

Livestock production system in Ward 12, Tsholotsho District, Zimbabwe: Characterization and potential productivity enhancement

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I. Introduction

The Gendered Feed Assessment Tool (G-FEAST) was administered to explore the livestock production systems in Ward 12, Tsholotsho District, Zimbabwe. Tsholotsho District is located approximately 115 km north of Bulawayo in Matabeleland North Province in Zimbabwe. The district lies in Natural Region IV-V, receiving low rainfall of about 350–500 mm. Soils are predominantly sandy and characteristically low in fertility. The district experiences frequent droughts. Exploitation of natural resources and subsistence agriculture form the basis of the livelihoods of Tsholotsho inhabitants with timber logging and livestock production as the main activities, respectively. Goats, cattle, donkeys and indigenous chickens are the most reared livestock species. The District has 20 municipal wards. This report is centred on both male and female focus group discussions (FGDs) that were held in municipal Ward 12. The ward is located in the southern part of Tsholotsho (Figure 1).

The G-FEAST is a powerful participatory action research-based tool to identify farmers' or communities' perception of feed challenges and the potential solutions (Lukuyu et al. 2019). The G-FEAST exercise is crafted in such a way that it prompts the viewpoints and perspectives of participant farmers, regarding feeding management and general crop and livestock production. The importance of separating men and women in FGDs cannot be over emphasised. It has been proven in many FGDs that women tend to contribute far less in the presence of male participants, particularly on matters related to gender (Stewart et al. 2002). The tool considers among other issues, asset ownership, such as land, as property rights give the holder the power to engage in livestock enhancement activities. It also looks into constraints that households face, such as the labour burden and explores how men and women have access and control over resources.

2. Process and sample description

A scoping exercise was conducted in liaison with the district extension office and Agricultural Technical and Extension Services (AGRITEX) to identify participant individuals, with gender and age in mind, so as to get as much diversity as possible to encourage representation of the whole community. Two gendered FGDs were carried out simultaneously, one with 14 male participants and the other with 16 women participants, alongside the village head attending in an ex officio capacity. This report accounts for the findings from both the male and female FGDs. The FGDs were held at Mambanjeni pre-school (190 48' 40" S, 270 43' 27" E) and each lasted over three hours. Thereafter, six respondents were selected for individual interviews from each group based on farm size (Table 1). The criterion for selection of the participants for individual interviews was based on different wealth categories using landholding. Facilitation of the female FGD was done by three women and the male FGD by three men. The roles were lead facilitator, notetaker and a timekeeper. Participants' consent was sought prior to the FGDs with community representatives endorsing their signatures on the consent note. Ndebele was used as the language medium.

Table 1: Respondents for individual interviews by farm size

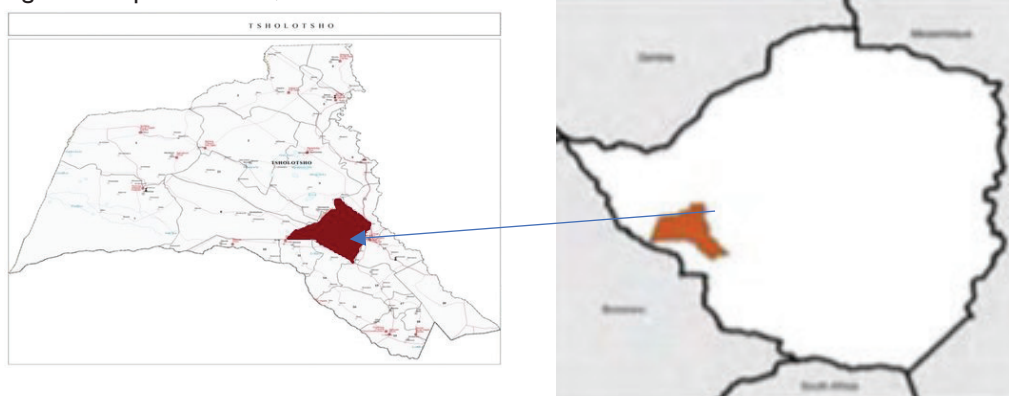
Land size	Number of female respondents	Number of male respondents
Small farm size (0–1 ha)	3	2
Medium farm size (1–7.5 ha)	1	2
Large farm size (7.5 ha and above)	2	2

