LIPS-ZIM
Livestock Production Systems-Zimbabwe

Funded by the European Union

Characterizing the livestock production system and the potential for enhancing productivity in Ward 7 Mutoko District, Zimbabwe

Eleanor F. Mutsamba-Magwaza[1], Precious Nyandoro[2], Peter Makiwa[3], Clayton Kapembeza[4] and Irenie Chakoma[5]

1. International Maize and Wheat Improvement Center, Harare, Zimbabwe
2. Department of Agricultural Technical and Extension Services, Mutoko, Zimbabwe
3. Henderson Research Institute, Mazowe, Zimbabwe
4. Department of Research and Specialist Services, Harare, Zimbabwe
5. International Livestock Research Institute, Harare, Zimbabwe

August 2022

Implemented by

ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE
CGIAR
cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT
CIMMYT International Maize and Wheat Improvement Center
UNIVERSITY OF ZIMBABWE
ZIMBABWE

ILRI thanks all donors and organizations which globally support its work through their contributions to the CGIAR Trust Fund

Editing, design and layout—ILRI Editorial and Publishing Services, Addis Ababa, Ethiopia.

Cover photos—Vingirayi Y

Citation: Mutsamba-Magwaza, E.F., Nyandoro, P., Makiwa, P., Kapembeza, C. and Chakoma, I. 2022. ***Characterizing the livestock production system and the potential for enhancing productivity in Ward 7 Mutoko District, Zimbabwe***. Nairobi, Kenya: ILRI.

Patron: Professor Peter C Doherty AC, FAA, FRS
Animal scientist, Nobel Prize Laureate for Physiology or Medicine–1996

Box 30709, Nairobi 00100
Kenya
Phone +254 20 422 3000
Fax +254 20 422 3001
Email ilri-kenya@cgiar.org

ilri.org
better lives through livestock

ILRI is a CGIAR research centre

Box 5689, Addis Ababa,
Ethiopia
Phone +251 11 617 2000
Fax +251 11 667 6923

ILRI has offices in East Africa • South Asia • Southeast and East Asia • Southern Africa • West Africa

Contents

Tables

Figures

Acknowledgements

We acknowledge Ben Lukuyu from ILRI for facilitating the G-FEAST training and the relevant extension officers for mobilizing farmer respondents who participated during the FEAST exercise. In addition, we acknowledge farmers for their time and valued contributions to the survey and discussions.

1. Introduction

The Gendered Feed Assessment Tool (G-FEAST) was implemented to characterize the livestock production systems in ward 7 (Nyamuzuwe) of Mutoko District in Zimbabwe. The G-FEAST tool combines both qualitative and quantitative research approaches to identify if farmers/communities perceive feed as a problem and what are the potential solutions (Lukuyu et al. 2019). The G-FEAST exercise elicits the viewpoints and perspectives of both women and men farmers in the community regarding feeding practices and general crop and livestock production. It considers the constraints that households face, such as the labour burden on women and their limited access to and control over resources.

Mutoko District lies within Mashonaland East Province, in the northeastern part of Zimbabwe. It is located at an altitude of about 1,200 masl (17° 40′ 34″ south, 32° 22′ 25″ east). Annual rainfall ranges mostly from 450 to 700 mm and decreases as one moves from NRIII to NRV while temperatures range from a minimum and maximum of 14°C and 31°C, respectively. The rainfed season growing period is 135–150 days. The rainy season generally starts from November until March, followed by seven months of dry spells. Natural region V is an extensive livestock production area with some drought tolerant crops such as sorghum, millet, rapoko and short season maize varieties. Major livestock include cattle, goats and poultry. The district is made up of 29 wards and is dominated by Mashona cattle breeds and small East African goat breed. The herds are mainly small to medium sizes which are poorly managed. Dominant soils in Mutoko are granitic sand soils derived from granite rocks and are generally low in fertility.

The G-FEAST exercise was conducted on 06 May 2021 at Nyamuzuwe Business Centre in ward 7 of Mutoko District. This report presents the findings of the assessment and conclusions for further action.

2. Process and sample description

Mobilizing farmers were conducted by the ward-based government extension officers. They identified 12 males and 12 females who fit across the 3 landholding sizes of the ward. Two gendered focus group discussions (FGDs) were carried out separately (but concurrently), 1 with 10 men and another with 10 women participants. The duration of the G-FEAST exercise lasted for about 3 hours. The exercise was held at ward centre hall, a central position in the community.

