Crop-livestock intensification in Zimbabwe: Closing the loop to sustainability

Calculated decision making

Jabulani Moyo is a man of calculations. If he sells 1 steer for around USD 300 he can buy 20 bags or 1 ton of stock feed. With this and what he grows he can keep his 33 goats, 13 cattle and 6 donkeys alive through the dry season when there is little or no available rangeland for grazing. To feed his family of five, Moyo needs 100 kg of maize meal a month. This costs him USD 100 per month, which he can make by selling two goats. To pay his children's school fees last year he sold four goats. In the end, all these numbers boil down to one straightforward goal: in order to sustain his family through the year, Moyo needs to get his livestock through the dry season.

In an average year, dry season feed shortages begin in June/July and last until the beginning of the rainy season in November/December. The peak of feed shortages is from September

Despite water harvesting methods, a severe drought decimates maize crops in Zimbabwe.

Jabulani Moyo grows bana grass and treats his maize stover with urea to make a supplemental feed to get his livestock through the dry season.

to November when the communally grazed rangelands provide only a meagre amount of very low quality fodder and Moyo's animals, like everybody else's, begin to suffer. Their body conditions deteriorate making them vulnerable to diseases. The solution to this is to ensure a source of supplemental feed. Moyo is exploring two solutions. One is to grow his own feed in a garden that he has established, which has a borehole. The other is to buy commercial stock feed at USD 18–20 per 50 kg bag.

Feed and feedback loops

Not only is he a man of calculations, Moyo is also willing to experiment and evaluate different options. After working with ICRISAT and the Challenge Program for Water and Food to learn some of the management practices and benefits of growing feed crops such as bana grass and mucuna, Moyo began to save the crop residues he got after growing maize to treat it with urea to feed his animals. Estimating what he believed to be appropriate quantities, he fed each of his goats one handful of the pen feed he bought mixed with stover. He fed his entire cattle herd three 20 liter buckets of supplemental feed per day. His experiments have worked. "My goal was to conserve my stock, to keep them breathing. I have achieved that," he says.

"What Moyo is doing is the tail end of an interesting feedback loop. The market is paying him more for his animals. So Moyo has decided to invest more in his animals to ensure that they stay alive, that they are well fed and will therefore get him a better price at the auctions," says André van Rooyen, Senior Scientist at ICRISAT-Bulawayo. "We have had these crop-based technologies for a long time. But they weren't getting adopted before. There was no reason to. But now the markets that we helped develop are setting the stage for our interventions to make sense."

A systems approach

Van Rooyen and the crop-livestock team at ICRISAT have been testing the efficiency of a market-oriented approach to boost technology adoption rates in mixed systems and encourage strategic reinvestments that pay in both the short and long terms. While crop production is crucial to ensure household food security, the vast majority of farmers in marginal areas do not produce enough to satisfy household needs, let alone enough for sale. In other words, crop production does not generate enough cash for farmers to meet their basic needs and then reinvest in farming.

"We know that livestock is the largest on-farm income generator, and together with off-farm income such as labour and remittances, it drives the household's financial portfolio," says van Rooyen. To stimulate greater reinvestment in agriculture, ICRISAT and partners have developed small stock markets. The rewards from these functional markets have illustrated to farmers the value of feed and fodder, stimulated on-farm thinking about the value of feed resources, and is slowly changing farmers' investments in crop production, especially the use of legumes as fodder crops.

This work is done using an innovation platform approach that brings together various stakeholders in a value chain in order to determine where the bottlenecks can be found. "These may be production challenges, marketing challenges or even constraints that stop the efficient flow of relevant information. The innovation platforms then choose various solutions to test and implement," Patricia Masikati, Post-doctoral Fellow at ICRISAT-Bulawayo, says.

Top: Farmers in Zimbabwe discuss the merits of using sorghum stover to feed livestock. The crop is well adapted to Zimbabwe's semi-arid climate and is also used for human consumption. Middle: Farmers visit mucuna fields during an exchange visit. Bottom: The ultimate test – will cattle even eat the newly produced feed? The answer is yes.

One of the information constraints was between agro-dealers, farmers and the private sector. Limited communication between the groups meant that agro-dealers did not realize that farmers were willing to buy stock feed, farmers were not able to access stock feed for their animals when they needed them, and the stock feed producing companies had not realized that there was a newly emerging market for their product in Gwanda. By playing the role of a bridging organization, the Gwanda Innovation Platform built solid links between the groups.

