

AGROECOLOGY CASE STUDY



Zimbabwe farmer-innovators quietly define food sovereignty

Faiseni Pedzi explains part of his interconnected water harvesting set up

Mr. and Mrs. Sithole and visitors on their farm that used to be all rocks

The Phiri Award for Food and Farm Innovators

Food sovereignty encompasses people's right to sufficient, healthy and culturally appropriate food for all, localising food systems, valuing and respecting food producers, building their knowledge and skills, and working with nature. The Phiri Award for Farm and Food Innovators Trust was founded in 2013 by a group of Zimbabwean practitioners, academics and researchers to recognise, celebrate and spread the achievements of farm and food innovators in Zimbabwe and their contributions to food sovereignty. The Phiri Award recognises that innovation is necessary for agricultural and economic development.

Professor Mandivamba Rukuni, the Chairman of the Trust says, "The Trust recognises the work of ordinary farmers doing extraordinary things grassroots innovations. They do not need to go to university to be innovators, but learn and innovate by doing."

Unfortunately, the role of farmers in developing innovation is given very little recognition by the research community. The Phiri Award seeks to change this situation. Communities (UCT) covering two Rural Communities, those of Diouroup and Tattaguine.

Agricultural Innovation and Innovators

Chema, Gilbert and Roseboom (2002) define agricultural innovation as activities and processes associated with the generation, production, distribution, adaptation, adoption and widespread use of new technical, institutional, organisational or managerial knowledge in the agricultural sector. Farmer innovators are individuals or groups of farming communities who innovate on their own initiative often in response to a new challenge or opportunity, building on local knowledge, and using own and external ideas; they are not model farmers groomed by projects to adopt transferred technologies (Waters-Bayer & Meijboom, 2013). One of the defining features of farmer innovations is that they incorporate the needs and interests of the poor while stimulating their growth (Heeks et al., 2013).

Agricultural innovations comprise two main dimensions:

- Technical, concerned with cropping, livestock, fish farming, water management, post harvest storage, handling and processing, value addition, etc; and
- Socio-institutional, concerned with labour organisation, collective production, bulk buying, market organisation, collective marketing, and saving and credits, etc.

John Wilson, a Trustee of the Phiri Award, sees farmer innovators as "Farmers who develop something new from experimenting and study by understanding problems, asking questions, trying things out, learning from trying things out, continually adapting and improving for more effectiveness, and being practical, not just trying things out for the sake of it."

Documentation and Diffusion of Farmer Innovations

The documentation and diffusion of farmer innovations under the Phiri Award are intended to support and encourage positive outcomes as given below.

- Other farmers learn about and adopt innovations developed by fellow farmers
- The development of a culture of continuous knowledge generation and innovation among farmers in their social ecological environments
- Scientists recognise the key role of farmers in the process of innovation and link and work with farmer innovators
- The revitalisation of people's link to their dynamic cultures and to nature

It was against this background that the Phiri Award nominated 12 farmer innovators in 2013 and commissioned the documentation of their innovations in March 2014. Five out of these 12 met the criteria of farmer innovators and the other seven were considered good farmers who had effectively adopted innovative water harvesting and farming techniques and produced plentiful food.

Innovations by the Five Farmer Innovators

The case studies suggest that there were two kinds of problems/opportunities that triggered innovation: agro-ecological conditions and socio-political considerations. The agro-ecological conditions that prompted farmer innovation included low rainfall, dry spells and Cyclone Eline all of which could be linked to climate change. Other factors were the topographical features of the farmland like mountain slopes, rocky outcrops and valleys/riverbanks. There was one exceptional challenge, that of moles, which affected food production. The socio-political problems that inspired farmers to innovate included household food, nutrition and income insecurity and the resultant disharmony and conflict. Other farmer innovators cited a moral obligation to meet some of the ideals of the liberation struggle (fighting for land) and to leave the world (farms) with greater productive potential (ecological infrastructure) for future generations. The farmers drew upon different ways of knowing, joint work to overcome labour demands, and pulling together material and agricultural resources to manage production.

Table 1 below describes the agricultural innovations that were made by the five farmer-innovator nominees. It shows that four farmers focused on technical innovations while one covered both technical and



Mr Mawara and the effects of his water harvesting

socio-institutional innovations. The innovations show that at the heart of agricultural innovation lies soil and water related improvements.



