

Securing the livelihoods of small-scale farmers in Ethiopia



Above: Figure 1: The landscape is dotted with water harvesters, as most farmers now own one in Azgo



Figure 2: Additional income enables farmers to change their roofs to tin, allowing them to collect water runoff and requiring less frequent replacement than thatched roofing

"A land without animals is not possible. Land requires food and animals require the land's food. So they feed each other."

Introduction

Water is one of the most scarce resources for African farmers. Access to enough water in semi-arid regions is a huge challenge and shortages can lead to the loss of lives and livelihoods in times of drought. With climate change, water conservation will only become more imperative.

Ethiopia has one of the largest populations of ruminant livestock. The Azgo region in Ethiopia has suffered severe droughts in the past. A study was conducted in Azgo to highlight the importance of livestock in securing the livelihoods of rural communities and establish how investments in water harvesters have impacted this. Water harvesters were originally provided free or subsidised by the government. Nearly all the households in Azgo have invested in them. Access to this simple technology for storing water has been found to dramatically improve farmers' incomes by up to ten-fold.

This study was a joint project of Compassion in World Farming, CGIAR - Challenge Programme in Water and Food, International Livestock Research Institute (ILRI), International Water Management Institute (IWMI) and the Amhara Agricultural Research Institute.

Methodology

The study population was 300 households in Azgo in the Amhara region of Ethiopia. The study was conducted from July to August 2012 with a sample of 15 – 20 farmers that headed households which had water harvesters and depended on livestock for their livelihoods. Both male and female household heads were interviewed.

A preliminary meeting was first organised with all the sample farmers. Once they agreed that they would be happy to participate in the survey, individual meetings were arranged. Farm visits followed to learn about the farmers' cropping, livestock and water management practices.

Key Findings

The study yielded several important findings which are given below in terms of the situation of the farmers and the main gains they have experienced from investment in water harvesters.

The Farmers' Situation

- Originally provided free or subsidised to all by the government, today purchasing of the membrane is now only subsidised if the household falls under the governmental food security scheme. The full price is 4,515 Ethiopian Birr (£157) while the subsidised price is 2,000 Ethiopian Birr (£70). In Azgo, all but a few farmers have such a structure, most buying theirs at subsidised prices although a few obtained their first water harvesting material free at the beginning.
- Water harvesters are designed to store the excess runoff of rainfall collected during the rainy season. They are built by digging a hole approximately 3m deep by 4.5m wide. This is lined with a geo-membrane which is impermeable and made in a local factory or imported. This simple structure and basic material make the technology easily accessible to small-scale farmers.
- The biggest challenge to attaining a water harvesting structure is the digging. The terrain of Azgo can be very rocky, but the farmers work together and dig holes for one another in turn.
- The farmers each have a household of around 4 or 5 members to support. They typically grow cash crops and grain on about a hectare of land. Most farmers have a number of livestock, usually a cow; a few goats, oxen and donkeys; and some have chickens as well. The number of livestock correlates directly with the wealth of the farmer. Richer farmers may also have a camel.
- Prior to the acquisition of water harvesters, farmers would often have to sell some or all their livestock by the end of the dry season in order to buy food for the family. Prices would usually be at their lowest then. Cash crops were traditionally grown to take advantage of rainfall, but this also meant selling when the price was lowest due to surpluses during seasonal harvests.



Figure 3: Chickens are kept for eggs and meat

"You can re-plant crops, but when you sell your animal you will never have the same one back."



Figure 4: Here a farmer has multiple water harvesters. The nearest is still under construction.

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The Main Gains

- By investing in a water harvester, each farmer is now able to water his crops throughout the dry period with the stored water. The farmers interviewed reported an immediate increase in yield following their investment in a water harvester. Typically, a farmer would try to purchase another within two years. Many of the farmers in the area now have two to three water harvesters each.
- The water harvesters allow the farmers to achieve bigger yields at different times of the year, thus being able to sell their harvests when prices are high. Farmers report that one water harvester can typically increase a farmer's income by ten-fold. This has the additional effect of safeguarding the farmer's livestock which are invaluable to the mixed farming system.
- Those with more than three harvesters often have a camel, which is a sign of significant wealth. The camel provides further income through being rented out to other farmers in the area for carrying large loads.
- The households get most of the protein in their diet from pulses. Meat is eaten not more than a few times a year, usually during special celebrations in the village. While livestock numbers have increased, the farmers' meat consumption is still relatively low, but this has increased by up to double what they would have had over the year previously. Families with higher incomes are now able to feed their children the eggs from their farms instead of selling the eggs at the market as they used to do before.
- The housing structure has also changed in Azgo; the traditional circular houses with thatched roofs have been upgraded to rectangular houses with a side stable and corrugated tin roofs.
- The children are all schooled in the area now, although those in high school have to walk over 15 km. Farmers with more than one water harvester often have enough money to purchase a house near to the school for their children to stay in during the week.



Figure 5: Cattle are used for ploughing the fields and provide manure to fertilise the soil

Considerations for Upscaling

Several lessons/recommendations for upscaling water harvesting in other villages can be gleaned from the study:

- Other villagers in the Amhara region have learnt from the Azgo farmers who visited them to encourage them to invest in the technology by sharing their experiences and assuring them that the investment in water harvesters gives good returns. Some farmers in these other villages have taken up the technology since. This is a good strategy for upscaling.
- The materials required for the water harvesters can be produced domestically and therefore made easily accessible to farmers.
- The geo-membrane needs to be very durable, particularly in stony areas where damage to the membrane is more likely, and as it is exposed to sunlight, it therefore degrades over time. Replacements are needed every two to three years. However, the profit made from the technology enables farmers to invest in a new membrane. If the material could be made more durable, this would increase the returns from investment.

Conclusions

In semi-arid areas of Africa, access to a simple technology for storing water has been shown to dramatically improve the lives of farming households and farm animals. This study found that year-round access to water increased farm yields by up to ten-fold; improved food security, nutrition and farm animal welfare; and reduced poverty in small-scale farming communities in Azgo in Ethiopia.

This simple water conservation technology has enabled farmers to water their crops throughout the dry season, bringing them higher yields at different times of the year which has allowed them to take advantage of higher market prices for their harvests.

The water harvesters have further safeguarded the farmers' livestock which are invaluable to the mixed farming system as a means of draft power, haulage and transportation as well as a source of manure; food like eggs, meat and milk; and animal hide. Having livestock also helps improve soil fertility which in turn positively affects crop yields. This study shows that small-scale mixed farming can provide sustainable livelihoods when farmers are given access to the right tools to succeed.

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