3. Results

3.1 Demography and population of Ward 12, Tsholotsho

Ward 12 has a total of 700 households. Of these, 65% are female headed. Each household has an average of 10 people. Migration is prominent in the area with youths and men forming the biggest proportion of migrants (60%). The major reasons for migration include, but are not limited to, marriage, seeking education in urban areas and job search on other farms, as well as urban areas in the country and neighbouring South Africa. Migration to South Africa historically dates back to the pre-independence period and continues to the present day. The driver for this migration pattern remains the same, that is, moving for better economic prospects (IOM 2018). The currency that is commonly used in the area is the South African Rand (ZAR), reflecting remittances from family members who migrate to South Africa.

Figure 1. Map of Ward 12, Tsholotsho.



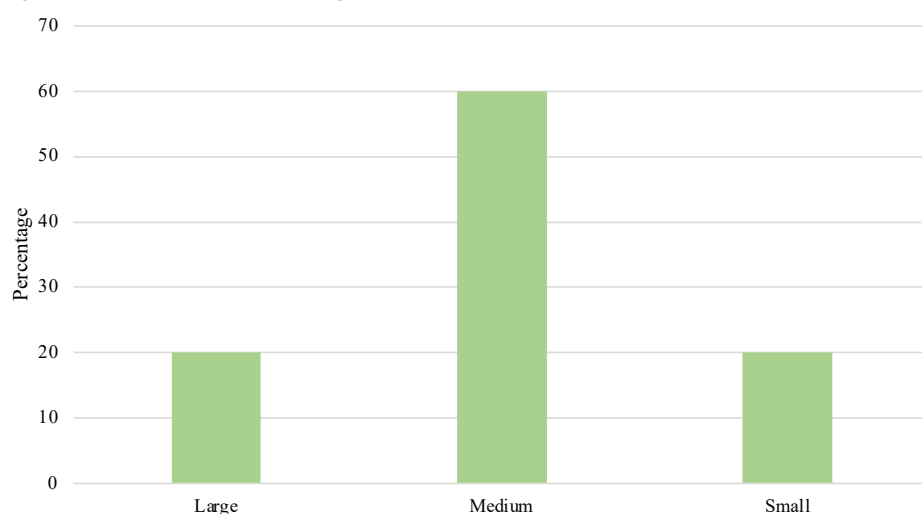
3.2 Farming systems

The farming system practiced in the area is predominantly subsistence mixed crop and livestock farming. Male respondents reported minimum farm sizes to be 0.5 hectares, average farm sizes of 2 ha and large farm sizes to be over 6 ha. Women on the other hand reported that at settling, each family is apportioned 4 ha, but land utilization rates vary. The average utilized farm size is 3 ha (approximately 7 acres), translating to a medium farm size (Figure 2). However, rampant conversion of grazing land into cropping land, particularly in vicinities close to homesteads, was reported. No landless households were reported. Similarly, leasing of land is not practiced. Fodder production is seldom practiced and is close to non-existent in the area. Land ownership is not gender related, implying that men and women have equal access to land.

The land tenure system in the area is communal. This means that individual farmers do not own the land per se, as it belongs to the community. Participants reported that the land holding arrangement in the area is not a constraint to

livestock production. At household level, in cases where both men and women are present, land is usually co-owned. In cases where the woman is the household head, she automatically becomes the sole land owner.

Figure 2. Household landholding.



3.3 Crop production systems

Ward 12 experiences four distinct seasons: summer, autumn, winter and spring (Table 2). The end of spring season into summer season coincides with the rainy or growing season. Rains are received from November through to March though no rains are received in January. This translates to only four months of rain. On a scale of 1–5, 5 being the heavy rain, the month of December receives rainfall of 3, translating to the most rainfall received in the season. Hambani Dam, an earthen dam is the source of water during the rainy season. However, the dam is silted and dries by April. Everyone has access to the dam, with the furthest distances being around 3–4 km. Boreholes are spread around the ward and provide water for the rest of the year. Every household has access to borehole water within their vicinity. Each borehole is managed by a committee. Breakdowns and receding water table are the challenges villagers encounter when utilizing boreholes.

