic factors that need to be taken into consideration for effective irrigation management. This will enable them to communicate effectively with subject matter specialists and farmers in this regard.
- **Irrigation water management:** The aim of this learning material is to acquaint learners with a comprehensive understanding of irrigation water management principles, introduce them to various irrigation systems that can be selected, an understanding of the layout and operation of an irrigation system and how to set benchmarks for efficient irrigation water management on the farm.
- **Irrigation engineering:** In this guide learners are provided with an overview of irrigation engineering aspects required for effective management such as evaluation and maintenance of irrigation systems. The resultant knowledge and skills will enable the extension officer to communicate effectively with specialists such as irrigation engineers and to troubleshoot on the farm.
- **Irrigation legislative context:** This learning material aims to provide the basic knowledge and understanding required to apprehend the legal environment of an irrigation farmer. Four modules relating to the agricultural policy of South Africa, including the National Water Act, National Water Resource Strategy and Irrigation Strategy, are included.
- **Irrigation economics:** This learning material aims to provide a basic understanding of farm management with the various tools that can assist the farmer to achieve his objectives. These tools and methods are divided into six sections, which include production and resource planning, financial management, marketing, human resource management and risk management. All of these sections are then incorporated into the business plan which forms the roadmap for the farm.
- **Irrigated crop and fodder production:** This learning material provides an overview of sustainable cropping systems, basic understanding of the water uptake by plants, vegetative and reproductive growth of plants, followed by a comprehensive overview of production practices with specific emphasis on the crop irrigation requirements of various crop types.
- **Agricultural extension:** This material addresses the identified skills and competencies as identified for agricultural extension. The 11 modules in this section covers various extension-related aspects, such as communication for rural innovation, extension approaches for agricultural development, leadership and facilitation, group mobilising, holistic farm planning and land evaluation skills.

