

## WATER AND FOOD

### Exploring learning networks for homestead food gardening and smallholder farming

*The Water Research Commission (WRC) is well known for its high quality knowledge products. The Water Utilisation in Agriculture (WUA) section has, over the years, produced valuable knowledge to guide the harvesting and conservation of rainwater to improve agricultural productivity among smallholder crop farmers and household food producers. This knowledge is useful for especially the many women farmers around the country growing crops to feed their families, and whenever possible selling excess to generate some income. However, one of the problems experienced in the field is that this knowledge does not always reach the intended audience. This is the problem that the Amanzi [Water] for Food project was engaged with.*

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Household food security in South Africa remains a national challenge with an estimated 59% of 13.7 million households being food insecure. Hunger and chronic malnutrition is widespread within this group. Agriculture contributes significantly to the livelihoods of an estimated 4.5 million people who have access to small portions of agricultural land, estimated at 6-12% of household income in a rain-fed context and 21-60% in an irrigated context.

Yet, utilisation of available land water resources for smallholders (0.5-10ha), both in home-gardens and fields remain low. The National Development Plan of government and the most recent

Strategic Plan of the Department of Agriculture, Forestry and Fisheries seeks to increase the number of households benefiting from food and nutrition security initiatives by 200 000, and to establishing and supporting 80 000 smallholder producers. As it is women who are responsible in the majority of cases for farming decisions, they are a key group to target in initiatives aiming for increased crop-production and food-security.

#### **Sharing WRC knowledge resources – starting out**

To address the need to share the valuable knowledge being developed by the WRC with stakeholders in the agricultural learning system, especially also women farmers, a team of

researchers at Rhodes University's Environmental Learning Research Centre worked with a wide variety of stakeholders to develop an action-oriented strategy for knowledge dissemination of rainwater harvesting and conservation knowledge for smallholder crop farmers and household food producers. The variety of stakeholders identified were those that are involved in the agricultural learning system at this level, and included agricultural colleges, research institutions, local economic development officers, extension services, farmers' associations, local media practitioners (e.g. community radio) and farmers themselves.

Two sets of materials were used as focus for the project. These are *Water harvesting and conservation* (originally published in 2011) and *Agricultural water use in homestead gardening systems* (originally published in 2010).



#### *The two main sets of WRC materials used in the Amanzi for Food Project*

These WRC materials promote low cost technology approaches to rainwater harvesting and conservation (RWH&C).

A detailed contextual analysis of the smallholder agricultural sector was undertaken which shows that there was need for curriculum innovation competence development in colleges, as well as practice-based demonstration site development. Additionally, it was found that there was an immediate local demand for knowledge of rainwater harvesting practices amongst smallholder farmers, and also from the Local Economic Development office of the Municipality as it was seeking to develop smallholder farmer capacity and farming innovations.

In initial scoping of how the agricultural colleges who are central to the agricultural learning system were using these materials, found that colleges continue to focus on larger scale farming and mainstream irrigation technologies, despite the fact that water is increasingly scarce, and that agricultural sector is the largest water user in South Africa. Currently all of South Africa's water is allocated, and there is little 'new' water for developing the smallholder farmer sector, especially in the face of climate change challenges. Developing this sector is, however, a key objective in the National Development Plan.

#### **Establishing a learning network and strategy of practice approaches**

To include all who were interested in the RWH&C practice knowledge, it was agreed to establish a learning network structure that was inclusive of all stakeholders in the agricultural learning system. In the Eastern Cape area where the learning

network model was first established, the learning network was named the 'Imvothu Bobomi' learning network, meaning 'water is life'.

