

Capacity building

Training the trainers – Guiding extension advisors in irrigation

A recently published study by the Water Research Commission (WRC) has sought to improve knowledge dissemination on irrigation management to the country's extension advisors.

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South Africa faces particular challenges regarding water supply. Rising temperatures and changing rainfall patterns will have further consequences for food production and water supply. At the same time, the National Development Plan 2030 proposes the advancement and expansion of agricultural development through effective land reform and growth in irrigated agriculture. This goal, however, requires skilled and well trained agricultural advisors to support smallholder farmers with decision-making on opportunities open to them.

For many farmers, but especially smallholder farmers, extension advisors play a pivotal role in building capacity through programmed learning and access to information. The WRC identified the need for training of extension advisors, in particularly irrigation management, as this would give

smallholder farmers a better chance of being successfully integrated into the food value chain.

Motivation for WRC project

In South Africa, extension services play an important role in the investment of human and social capital required for sustainable agriculture development. The policy environment for the agricultural sector in South Africa is dominated by three important policy issues: land reform, black economic empowerment and the strategic vision for agriculture. Agricultural education and training has an indispensable role to play in all of these strategic policy issues.

Despite playing such a critical role in especially smallholder agriculture, studies have shown that the extension link has

deteriorated in recent years and become less effective. A previous WRC project illustrated that many educational programmes and curricula offered by tertiary education and training organisations in South Africa are inappropriate and not aligned to the skills and knowledge required by extension advisors to do their work properly.

In many cases this results in a lack of confidence and self-esteem among extension advisors, decline in credibility and therefore withdrawal from the community which they must serve. An urgent need was therefore identified to restore the self-esteem of these individuals and to improve the service delivery of the extension profession.

A first step in rectifying the situation was to define the 'knowledge profile' for training of extension advisors, or the basic knowledge required to advise farmers effectively on irrigation management. This conceptual knowledge profile of the irrigation extensionist does not imply that extensionists should become subject matter experts in each of these identified technical learning areas, but rather that adequate technical knowledge and competence in each of these learning areas is a prerequisite for credible extension service delivery to irrigation farmers.

Already in 2006 the WRC, through a project led by the University of Pretoria, developed learning material (93 modules) for the eight learning areas identified to form the knowledge profile of the extension advisor. This training material includes the main elements required to inform irrigation water management on farm level and have been divided into technical and extension related modules. The aim of the learning material is to support tertiary education organisations, commonly demarcated as further and high education.

This latest project involved disseminating the research output to agricultural colleges; universities of technology; AgriSETA accredited training colleges; FET colleges; commodity organisations involved in irrigated agriculture development; provincial Departments of Agriculture; and international irrigator advisors and professionals.

The report emanating from the project reflects activities and discussions held with various stakeholders involved in agriculture education and training to raise awareness of the training material, but also to encourage and catalyse the possible inclusion into existing curricula and use in short courses for practical training of irrigation farmers at irrigation scheme level.

The discussions with stakeholders have resulted in a number of key messages, opportunities and challenges for shifting the discourse within the educational and training sphere to include irrigation water management learning material in existing curricula offered at agricultural colleges and university of technology.

The aim of the WRC project was to make key actors within the various education and training organisations aware of the learning material and to disseminate the knowledge on the training and learner guides developed by the WRC for extension advisors in irrigation water management, and to identify possible constraints in the uptake of the research knowledge.

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Main messages and recommendations

Extension is a process of capacity building through engagement of individuals, groups and communities so that farmers are more able to deal with various issues affecting them and opportunities open to them. Extension therefore comprises several activities that may provide: a framework for learning, a specific learning event; a process for developing or modifying specific management practices or technologies; individual mentoring and an on-going access to needed knowledge and information.

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The reflections and insight of a strong set of knowledgeable individuals involved in training and extension provide a nuanced image of challenges and shortcomings that are critical to address training and education in irrigation water management. It helped to better understand the underlying challenges at training organisations for the uptake of the learning material.