Table 2. Seasons experienced in Ward 12, Tsholotsho

Season (local name)	Months	Major cropping activities
<i>Spring (Intwasa)</i>	September–December	Land preparation Fertilization Planting
<i>Summer (Ihlobo)</i>	January–April	Weeding Bird scaring Harvesting
<i>Winter (Umqando)</i>	May–July	Brush fencing Stumping fields
<i>Autumn (Inkwindla)</i>	August–September	Gardening

Labour is required the most during planting, weeding and brush fencing of fields. Labour is not always available as and when required by farmers. As a result, the size of the land under cultivation is decreasing, particularly in households headed by the elderly in the community who can no longer do manual work after the young and strong migrate searching for better opportunities. The minimum daily labour cost for hiring cropping-related activities is ZWL550 (for weeding) while the maximum is ZWL1,250 (for brush fencing). Although there is no major differences in the wage

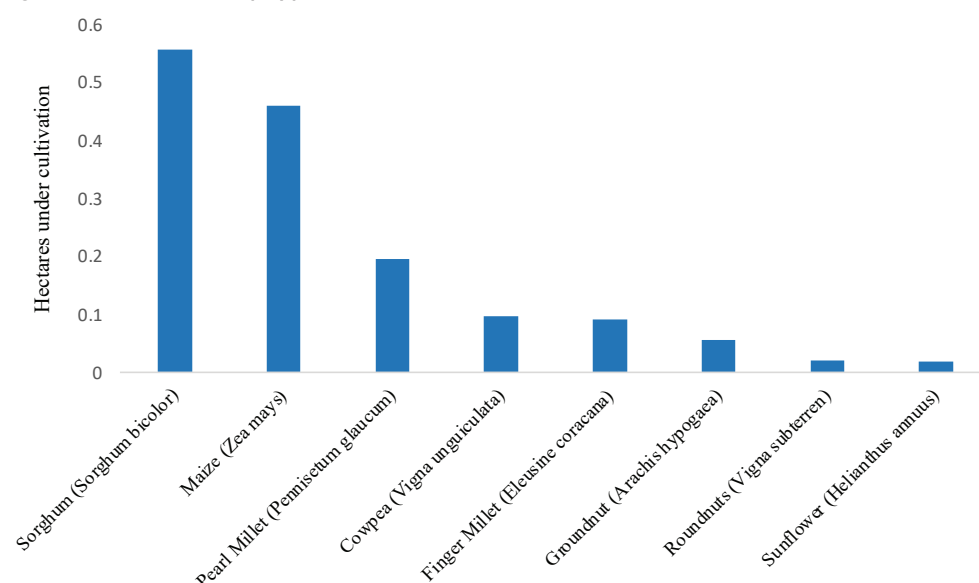
rate per task, daily wage rate paid to men is three times higher than women's as men tend to spend less time per task (see Figure 3). Although casual labour for hire is readily available in the area, it is exorbitant and beyond the reach of many farmers.

Furthermore, casual labours prefer to be paid in foreign currency, South African Rand (ZAR), which is not accessible to households which do not get remittances from South Africa. Payment in kind was reported to be a way farmers evade the challenge of high labour costs. Payment in grain-equivalent was reported to be a common practice when hiring labour for harvesting and thrashing grain crops. An example is payment of 2½ bags of grain per 9 bags processed. However, women lamented that it is more difficult for female-headed households to hire labour compared to male-headed households.

Figure 3. Average daily labour rates by gender.



Figure 4. Dominant crop types.