Bouwas Mawara

Table 1. Summary of the documented innovations of the five Phiri Award nominees

Name of innovator	Nature of innovation
<i>Theme: Soil improvement, water harvesting and conservation, and integrated agriculture involving collaboration and networking</i>	
Bouwas Mawara	He harvests huge amounts of water using contours and uses the water primarily for horticultural production in the dry season. He has an extensive irrigation system involving pipes that draw away excessive water from the fields in the rainy season and irrigates the fields in the dry season. He also rears livestock and fish and grows fruit. He co-founded an innovators' platform to sharpen, share and disseminate innovations.
<i>Theme: Soil improvement, water harvesting and conservation, and integrated agriculture</i>	
William Gezana	He rehabilitated land that had been severely eroded by Cyclone Eline. He combines group watershed management, water harvesting, land rehabilitation, nursery production, fish farming, small livestock keeping, indigenous tree planting, crop rotation, irrigation and horticultural production. His work with fellow farmers is supported by a local NGO.
Wilson Sithole	He converted a rocky, non-cultivable piece of land into productive land by removing the rocks through heating and breaking them, and adding compost. He harvests water using trenches and his roof. He uses the 're-claimed' land for the production of bananas, citrus fruits and pineapples.
Faiseni Pedzi	He harvests water using deep contours and has developed an intricate system to distribute water in his plots using 'valves' and canals. The system enables him to direct water to any desired point on his land. He grows crops throughout the year and integrates this with fish and livestock raising and fodder production
<i>Theme: Pest control</i>	
Paguel Takura	He developed an effective mole trap and an associated process to trap and catch moles, which are a significant pest in the area

Trajectories of Farmer Innovations

The cases studies suggest that an innovation process is not linear but iterative. The general pattern of innovation development may be summarised as follows:

a. Problem/opportunity identification: Each innovator responded to an adversity or limitation in agricultural production that he was facing. At the same time, each was driven by personal curiosity and the needs of family, community and society. At times, the starting point was the mere questioning of prevailing wisdom concerning one or more aspects of farming. Such a question could be, for example, "Do the contour ridges that are promoted by the agricultural authorities and which drain water away from our fields serve our agricultural production interests?"

b. Initial trial and error experimentation: During this phase, the innovator draws on different knowledge sources and material resources to tackle the challenge. Before the solution is found, innovators tend to get discouraged by ridicule or stigmatisation by fellow farmers. Typical remarks include: "He is insane"; "He takes marijuana"; "He practises witchcraft" and "He will soon die from overworking himself".

c. Initial breakthrough: At this stage, the creative idea works on the ground. The innovator becomes confident and begins to reap benefits from his/her effort. Criticism gradually dies down. Some members of the community begin picking up some aspects of the solution and directly or indirectly benefit from doing so while others move from ridiculing the innovation to sabotaging its application to try and prove their point.

d. Perfection and expansion of innovation: The innovator keeps on looking for additional creative ways to build on the innovation. For example, those whose innovations initially focused on soil or water improvement may expand into agricultural productivity. Such applications may include others from different backgrounds and resources who are working in slightly different agro-ecological settings. The experience that is used to perfect or expand the innovation is gathered over several seasons. Feedback from early adopters and other interested stakeholders assists the innovator as well.

The process of developing and perfecting the innovation generally takes more than one agricultural season as results may not manifest within a year. Also certain conditions like droughts and above average rainfall may occur several years apart and these need to be taken into consideration.

Benefits Arising from the Farmer Innovations

A wide range of benefits for the local people, local economy and planet have been generated through the work of the farmer innovators. These include the following:

- Made more water available for agricultural production during and after the rainy seasons
- Increased arable land through improving soil moisture and fertility
- Enhanced agricultural productivity and production through more intensive use of the land across seasons
- Enabled the growing of a wider range of crops, including perennial crops and crops that local women have more control over, thus increasing household food and nutrition security and resilience during droughts
- Improved household income, which enabled the farming households to acquire productive assets and pay for the school fees of their children

e. Scaling out the innovation: When there is sufficient evidence that the innovation works, the innovator responds to demand by creating a structure that enables its dissemination. This may arise from having to attend to many fellow farmers who come to enquire at different times, thus 'disrupting' the innovator from performing his farming activities. In other cases, scaling out takes place when local development organisations recognise the innovation and find ways of linking other farmers with the innovator. Most of the farmer innovators in this report experienced difficulties in the scaling out process.

A key lesson from all the nominated farmers is that farmer innovators who live in close proximity with fellow farmers have to overcome both social and technical obstacles. This can only be done through applying intellectual, physical and emotional effort in the innovation journey. Perseverance is therefore an essential quality for farmer innovators.

- Enhanced farmer confidence in experimentation, overcoming adversity, and building local community and ecological resilience through an accumulation of breakthroughs

The case studies show that farmers are developing important technical and social innovations. They underscore the value of setting up initiatives such as the Phiri Award which seek to recognise and upscale farmer innovations. More importantly, the findings show that farmer innovators are addressing AU policy objectives by:

- offering creative agricultural solutions to the problems being faced in their respective social and ecological environments;
- reclaiming and extending arable land by improving the soil and increasing water supply; and
- increasing food supply.

The link between farmer innovators and formal researchers will need to ensure that one way of learning does not prevail over the other. This means that efforts should be made to enable farmer innovators and formal researchers to work together in ways that allow farmers to feel comfortable and respected.

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