

Smallholder irrigation

Recipe for success – exploring the tools farmers need to succeed

Smallholder irrigation farmers require more than infrastructure investment and training to make them succeed, as a Water Research Commission (WRC) study has discovered.

Article by Sue Matthews.



Over the past 25 years, the WRC has funded an extensive body of research on smallholder irrigation schemes. A review of knowledge generated through this research was undertaken by Wim van Averbek and colleagues in 2010, and published in *Water SA* in January 2011. At that stage, only 206 of South Africa's 302 schemes were operational, and most were running at a fraction of their capacity. The problem was related to the fact that the schemes were located mainly in the former homelands, and many collapsed or went into decline when the parastatals responsible for them were closed post-1994 and their management transferred to the farmers.

Government has made efforts to revitalise the schemes, but the interventions typically focus on infrastructural improvements rather than management and socio-economic issues. Two such schemes – both situated on the floodplains of the Pongola River – serve as study sites for a WRC-funded research project currently being conducted under the leadership of Prof Edilegnaw Wale Zegeye of the University of KwaZulu-Natal's School of Agricultural, Earth and Environmental Sciences.

The Ndumo B scheme is located in the northernmost reaches of the province, close to South Africa's border with Mozambique, while the much larger Makhathini scheme lies just downstream of the Jozini Dam. In essence, the research is exploring opportunities and constraints presented by the schemes in facilitating sustainable rural livelihoods and entrepreneurial development, but a novel aspect is the focus on farmers' psychological capital – their hope, optimism, resilience and self-efficacy.

"It is common knowledge that farmers working in the same community – with similar resource endowment and faced with similar institutional and infrastructural constraints – are adopting different strategies, responding differently to incentives, calling for different interventions and achieving different livelihood outcomes," note the project team. "While some take advantage of opportunities when they arise, others do not. While some wait and expect the government to do everything for them, others make their own effort and decide on their destiny, act and mobilise available resources. While some are confident



This Makhatini community gardener cultivates tomatoes, cabbage and spinach on his 0.1 ha plot.

in farming as a means of supporting household livelihoods, the others are not. While some give up easily when faced with challenges, the others do not.”

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The project team aimed to explain these differences using the ‘PsyCap’ concept. They gathered data during three week-long field visits to each of the schemes in 2015, using trained enumerators, guided focus group discussions and structured questionnaires, which focused mainly on sources of livelihoods, asset or capital endowment, water availability and irrigation, cropping patterns, agricultural production and marketing.

Agricultural producers in and around the two schemes could be roughly differentiated into five different types: scheme irrigators, independent irrigators, home gardeners, community gardeners and non-irrigators. This partly explains why irrigated crop production was found to be only the second most important source of income for the farmers sampled, with temporary employment, livestock, remittance, arts and craft, rain-fed crops and permanent employment being lower in order of importance. For home and community gardeners, farming is mainly a source of food, rather than income.

What is somewhat surprising, though, is that the primary source of income in the rural areas was welfare grants, such as child

support, old age, disability and foster grants. The project team note that these grants have likely contributed to the farmers’ entrenched mindset that they are entitled to government support, as well as their low psychological capital to ‘make things happen’ using the resources and assets they do have. Furthermore, farming is considered an unattractive economic activity by the youth, who consider it an old-fashioned and dirty occupation that does not bring quick money.

In their progress report, the project team suggest various ways of addressing this. For example, the provincial Department of Agriculture and Environmental Affairs (DAEA) could arrange field visits and mentorship programmes for smallholder farmers, aimed at boosting their confidence and hope in agriculture when they see how more experienced, entrepreneurial or successful farmers operate.

“The attitudes of young people towards farming needs to be changed and the policy of the government should deliberately create conditions that encourage young people to be involved in farming, not only as workers but also as owners of farming businesses,” they write. “The long-term focus should be on developing entrepreneurial spirit from young ages. If established smallholders can run their farming profitably, the perception will change over time.”