Households in the area commonly grow a variety of food crops as shown in Figure 4. The most dominant food crops grown include sorghum (*Sorghum bicolor*), maize (*Zea mays*), pearl millet (*Pennisetum glaucum*), cowpea (*Vigna unguiculata*) and finger millet (*Eleusine coracana*). Other food cash crops grown include groundnut (*Arachis hypogaea*), and sunflower (*Helianthus annuus*). An average of 0.5 ha is committed towards sorghum cultivation per household. This is expected because the area is a low rainfall region, and sorghum is drought-resistant. In a normal year, maize will not thrive well under rainfed conditions. Maize is therefore successfully grown in above normal rainfall seasons, such as in the 2020–2021 season. Hectareage under food cash crops is generally below 0.1 ha, reflecting the subsistence nature of the cropping system.

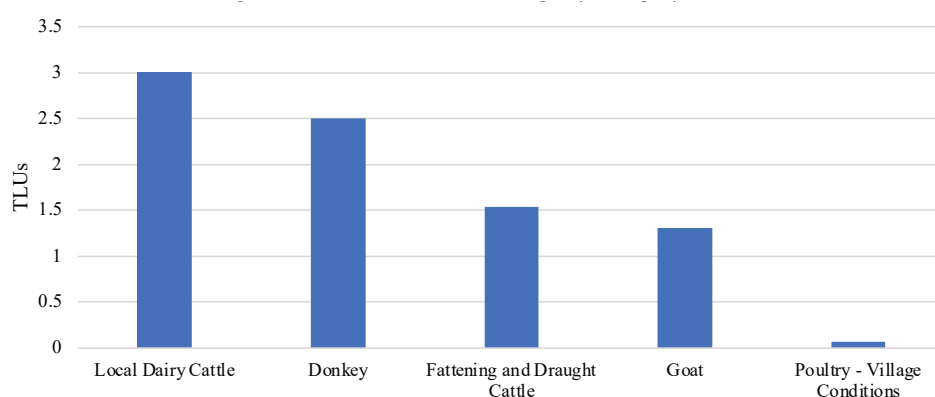
3.4 Livestock production systems

Goats, cattle, donkeys and indigenous chickens are the livestock mostly kept by livestock farmers in Ward 12, Tsholotsho District (Figure 5). Goats, cattle and indigenous chickens are primarily kept for meat production. Although local dairy animals form the biggest tropical livestock units (TLUs), milking is very limited and only coincides with the rainy season, which usually lasts an average of four months. During the long dry period, cattle are usually underconditioned for milking, and milk is therefore reserved for the calves. Indigenous type breeds are the most common across species. Cattle are seldom sold while smaller stock such as goats and chickens are sold for income. They are also culturally integral as they are used for paying lobola and slaughtered during other cultural activities such as funerals. Manure from cattle is important for manuring fields, an integral crop-livestock system interaction. Donkeys are kept for traction and transport purposes. A female participant reiterated the importance of donkeys, even for female-headed households:

‘Donkeys are very important for us. They are easy to work with. Even women can plough using donkeys.’¹

Zooming into ownership of livestock, 50% and 60% of households were reported to own cattle and donkeys, respectively. Goats and village chickens were reportedly more ubiquitous with 98% and 100% of households owning these small stocks.

Figure 5. Dominant livestock categories



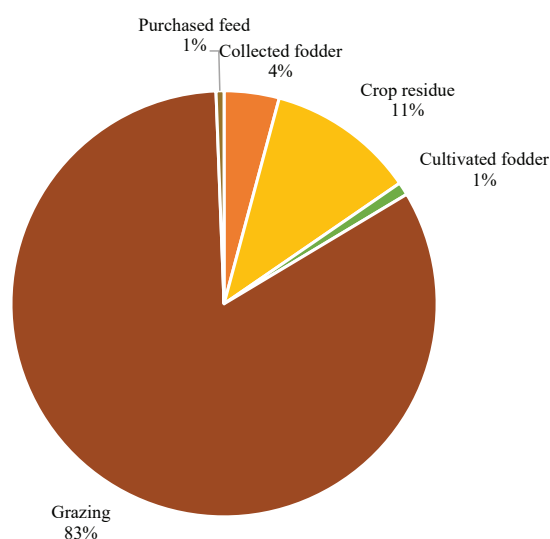
*1 TLU is equivalent to 250 kg.

