

CASE STUDY

SECURING THE LIVELIHOODS OF SMALL-SCALE FARMERS IN ETHIOPIA



THE CHALLENGE

Mixed farming contributes to 60-70% of Ethiopian livelihoods¹. The sustainability of such farming is achieved by the crops, animals and water supporting each other. In areas where there is a high risk of water insecurity, sustaining a livelihood from the land is difficult. In such areas, many of the population may be suffering food insecurity and there can be high levels of migration.

OVERVIEW

Compassion in World Farming undertook a study into Ethiopian small-scale farming in the Amhara region, looking at how access to water has positively impacted the lives of farmers and livestock in the region.

Ethiopia has one of the largest populations of ruminant livestock². Distribution of ruminant species varies over geographic regions based on rainfall and availability. The importance of livestock here is greater than just simple economic gains from the sale of meat and by-products. Mixed farming for the rural poor is heavily dependent on the integration of livestock, providing many other benefits:

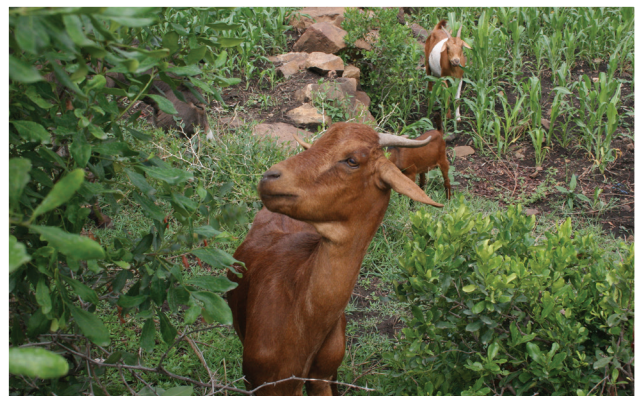
Draft power, for ploughing; **Haulage**, for water in areas inaccessible by mechanical transport;

Manure, vital for fertilising crops and used to plaster houses as well as sometimes used for fuel; **Livestock**, also provide credit and insurance policies; **Animal hides** used on farm for materials, such as bowls, or maybe sold at market.

This case study shows the huge impact that the provision of a water reserve has in enabling farmers to secure their future. It highlights the necessity of livestock for the livelihoods of farming communities and illustrates the positive improvement that can be made to the care and welfare of farmed animals when provided with basic provisions. The data collected for the study is qualitative, representing observations and information attained in interviews with farmers.

KEY FINDINGS

In semi-arid areas of Africa, access to simple technology for storing water can dramatically improve the lives of people and farm animals. This study (2012) found that year-round access to water increased farm yields up to ten-fold, improved food security, nutrition and farm animal welfare and reduced poverty in small-scale farming in the highlands of Ethiopia.



Livestock are normally fed on sorghum and maize but also browse hedgerows.

AZGO

The community of Azgo is in the Amhara region of Ethiopia, lying in the semi-arid lowlands. The area supports around 300 households and was one of the many areas hit badly by the drought of 1984. Since that time, water insecurity has been a huge issue in the region. The area has two rainfall periods, a small rainfall in May and then a heavier one in late July to mid September. The water from these rains must support the farming households until the following year.



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

CONSERVING WATER

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 geomembrane which is impermeable and made in a local factory or imported. This simple structure and basic material ensures it is accessible to small-scale farmers. Originally free or subsidised to all, today purchasing of the membrane is only subsidised if the household falls under the governmental food security scheme. Full price costs 4515 Ethiopian Birr (\$245) and is subsidised at 2000 Ethiopian Birr (\$109). In Azgo, all but a few farmers have such a structure – most buying subsidised – although a few of the farmers gained their first water

harvesting material free at the start of the scheme. The biggest barrier 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 on each other's farms.

Each farmer in the village often has a household of around 4 or 5 members to support. They typically grow cash crops and grain on around a hectare of land. Most farmers have a number of livestock, usually a few goats, a cow, a couple of oxen, a couple of donkeys and possibly some chickens. Depending on the wealth of the farmer, the numbers of animals is greater or lesser in correlation with what they can afford. Wealthier farmers may also have a camel. Prior to the uptake of water harvesters, farmers would often have to sell some or all their livestock by the end of the dry season to enable them to buy food for their family. They would have sold them when the price was at its lowest. Cash crops were traditionally grown to maximise the rainfall but this also meant selling when the price was lowest due to surplus during seasonal harvests.

TEN-FOLD INCREASE INCOME

By investing in a water harvester, each farmer is now able to water crops through the dry period with their stored water. This allows them to achieve a bigger yield and harvest at different times of year, thus being able to sell their harvest at a time when the price is higher. Farmers report that one water harvester typically increases the farmer's income tenfold. This has the additional effect of safeguarding the farmer's livestock which are invaluable to the mixed farming system.

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



The landscape is dotted with water harvesters, as most farmers now own one in Azgo.

Table 1. Detailing the typical feed, use and productivity of the livestock kept by farmers.

