

Indigenous knowledge and water

Insights into indigenous coping strategies to drought

A completed Water Research Commission (WRC) study investigated the traditional coping strategies against drought conditions by farming communities in the Karoo.

Background

There is a gap in understanding and recognising the value of indigenous knowledge in reducing vulnerability of rural communities to impacts of hazards such as drought. Local people who are most vulnerable to these impacts are left out of the research in many studies.

It has been proved by many recent studies that local or indigenous knowledge holds valid, meaningful and relevant answers for coping with current and future droughts. Studies capturing local indigenous knowledge of the impacts, experiences, coping and adaptation strategies (or risk management strategies) of past and current droughts in South Africa are lacking, although indigenous people such as the Khoisan, have been living and coping with extreme environmental conditions such as drought for a long time.

This WRC project sought to document and capture indigenous coping and adaptation practices of farmers in the Karoo to limit further loss of this valuable knowledge through limited intergenerational transfer or colonisation by mainstream modern scientific knowledge.

Methodology

A detailed desktop review of indigenous knowledge was carried out and case studies from all over the world were documented. The Intergovernmental Panel on Climate Change (IPCC) list of adaptation and action strategies for agriculture was also presented.

The selection of farmers for the study was undertaken in collaboration with extension officers and project advisers.

Methods for capturing indigenous knowledge were also reviewed and appropriate methods were selected for the study. Participatory research methods were also reviewed and appropriate methods were selected for the study.

Participatory research methods were adopted for the whole study, particularly in interactions with the farmers. Semi-structured interviews and meetings were conducted with District Extension Managers, field-based extension and Landcare officers.

Three methods were selected for collecting data from the farmers, viz semi-structured interviews, focus group discussions and field observations.

Result and discussion

A wide-ranging list of drought indicators was compiled from interviews with the farmers. Farmers understood well how the behaviour of certain animals and plants meant that drought was approaching.

Wind direction, and changes in temperature were some of the signs used by the farmers. The signs were consistent with indigenous knowledge signs collected from other regions of Africa although the plant and animal species were different.

The reason attempted to develop various typologies for assessing indigenous knowledge in the Karoo. The most appropriate method was found to be the one using farmer systems of crop, mixed crop-livestock and livestock systems.

The IPCC approach of presenting the data in form of impacts, coping and adaptation strategies was adopted.

Corresponding scientific methods were also presented.

Crop systems consisted for horticultural farms. Farmers had devised methods of conserving moisture such as using bottles to moisten the soil slowly, mulching and shade netting. They used manure and household (kitchen) garbage to improve soil fertility.

Mixed crop-livestock systems had developed many coping mechanisms and the farmers had also developed adaptation strategies that ensured the systems kept operating even during severe drought.

Fruit orchards were saved by reducing irrigation levels, and changing cultivation to high-value horticultural crops. Some farmers focused on single enterprises to keep the farms in operation. Other farmers had adapted by changing their systems from cropping to more drought-resistant livestock only systems.

Livestock farmers were the most resilient to drought. Some of the strategies adopted by the farmers dated back centuries. Migration with animals to better grazing lands was one of the oldest coping mechanisms used by livestock farmers.



Lucerne harvesting on a smallholder farm outside Oudtshoorn.

Farmers also purchased lucerne from other farmers or far off areas to feed their animals. Conserving grazing lands through long-term paddocking and rotating camps was another long-term strategy used.

Some farmers also resorted to early marketing of livestock, destocking and leaving the breeding herd intact and also manipulating feeding strategies to conserve the herd. Long-term strategies included breeding for survival during

drought, changing breeds, and changing systems to low input ostrich or game farming.

Livestock farmers also developed methods of conserving water through rainwater harvesting from mountain slopes, construction of stock dams for water storage and use of windmill-pumped boreholes. Building silt traps/sluts to prevent dam siltation and the construction of contours across slopes to conserve soil were other long-term strategies.

The identified coping and adaptations strategies adopted by farmers in the Karoo indicate systems that have evolved over a long period of time. Some traditional methods have now been replaced with modern, more efficient methods, for example, flood irrigation has been replaced with water conserving drip irrigation.

Although science has provided new methods of predicting weather, farmers still use their own traditional methods concurrently with modern methods. Farmers also continue to use century-old methods of grazing, soil and water conservation. There is a need to integrate these traditional systems to increase farmer resilience to drought in the Karoo.

Result and discussion

There are unique farmers in the Karoo who do not necessarily fit the definitions of subsistence, smallholder and commercial farmer. Classifying the farmers according to systems and activities allowed easy documentation of indigenous knowledge, and the use of impacts, coping and adaptation also made clustering of the information easy.

There is a rich knowledge based of indigenous local knowledge in the Karoo that needs to be shared with the farmers and other relevant stakeholders. There is also a need to find mechanisms of using this knowledge to improve farmer resilience to drought and increase their adaptive capacity.

Further reading:

To order the report, *Insight into indigenous coping strategies to drought for adaptation in agriculture: A Karoo scenario* (**Report No. 2084/1/15**) contact Publications at Tel: (012) 330-0340, Email: orders@wrc.org.za or Visit: www.wrc.org.za to download a free copy.