3.4.1 Major feed sources

Livestock mainly graze on the natural rangeland during the day and are kraaled at night. The cost of hiring herders per day is relatively cheaper compared to other agricultural activities, however, herding is done daily for around seven months, hence costs become high cumulatively (see Section 3.3). The quality of the graze is good as the veld is generally sweet. However, graze quantity is a huge challenge as there is usually inadequate carry over from the wet to the dry season and people are opening up grazing lands, converting them to cropping lands, further dwindling the feed base. During the dry season, supplementation of livestock is inevitable. Farmers usually supplement their livestock with crop residues, collected fodder and, to a lesser extent, with commercial feed (Figure 6). Fodder production is non-existent, though collection of tree pods for supplementary feed is common.

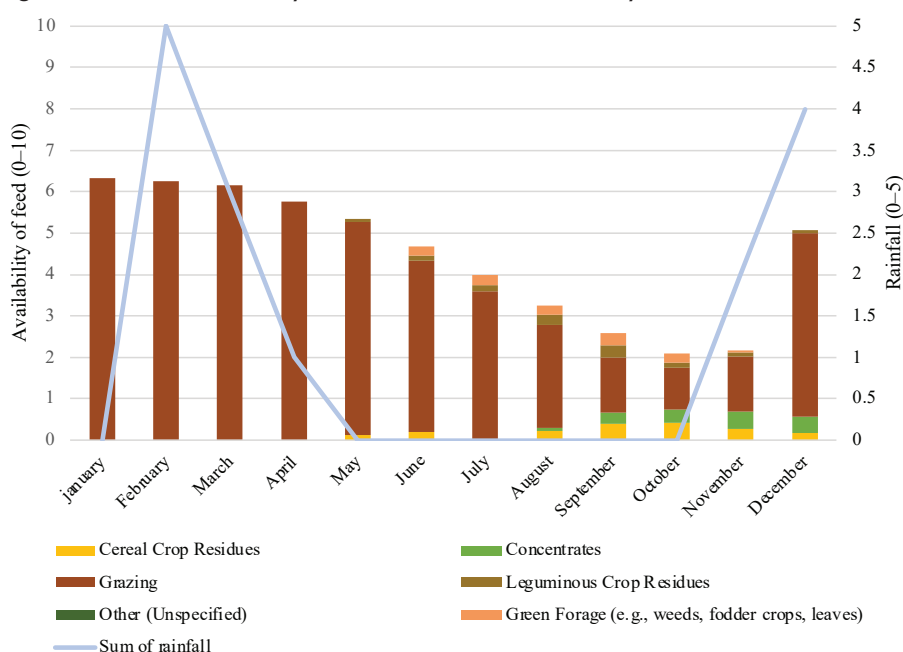
¹ Statement translated from Ndebele language

Figure 6. Pie chart showing sources of dry matter intake for livestock.



The availability of feed, particularly for ruminants, is directly related to rainfall pattern in the area (see Figure 7). Because the rangeland forms the bulk of livestock's feed, availability is dependent on biomass fluctuations. From January to April, grazing intensity is high as livestock solely depend on grazing. This period coincides with the wet season, with peak rainfall recorded in February. As the dry season approaches, feed availability begins to fall by a unit from +6 to +5 in May. The same period marks the end of the wet season. Farmers begin to supplement livestock with cereal grain stover. Feed availability continues to fall as the year progresses and the proportion of cereal, legume stover and green forages continue to increase in the diet. Commercial feeds are gradually introduced in August and their proportion significantly increases, constituting around 20% of the total diet in September to October. The beginning of the rainy season in October does not automatically translate to feed availability as forage materials first need to establish before they can be meaningfully grazed. As such, grazing material becomes significant in December onwards.

Figure 7. Seasonal availability of feeds in relation to monthly rainfall distribution.