Thereafter, six respondents were selected for individual interviews from each of the groups. The selection of the participants for individual interviews was based on landholding category. The composition of the sample is shown in Table 1.

Table 1. Distribution of respondents for individual interviews by farm size

Farm category	Female respondents	Male respondents
Small farm size (0–0.85 ha)	2	3
Medium farm size (0.85–3.1 ha)	2	2
Large farm size (3.2 ha and above)	2	1
Total	6	6

The facilitating group comprised of main facilitator (although the rapporteur was also assisting in explaining the question), rapporteur and time keeper. Before each session, a consent note seeking permission for the interviews from farmers was read to them in the local language. Farmers agreed to the discussions and signed the consent forms before the sessions commenced. Subsequently, the notes were typed in English using Microsoft Word.

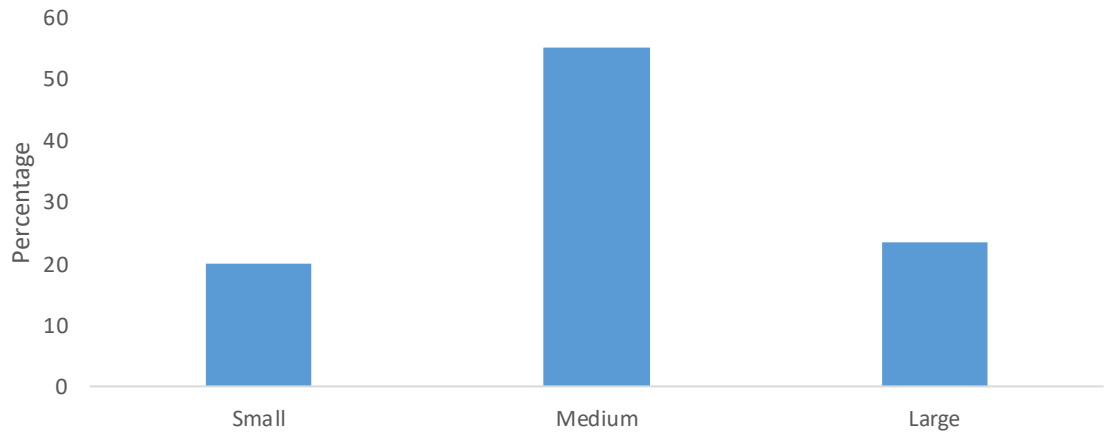
3. Results

3.1 Farming systems

The farming system practised in the area is primarily mixed crop–livestock system. Most of the land is being used for cropping activities (mainly field crops and horticultural crops) and smaller proportions dedicated to grazing. The average household size comprises of six people.

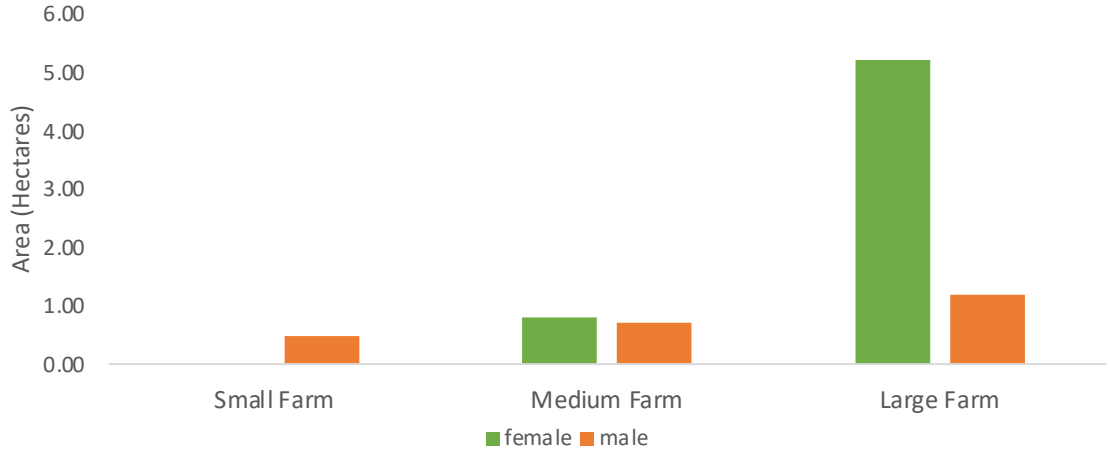
Twenty per cent farmers in the ward have small farms, 55% have medium farms while 25% have large farms (Figure 1).

Figure 1. Households by landholding category.