In summary, there are a number of proposals emanating from the discussions to move forward:

Quality of training in irrigation water management: A positive interest and need exists with all stakeholders to upscale the quality of training to extension advisors, farmers and academic staff/lecturers responsible for training through mainly the offering of accredited short courses. These courses can be offered through private training organisations, universities or agricultural colleges. An important condition will be that, apart from theory being offered, attention should also be given to hands-on skills during these courses. The training product should therefore be designed to address specific competency needs of clients.

Policy enabling environment: The necessary conducive strategies and policies already exist for the role that extension advisors should play in enhancing sustainable irrigation agricultural development, such as Farmer Support Programmes that are implemented in all the provincial Departments of Agriculture. However, the lack of necessary political will to implement these strategies in a way where extension advisors are released to address the real needs of farmers and do what is required of extension, undermine smallholder farmer advancement.

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.

The guides, *Training material for extension advisors in irrigation water management Volume 1 (Main Report)* (WRC Report No. TT 539/12); and *Training material for extension advisors in irrigation water management Volume 2 (Technical learner guides)* (WRC Report No. TT 540/1/12 to TT 540/8/12); *Training material for extension advisor in irrigation water management Volume 3* (WRC Report No. TT 541/12). To order any of these reports, contact Publications at Tel: (012) 761 9300; Email: orders@wrc.org.za or Visit: www.wrc.org.za to download free copies.

Strengthening agricultural colleges organisational capacity

An urgent need exists for reviewing of content on current curricula offered at Agricultural Colleges and Universities of Technology to align with industry needs. Instead of developing new curricula at colleges and universities of technology, the general preference by participants were that updating of existing curricula with information from the learning material will be the best option in the short term.

At some agricultural colleges serious staff shortages necessitate

the employment of young, inexperienced staff, who require additional mentoring and support. This learning material can be of great support to help these young scientists and lecturers with the updating and revision of existing curricula. Overall, much agricultural education and training focuses on primary production rather than on farming as a business – a crucial need for general economic business skills which are clearly addressed in the learning material content.

Very positive findings from the discussions were the general attitude and understanding expressed by participants that

current curricula offered at many colleges and universities of technology are outdated and should be reviewed. The general opinion expressed in the majority of discussion forums and meetings held was that the WRC should play a more important intervening or brokering role in addressing the shortcomings and misalignment of formal education by agricultural colleges and universities.

Explore possibilities of establishment of irrigation water school or Centre for Irrigation Water Management

Participants suggested exploring the establishment of an irrigation water school or Centre for Irrigation Water Management. The private sector can help with the funding of such a project, and also be involved in the training and research envisaged for such a centre.

Policies and implementation of decisions that support the proper functioning of agricultural education and training

Although the necessary policies and strategies with regard to the repositioning of agricultural education and training have been accepted, no concrete actions to implement these decisions have been taken yet. Unless the current position of agricultural education and training is not clarified soon, the degradation of infrastructure (including irrigation infrastructure) and demoralising of lecturing staff will continue.

Clear and distinctive decisions and implementation of an action plan are required to enable agricultural education and training centres to play its role in providing training and short courses to the agricultural sector.

Professional registration of extension advisors

Professional registration of extension advisors open doors for the offering of credit-bearing courses and training events as part of the continuous professional development required to maintain registration. This will help foster ongoing involvement in learning as well as support the national institutional arrangement for recognition an accreditation of learning.

Extension Suite On-line

Extension Suite On-line is an Internet-based application developed by Manstrat Agricultural Intelligence Solutions and provides an important link and information transfer mechanism between agricultural research and extension services.

The system facilitates and enhances the transfer of information between these parties by collecting, collating, interpreting and transforming scientific agricultural data into useful and user-friendly formats for use by extension practitioners and farmers. The possibility of including some of the material as part of this service rendered to extension practitioners were discussed with the developer.

To obtain the report, *Knowledge brokering and dissemination of irrigation management guidelines for training of extension advisors (WRC Report No. KV 356/16)*, contact Publications at Tel: (012) 761 9300; Email: orders@wrc.org.za or Visit: www.wrc.org.za to download a free copy.