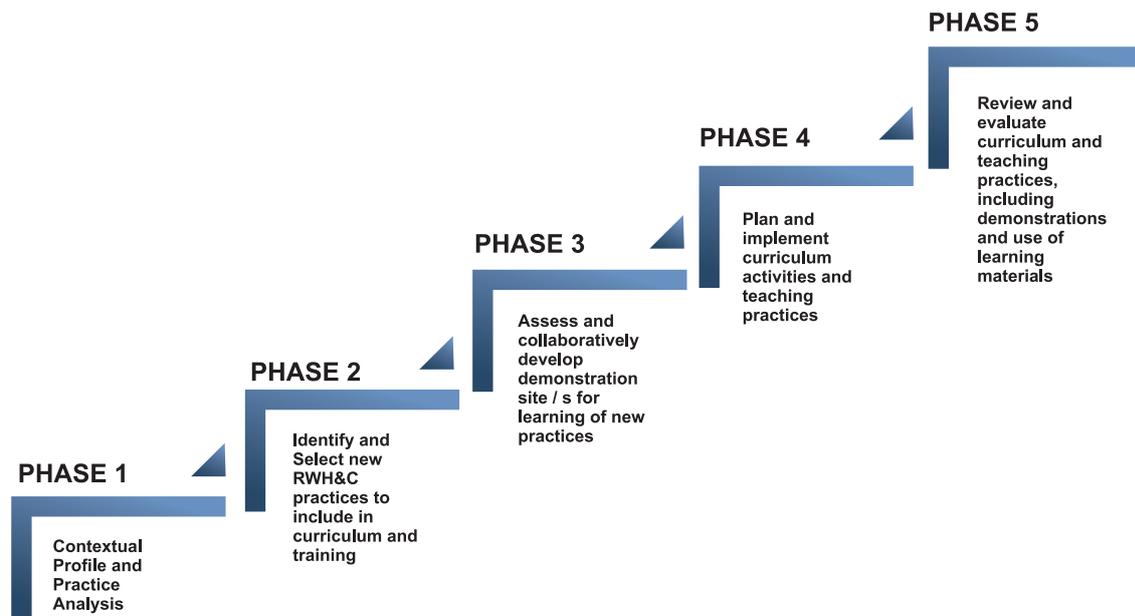
Within this learning network, a Training of Trainers (ToT) programme was established to mediate the new knowledge of RWH&C (offered by the WRC learning materials) and to support the stakeholders in the agricultural learning system to take up and use this knowledge. In the Agricultural Colleges, lecturers were supported to develop curriculum innovation projects which included share demonstration site development.

Other stakeholders (extension officers, Local Economic Development (LED) officers, researchers, farmers and farmers' association members) were also included in the ToT, where they too were supported to develop learning support innovation projects and to participate in the shared demonstration site development process. This brought the value of working in learning networks to the fore, as different stakeholders were able to mobilise their prior knowledge, experience and expertise in a local context, drawing on the new knowledge from the WRC, where the end result was contributions to improved knowledge exchange and farming practice amongst farmers, improved curriculum options for college students, and better support to smallholder farmers to use RWH&C knowledge in local context.

Out of this process, the Amanzi for Food project developed into a social learning innovation partnership between the WRC and Rhodes University's Environmental Learning Research Centre and local partners supported a range of diverse learning processes in this learning network. This provided for an interactive framework that allowed for co-engagement with knowledge around productive demonstration sites development which placed the farmers at the centre of the agricultural learning system.

It also challenged traditional approaches to knowledge dissemination that are largely based on the model of research-develop-disseminate-adopt (RDDA), and offered a more systemic, interactive and co-engaged model for knowledge dissemination. The foundational approach is innovation oriented and relational and practice-oriented. The project adopted a 'Strategy-as-Practice' approach which focuses in on people and the interrelations between people and practice in the emergence of strategy. Here a key feature of the project was the development of productive demonstration sites where relevant RWH&C practices could be viewed in action and used practically. These sites were in the college grounds, on individual farm or garden plots, and on an area of co-operatively farmed communal land. The development of these sites proved one of the most crucial activities in bringing the members of the Learning network together.

Participants on the Training of Trainers course, who were also members of the Imvothu Bubomi Learning Network, included college and university lecturers, agricultural extension officers, agricultural researchers, farmers and members of farmer associations, and a representative from a local economic development agency. The course was facilitated at two levels; one for those involved in the formal training sector, such as the lecturers, and the other for those involved in informal training, such as the farmers, and comprised five phases:



*The 5 phases of the Training of Trainers course.*

Participants could attain a Rhodes University NQF-accredited certificate through the successful completion of assignments and change projects directly linked to their training practices, and the majority succeeded in this.

To quote one of the lecturers at Fort Cox College which shows the bringing together of the materials and new knowledge encountered in the Training of Trainers programme with the development of productive demonstration sites for co-engaged learning: "The use of photographs and videos is one step towards a true learning experience. These shall be employed for the teaching of farm ponds as a RWH technique to college students. Of utmost importance will be the demonstration site to be erected at Fort Cox College of Agriculture and Forestry. College students, high school students, agricultural professionals, and farmers will all converge at this site for an extra-ordinary learning experience in the construction, observation, guided manipulation and use of the site."

Curriculum innovation modelling at the college has since seen the teaching of students in rainwater harvesting and conservation using the established demonstration site through agricultural engineering (irrigation), crop production and horticulture, and soil and water conservation courses.

A series of radio programmes were broadcast through the agricultural programme on the Forte FM community radio station based on the University of Fort Hare campus in Alice. Each programme involved a panel of speakers from the Imvotho Bubomi Learning Network sharing ideas about RWH&C and their experiences with this with the listeners. Listeners were encouraged to call in with questions and their own experiences, to which the panellists could respond.