Farm sizes by gender of the household head shows that men own land across the three landholding categories while women own land in the medium and large farm size categories (Figure 2). The largest proportion of female headed households fall in the medium and large farms category because their husbands would have died and the widows now own the land. In some instances, daughters return after broken marriages or are impregnated at home and are given some portions of land. It was agreed that women can own land just as men do.

Figure 2. Farm size by gender of household head.

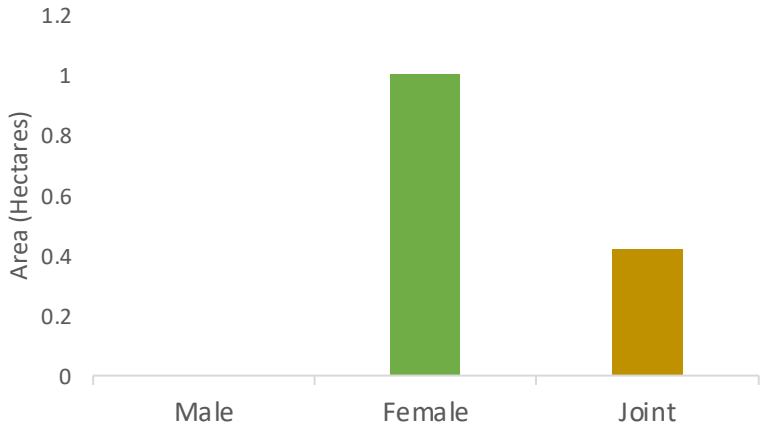


The common land tenure system of the study site is communal ownership where land is collectively owned by an extended family or clan with the control or administration vested in traditional leaders. These traditional leaders may give out portions of the land to other new people. Land area for cultivation is continuously decreasing due to settlements of new people immigrating and also local people who start new families. Given this background, land is used for more than one crop per year. However, 40% arable land is cultivated and 60% fallowed due to lack of inputs and labour and to some extent to replenish the soil fertility.

In ward 7 Mutoko, there is no price for leasing land, but a person leases land to an individual for a maximum of two years otherwise beyond this period, the land is considered to be owned by the one using the field. Out of the cultivated land, 80% land is grown crops for subsistence and 20% of the land is grown cash crops. However, more cash (horticultural) crops are grown during the dry season in the fields while subsistence food crops are grown during the wet season in same fields. There are no fodder crops grown in this area. In case of extensive systems, the fallow land can be used to grow forage thus the availability of land for fodder cultivation is high.

Most land is owned by female headed households, followed by joint ownership and no land solely owned by male headed households (Figure 3). The reasons being that there are females who return home after broken marriage (single women) and widows who own land or else land is owned by both husband and wife (jointly). The study indicates that there are no single (unmarried) boys who own land nor have widowers as men tend to marry faster when their wives die.

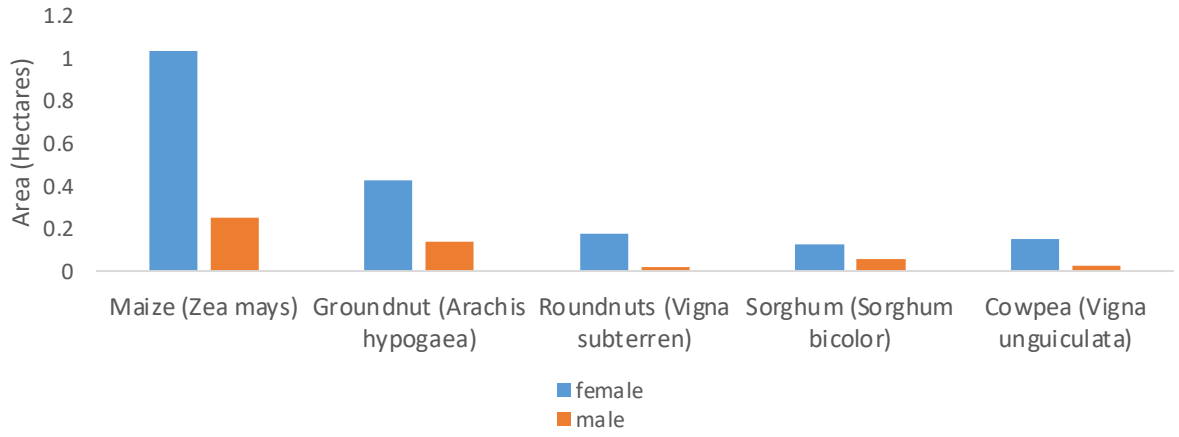
Figure 3. Land ownership by gender.