The most common livestock challenges faced in Ward 12 are diseases, stock theft, particularly of small stock as well as predation by jackals. Blackleg and lumpy skin disease are the most prevalent diseases. Fortunately, animals can recover from both these diseases if intervention is timeous. Abortions in cattle and goats is another major threat to livestock production. With regards to markets, low prices from local buyers was reported as a major setback to the viability of livestock production.

Inputs for livestock including veterinary drugs and feed are procured from the Growth Point, Tsholotsho. However, some specialized prescription drugs may not be available locally and farmers have to travel to Bulawayo, 115 km away, to find them. The government supplies knapsack sprayers, acaricides and veterinary drugs and non-governmental organizations (NGOs) supply farmers with vouchers to purchase implements. Farmers rely mainly on public veterinary officers in the area for veterinary services such as vaccinations, dipping, dehorning and castration among other services. Both men and women have equal access to extension services. Public veterinary officers do not charge for their services; however, farmers may need to buy the consumables themselves. Alternate veterinary or ethnoveterinary medicines are sometimes used, especially in relation to poultry production.

Breeding is solely through natural mating with artificial insemination services unavailable in the area. However, the quality of breeding bulls was reportedly poor, with need for breed improvement initiatives in the area.

3.5 Major income sources

The sale of livestock, particularly cattle and goats, is one of the major income sources for farmers as shown in Figure 8. Prices of cattle are highest during the festive season due to high demand. Prices are also relatively high mid-year, around May–July owing to the good body condition of animals in this period. Similarly, prices of goats are highest from July to August, after which the prices sharply fall and only begin to pick up again around the festive season (Figure 9). Sale of crops, remittances and other non-farm businesses are significant income sources.

Figure 8. Major sources of income.

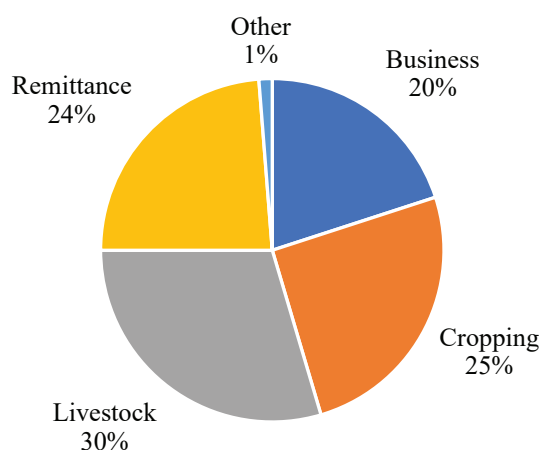
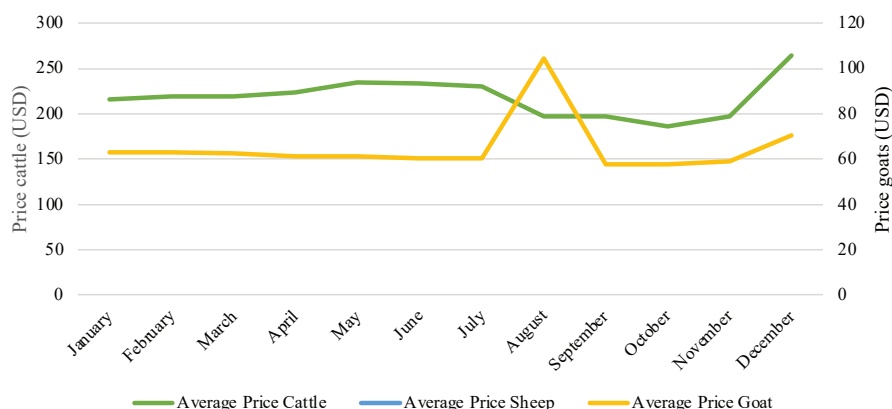


Figure 9. Average prices of cattle and goats.