Animal	Feed	Productivity	Use
Chickens	Fed grain and pulses plus household scraps.	<ul style="list-style-type: none"> One hen will lay around 30 eggs a brood - two-thirds will hatch (if allowed). Hens typically have 2 to 3 broods per year. 	<ul style="list-style-type: none"> Eggs - fed to children or sold at the local market. Chickens - sold for meat/laying at market or eaten at home.
Goats	Fed maize and sorgum stubble plus browse on hedgerows.	<ul style="list-style-type: none"> One nanny will have 1-2 kids once a year. Males may be castrated or left entire to mate. 	<ul style="list-style-type: none"> Meat or females kept to breed. Manure used as fertiliser.
Cattle	Fed maize and sorgum stubble plus browse hedgerows.	<ul style="list-style-type: none"> One calf every 2 years. Milked for about 3-6 months, giving approximately up to 1 litre of milk a day. Males - plough and are normally castrated - when they become known as oxen. 	<ul style="list-style-type: none"> Ploughing and occasionally used for meat. Manure - primarily as fertiliser and then for plaster and fuel. Cows are used for milk. Oxen shared or rented to make pairs for ploughing. Cows may be lent to others or sold.
Donkeys	Fed maize and sorgum stubble plus browse hedgerows.	<ul style="list-style-type: none"> One foal every 2 - 3 years. Males may be kept entire for mating, otherwise castrated. 	<ul style="list-style-type: none"> Transportation - carrying water daily and transporting crops during the harvesting period.
Camels	Fed maize and sorgum stubble plus browse hedgerows.	<ul style="list-style-type: none"> Only males, as females kept in the Afar region (south east of Amhara region). 	<ul style="list-style-type: none"> Transport and haulage. Used for credit and can be rented out. Manure for fertiliser.

LIVESTOCK

The livestock kept by small holders in Azgo are reared in mixed farming conditions. The Ethiopian government is advising against free grazing and the farmers should only allow their animals to graze on the hedgerows of their plots. The animals live beside the farmer's home. During the day they may roam the small plot of land around the house and may be tethered for a short period of the day. They are brought crop residues twice daily. Chickens are free to roam, including in the house. Water is available to chickens all day, however other livestock are walked to water daily. At night, to protect from predators, the animals are either brought into the house or are stabled in a specially designed stable at the side of the house, which is normally about a quarter or fifth of the family's overall house plot.



Chickens are kept for eggs and meat.

FERTILE LAND

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

By using the manure from ruminants and donkeys, farmers are able to keep soil fertile and with the availability of water from the water harvester, higher yields are possible. Intercropping is also practiced which helps increase the efficiency of soil use and give better nutrient recycling. Rather than needing to sell animals during the dry period, farmers can now feed their animals throughout the year and afford veterinary care. Retaining livestock helps with crop yield, transport and cash flow.

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



Livestock live alongside the farmers' house.

FARM ANIMAL WELFARE

The basic provisions of food and water for livestock are now ensured through improved water management. Local breeds are used and more adapted to dealing with water restriction than western breeds. Many farmers outside Azgo have bred their livestock with western breeds such as Friesians and suffer higher rates of emaciation, lameness and mastitis. The rearing of livestock semi-free range allows animals to exhibit many of their natural behaviours including grazing, browsing, exploring and social interaction. While draft animals may work for periods of the day, there is a substantial period of the year when they are not required to work. Animals are vaccinated against the major diseases but limited veterinary provision restricts welfare and productivity.

INVESTMENT

The farmers we interviewed reported an increase in yield immediately following the investment in a water harvester and typically, a farmer aimed to purchase another within 2 years. Many of the farmers in the area now have 2 or 3 water harvesters. Those with more than 3 harvesters often had a camel, which is a sign of greater wealth. The camel then provides further investment by being rented to others in the area for carrying larger loads. The housing has also changed in Azgo; the traditional circular housing with thatched roofs has been upgraded to rectangular houses with a side stable and a corrugated tin roof.

The children are all schooled in the area now, although they have to walk over 15km to get to high school. Farmers with more than one water harvester often have enough income to purchase a house near to the school where children can stay during the week. Meat is not eaten more often than a few times a year, at special celebrations, and they get the majority of the protein in their diet from pulses. Whilst the livestock numbers have been able to increase, the farmers' meat consumption has only increased by a small amount, but this is often twice what they would have had over the year. Eggs are a good source of nutrition for children, and families with greater incomes were able to feed eggs to their children rather than selling the eggs at market.

CONCLUSIONS

This study has shown great benefits to people's nutrition, food security and incomes from low-tech and low-cost water saving devices. The welfare of livestock is greatly improved with the ability of farmers to provide basic provisions of food and water for their families and animals. The system of mixed farming allows many of the animals' natural behaviours to be expressed and has benefits for crop yields. Productivity is limited in areas with soil degradation and livestock are integral to maintaining fertility for good crop yields and to providing draft power during harvesting. Small-scale mixed farming can provide a sustainable livelihood when farmers are given access to the right tools to succeed.

REFERENCES

- ¹ Michael Halderman (2004) A living from livestock. The Political Economy of Pro-Poor Livestock Policy-making in Ethiopia. Pro-Poor Livestock Policy Initiative, pg ix. <http://goo.gl/A16Dx>.
- ² Based on FAOSTAT (2010) <http://goo.gl/Nh1Cy>

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- ⁴ South Wollo Department of Agriculture, Ethiopia

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