Farmers like Moyo were able to clearly articulate their desire to buy stock feed as well as the quantities they would be willing to purchase. With this information, agro-dealers were able to discuss the potential of sourcing stock feed to remote areas with the private sector. Recognizing the importance of servicing this new market, the stock feed companies were willing to supply rural outlets, improving farmers' access to stock feed. Today in Gwanda's Nhwali and Takaliawa sale pen catchment area around 250 farmers are buying stock feed for their animals on a regular basis. "During the last dry season farmers bought 40 tons of stock feed. They are collectively spending USD 15,000 on stock feed," Masikati says. This year the demand is even greater.

Going once, going twice, sold!

The driving force behind the purchase of stock feed is the market, which in Nhwali, Zimbabwe, takes place every third Thursday of the month.

Satisfied buyers

It is not only farmers who are pleased with the newly established auction system. Ntobeko Sibanda, a buyer of small stock at Nhwali, is also pleased. Sibanda buys goats and sheep in Nhwali and then transports the animals to Bulawayo, where he sells them to Bulawayo Abattoirs, a company that processes goat meat for supermarkets in the city. "This system means that the goats are grouped in place and that makes it easier," Sibanda says. "It also reduces the amount of theft for me as I can take my animals straight from here to Bulawayo."

During their preliminary meetings to discuss the constraints surrounding the livestock sector, the Gwanda Innovation Platform felt that their main marketing constraint was centered around the fact that the markets for small stock were largely informal. Negotiations between buyers and sellers occurred on farms or under trees during cattle auctions. The informality of the sales meant that farmers often had limited information on what was a fair price for their animal. Desperate for cash, farmers would sell their goats for little money and walked away feeling cheated and reluctant to repeat the experience.

To turn this situation around the Gwanda Innovation Platform tested out a more formal marketing structure that would require the construction of sale pens for small stock as well as establishing and running the monthly auctions. After a few minor hiccups the auctions have now become an established institution in Gwanda and the most popular marketing channel for small stock. "Today more than 85% of sales of goats take place at auctions. This is a huge difference from five years ago when most of the sales were at the farm gate," says Thabani Dube, Scientific Officer at ICRISAT-Bulawayo.

Thabiso Ncube, a farmer in the Nhwali area, is very pleased with the auction system. "I attend every auction. I come here to make money. It is better than before when I was selling goats for 25 dollars," she says. Ncube sold five goats at a recent market day for USD 45 each. With the money she has made she plans to buy some food for her family and also some stock feed for the 70 goats and 23 sheep she has at home.

In the end, it is the calculated careful decisions of farmers like Moyo that will determine the direction of this system. "In five years the price for goats has increased to around USD 50 per animal. Yes, we still grow crops but we don't really get anything from it. The future for us is livestock," Moyo says.

Khumatso Nare, a livestock producer in Gwanda, knows the value of keeping her goats alive during the dry season. She grows dual purpose sorghum, velvet beans and bana grass for her animals. Nare's husband works as a taxi driver, augmenting their family earnings, increasing their ability to cope with uncertainty and change, and giving them options that other farmers may not have. For example, the Nares have managed to buy and bulk up commercial stock feed in preparation for the dry season, and they also plan to build their goat herd instead of selling off their animals immediately. So far they have 33 goats and 11 kids.

Working together for progress

"It's back breaking work, but we have to do it if we want progress," Judith Mlilo says holding a shovel in her hands as she takes a break from digging. Mlilo has been working for more than two weeks with her neighbors to help build a livestock sale facility for Matobo District under the supervision of Robert Moyo, the Livestock Development Committee Chairperson for Matobo. The sale facility is sponsored by an IFAD project.

"Our plan is to facilitate the sale of livestock in this area. Livestock is very important to us and this sale pen will attract people from at least four nearby wards. The prices we will get will be better with this facility," Moyo says. The schedule he has drawn up is tight. The poles are almost all cemented in place. But they have yet to be wired together. Then, shelters must be built and a weighing scale installed.

But to help him finish this work on time, Moyo has a willing team of 230 farmers who contribute to community projects. "We have a lot of community projects at the moment. We are also constructing a new building for our school. But we have no problem with handling this sort of work. Our people are very motivated and willing to work," he says.