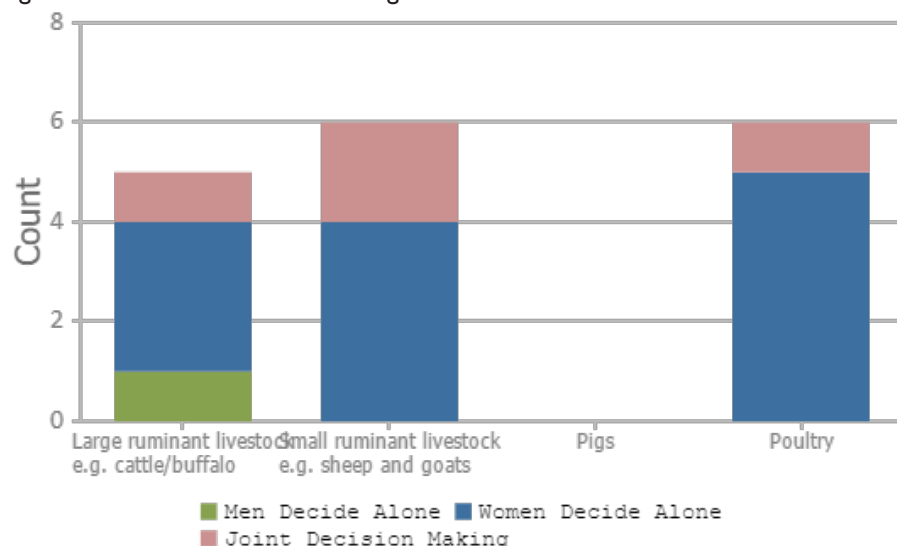
With regards to credit, the main sources of credit include the Department of Women Affairs, local shops and village lending schemes. The Department of Women affairs offers formal loans to organized women groups, such as poultry and irrigation cooperatives. Credit is mainly obtained for the purchase agricultural inputs. Informal credit dominates the microfinance sector. Conditions of accessing credit vary according to source of credit. Some of the common conditions for obtaining credit for agricultural production include guarantors, national identification and membership in the case of village lending schemes. Participant women rated ease of access to credit as 'not so difficult' as it takes one's initiative to join credit schemes. All participant women aired their aspiration to access credit as there seemed to be equality in accessing credit, with multiple options to choose from. Sale of large stock and food crops contribute significantly to household income while remittances, sale of chickens and sale of horticultural produce contribute the highest share to the women's income.

Regarding gendered decision-making on major sources of household income, sale of cattle was mostly a man's decision while sale of goats was reported to be a joint decision. Women make most decisions alone on poultry sales.

3.6 Gendered decision-making on livestock

Although women autonomously make decisions on large livestock if they are household heads, there is a tendency of men influencing decisions on large livestock in households where both men and woman are available. Joint decision making is also common for large ruminants. With regards to small ruminants, joint decisions are common in households where men and women are available. Women tend to dominate decisions on poultry, with much fewer joint decisions. Figure 10 illustrates gendered decision-making on livestock in Ward 12.

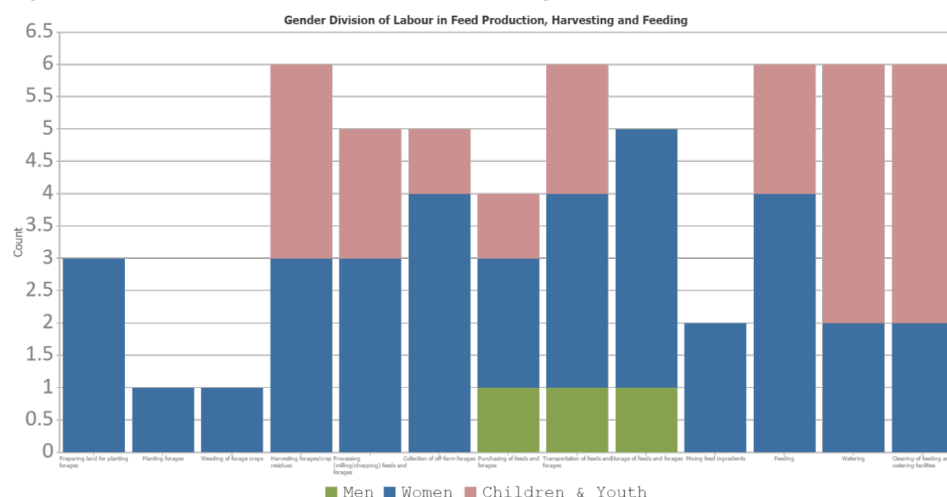
Figure 10. Gendered decision making on livestock.