Mentorship programmes and additional training could also help to address some of the more practical issues that act as barriers to success. Although the majority of farmers have received some sort of agricultural training from DAEA and/or various non-governmental organisations and suppliers, there is a clear need for training in financial management and business operation.

“Most of the farmers do not know whether they are making a profit from their produce as they don’t distinguish farm operations from family operations, and do not always keep records of their yield, input costs, household consumption and marketable surplus,” note the project team.



Community gardeners in Makhathini are sourcing water from the river located a kilometre away. The water is stored using buckets.

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Even the training that the farmers have received is often not put into practice because of limited resources, irrelevance to their situations and lack of finance to buy equipment or materials. Unlike large commercial farmers, smallholder farmers typically do not have access to credit and cannot take advantage of economies of scale in marketing, transportation and acquiring services such as tractor hire. Collective action organisations in the form of cooperatives and farmer groups can play a valuable role in reducing costs and increasing bargaining power, but many farmers are averse to them because of previous bad experiences. Some view cooperatives as a tool being used by government to control them, while others cite issues of mistrust, accountability and the ‘free riding’ syndrome as major problems. Corruption and nepotism displayed by the leadership, as well as different visions among members, were additional problems mentioned by the farmers surveyed.

Relations between farmers and buyers are also poor, with low levels of trust. Farmers often fail to consistently meet their market obligations in terms of quantity and quality of produce, although this may be through no fault of their own. The irrigation systems are often faulty or non-functional – hindering production – while pest outbreaks are common. Most farmers cannot afford to buy pesticides, nor the fertilisers that would encourage bumper crops.

Market access is also affected by such ‘real-world’ problems as the poor condition of roads. All of these factors mean that farmers mostly sell their produce at low prices to local hawkers, instead of targeting high-value markets further afield. Consequently, farmers barely recoup their costs, particularly at the Ndumo B scheme, where the monthly electricity bill for pumping irrigation water amounts to R700-900/ha/month for each farmer. The Makhathini farmers benefit from a government subsidy, and only pay about R2 700/ha/year.



The research project is exploring opportunities and constraints presented by smallholder irrigation schemes in facilitating sustainable rural livelihoods and entrepreneurial development.

Currently, the two schemes cannot accommodate any more farmers, with the only options being leasing, borrowing and renting. However, because such arrangements are generally informal, the farmers have no security of tenure.

“Land owners can always claim their land at any time, making capital investments like improving drainage or applying organic manure on the land irrational,” write the project team. “One of the inherent challenges in this regard is the ‘unquestionable’ and absolute power of traditional leaders on land. There is a perception by the small producers in the rural areas that any time the traditional leader can take away the land, or change the tenure arrangement.”

Clearly, government intervention is required to address rights issues relating to land and water, but the private sector can assist smallholder farmers through, for example, local procurement of their products, offering input and credit schemes, and rewarding excellence in sustainable farming. There are even opportunities for ‘techies’ to get involved. The project team note that almost all the farmers have cellphones, so an app developer could make a valuable contribution by creating an online directory, where farmers could access market prices, agricultural services and extension advice.

Since completing this phase of the research, the project team has focused on determining the aspirations and goals of farmers to expand irrigation crop production from homestead gardens to irrigation plots, and/or from one to multiple irrigation plots on the two irrigation schemes. They are also formulating appropriate development paths for establishing sustainable farming businesses with crop enterprises, in order to increase food security, profitability and employment opportunities.

The various research projects on the theme of entrepreneurial development being funded by the WRC emphasise the importance of establishing small business in agriculture, notes WRC Executive Manager, Water Utilisation in Agriculture, Dr Gerhard Backeberg. “These small business opportunities must be identified along the whole food value-adding chain, from ‘farmer, field, to consumer fork. The challenge is to fully exploit the potential for employment generation and poverty reduction in both rural and urban areas.”