For many members of the network this was the first time they had been into a radio studio, and it proved a valuable experience in using community radio to share their ideas with other lecturers, farmers and extension officers. While some were understandably nervous at being broadcast, others proved

to be natural radio personalities, and took to the medium without any apparent effort or discomfort. It was also the first time the local community radio had been used as a conduit for communicating rainwater harvesting and conservation issues. In so doing it led to some farmers taking up and implementing the practice. One farmer said "I was led to water harvesting by information from my extension officer at a farmers' meeting and listening to a radio show".

However, it was only possible to implement one such learning network in some depth over a period of 18 months, but shorter ToT programmes were run, and other learning networks were emerging. A key extension to the above, was development of a media component for facilitating the expansion of access to, and use of the experience and RWH&C knowledge and materials. This involved development of a project website 'Amanzi for Food' allowing quick access and association with the key message of the programme ([www.amanziforfood.co.za](http://www.amanziforfood.co.za)) which allowed multi-levelled access to the materials via various access tools, including a 'navigation tool' which served to be critical to the whole knowledge access and dissemination process, links to other social media, including a Facebook page, blogs and news items and links to other websites where the RWH&C knowledge is being shared.

Posters and Youtube videos were also developed and pilot tested to assist with visualisation of the RWH&C practices. Additionally, a community radio programme was established with a radio handbook produced out of the experience of designing and hosting the radio programmes. A significant finding out of the media component is that the various forms of media operate in relationship, requiring an integrated approach to media development for enhancing knowledge dissemination.

Importantly, the project has left some genuine tangible benefits for farmers in the Learning Network, and for agricultural training organisations.



### The model attracts national and international attention

The co-engaged knowledge dissemination / social learning model that has been developed by the project has attracted a lot of attention, especially because it has led to actual curriculum innovations in colleges while at the same time supporting farmers to improve their food production via use of rainwater harvesting and conservation practices. The project won a *Mail and Guardian* 'Greening the Future' award in the category 'Women in Climate Change'. Post-graduate students on the project were given the Vice Chancellors award for community engaged research, while the project as a whole won the Vice Chancellors Community Engagement Award at Rhodes University in 2016. The project was also selected for evaluation within the Department of Higher Education and Training's National Skills Development Strategy III, as it models how partnerships in a local context can improve agricultural education and training and how the colleges are situated within and can service the wider agricultural learning system. Additionally, the project was also selected as a model project dealing with critical supply and demand issues in the Partnership for Green Economy's Learning programme, and was presented at the PAGE Inter-Ministerial Conference in Germany last year.

### Expanding the programme

Following this, in 2018 the project is being expanded to two other provinces where the learning network model is being developed further. This is helping with further implementation of the innovation centred action oriented strategy, involving the multi-actor Training of Trainers programme, more agricultural colleges in South Africa (and potentially elsewhere), the media-based social learning components, and further collective RWH&C demonstration site development which benefits the women food producers in practice, enhancing their food production systems, while benefiting the colleges through practice-based learning sites, and curriculum innovations. These also benefit local extension officers and the municipality's interest in green economy practice development via their smallholder farmer's development scheme. The programme also benefited the local radio station, offering local development news, and youth

who were engaged in internships, by offering them practical experience.

### Overall contribution of the project

Overall, the project offers a framework for a new, more engaged model of water education, training and social learning responsiveness that offers multi-benefits for all stakeholders associated with the water value chain, leaving lasting innovations in the colleges, or learning centres. The private sector could greatly facilitate this process by supporting supply of the technologies needed for small scale RWH&C practices for smallholder farmers in low cost formats.

This model is based on the concept of 'relational goods', meaning that for the smallholder and household farming sector to flourish, training models that develop relational goods (being shared new goods, concepts, or practices) that are developed co-operatively via new multi-actor-based learning and training interactions are needed. What was innovative in this case, is that the normal 'traditional' service providers of education and training, namely the colleges, were also part of – in fact central to – the social learning innovation system. This addresses an emerging problem in Africa and elsewhere that much social learning innovation tends to operate outside of the formal government systems of training. Including the colleges as central to the social learning innovation and production of water value chain 'relational goods' allows for a more sustainable approach to water education and training innovations. The impact is innovation in the learning system, as well as immediate practice benefits for multi-stakeholders.

To order the reports, *Water use and food security: Knowledge dissemination and use in agricultural colleges and local learning networks for homestead food gardening and smallholder farming Volume 1: Research and development report (Report No. 2277/1/16)* and *Volume 2: Action oriented strategy (WRC Report No. TT 694/16)*, contact Publications at Tel: (012) 761 9300, Email: [orders@wrc.org.za](mailto:orders@wrc.org.za) or Visit: [www.wrc.org.za](http://www.wrc.org.za) to download a free copy.