3.7 Gender division of labour and gendered decision-making on livestock feed-related activities

Men dominate in the purchase, transportation and storage of feeds. Women on the other hand are mostly involved in harvesting of crop residues and feeding livestock. Women are solely involved in mixing of feed ingredients. The rest of chores are done by women as well as children including watering and cleaning livestock facilities. Generally, there is division of labour with all household members providing labour, though men tend to do a lot less in the management of feed resources and livestock in general as illustrated in Figure 11.

Figure 11. Gender division of labour in feed management.



4. Problems and opportunities

Table 3 summarizes the challenges faced by farmers in Ward 12 and corresponding suggested solutions according to female farmers.

Table 3. Livestock related challenges–Female participants

Challenge	Who is affected most? (Small/medium/large farms; men/women; MHH/FHH; etc.)	Proposed farmer solutions	Ranking by women
Predation(of goats)	All	Herding goats	1
Grazing/feed shortages	All	Housing goats; supplying feed and water Authorities to enforce by-laws	2
Diseases	All	Growing and conserving fodder Vaccinations	3
Absence of secure handling facilities	FHH	Construction of handling facilities at homesteads	4
Low livestock prices	All	Construction of goat houses Value addition (e.g. pen fattening schemes)	5
		Engage auctioneers to conduct sales at local sale pens	

Table 4 summarizes the perceptions on challenges faced by farmers in Ward 12 according to male farmers. It also captures their suggested solutions to the problems

Table 4. Livestock related challenges–Male participants

Challenge	Who is affected most? (Small/medium/large farms; men/women; MHH/FHH; etc.)	Proposed farmer solutions	Ranking by men
Water	All	Solarization of available boreholes	1
		Construction of new dams and scooping of small earth dams already available	
		Drilling of more boreholes will alleviate water challenges in the area	
Acaricide shortages	All	Government to timeously supply acaricides to the community	2
Diseases	All	Government to put price controls on veterinary drugs since some of the prices are beyond the reach of many	3
Marketing	All	Need for more trainings and more agro dealership in Tsholotsho Need for more training on livestock husbandry in order to improve livestock quality and hence get better prices	4
Grazing	All	Fencing of fields to safeguard stover for later use during the season	5
		Construction of paddocks for relief grazing to safeguard grazing areas in the community	

5. Potential interventions

Findings from the study indicate that seasonality highly influences feed availability. The long dry season of up to seven months coupled with low biomass of the rangelands imply that feed shortages in the dry season are inevitable, particularly for farmers who mainly rely of the rangeland as a feed source. Fodder banking is highly recommended to bridge the dry season feed gaps. Other potential interventions are as follows:

- Training farmers on livestock health management to reduce livestock mortalities. Areas to include are vaccinations, kid and calf rearing, alternative dipping methods and breeding management among other aspects.
- Breed improvement to allow introduction of improved adaptable genetics.
- Training farmers on forage production alongside proper feed management practices such as feed conservation and processing (e.g. haymaking and silage).
- Introducing fodder varieties with high nutritive quality adapted to the agro-ecological region.
- Training farmers on the importance of water harvesting and proper storage and use.

5. Conclusion

Farmers in Ward 12, Tsholotsho District, are inclined towards goat production and rearing of cattle in traditional semi-extensive systems. The sweet natural veld is an inherent advantage for livestock production in the area. If this is augmented with fodder production, then supply of good quality forage will be guaranteed throughout the year. If farmers receive training on animal nutrition and balanced feed ration formulation, it will go a long way toward improving livestock production. On the other hand, farmers without livestock can take up fodder production for sale to those with livestock. If production is upgraded from subsistence to commercial, it can attract more youths who currently migrate to neighbouring regions and countries in search for jobs, including jobs on farms. Capacity building for extension staff should also be strengthened to promote improved animal health management.

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