Crop production

Households in the area commonly grow a variety of food crops. The most dominant food crops include maize (***Zea mays***), groundnuts (***Arachis hypogaea***), roundnuts (***Vigna subterranean***), cowpeas (***Vigna unguiculata***), sorghum (***Sorghum bicolor***), pearlmillet (***Pennisetum glaucum***) and common beans (***Phaseolus vulgaris***) (Figure 4). Other crops grown in dry season are horticultural crops such as tomatoes and leaf vegetables. Maize is the most dominant cultivated food crop with more than 1 ha committed to its cultivation, since sadza is the staple food of Zimbabwe. There are no fodder crops grown in Mutoko ward 7. Females participate more in the production of all crops than men.

Figure 4. Dominant crop types cultivated by gender of household.



Rainfall patterns

Rainfall levels are generally poor and erratic during the rainy season, with February only recorded as a month of heavy rainfall. No rains are received between May and November (Table 2). However, farmers reported that over the years, unpredictable weather patterns have threatened reliance on rainfed agriculture. It has also threatened livestock production, which relies heavily on grazing of natural grasses and bushes.

Table 2. The rainfall variation over the year

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall (0–5)	1	5	3	1	0	0	0	0	0	0	0	3

Mutoko experiences unimodal rainfall patterns. Four distinct seasons are experienced in the area (Table 3). The first season, summer (***zhizha***), is the cropping season which is characterized by moderate showers to heavy rainfall, stretching from December to February. This is the time when rainfed crops are planted, fertilized, weeded and harvested. Autumn (***matsuts***o) is the second season which starts in March and ends in May. ***Matsutso*** is the season when the ground start '***kutsutsa mvura***' (drying up) and farmers finish harvesting field crops and start planting and managing horticultural crops using manual irrigation systems such as bucket system or siphoning. Light showers are received in March and the moisture is used to do winter ploughing in preparation of the next season. Winter (chando) is the third season and is the coldest season. Farmers mainly manage their horticultural crops although no rainfall is received. It starts in June and ends in August. The last season is spring (chirimo) which stretches from September to November. Farmers continue with producing horticultural crops and also start land preparation for the next rain season by tilling the land, applying manure, weeding, burning residues etc. Partial gardening is practised in areas with perennial water sources.

Table 3. Cropping seasons experienced in Mutoko

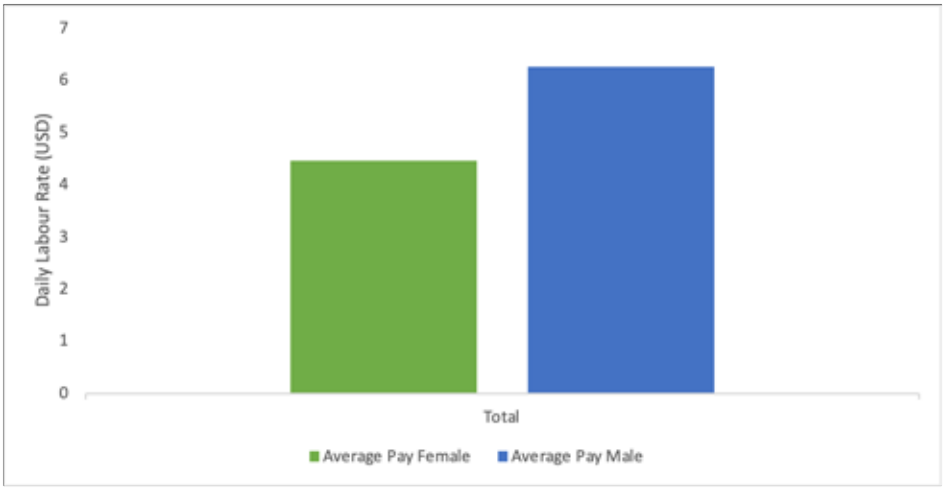
Name of cropping season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Summer	■	■										■
Autumn			■	■	■							
Winter						■	■	■				
Spring									■	■	■	

Labour availability

Labour is readily available and is generally easy (scored 3) to hire as and when required. Activities such as planting, weeding and harvesting are pegged at USD 5. The minimum daily labour cost is USD 3 and the maximum rate is USD 5. Land preparation, particularly the basin construction for conservation agriculture costs USD 6 and is mostly done

by men. This could imply that men's work is difficult than women's work. However, the labour costs are generally the same throughout the year and are almost similar for both males and females although male tasks sometimes fetch more daily wages (Figure 5).

Figure 5. Average daily labour rates by gender.



Although labour is readily available, farmers are limited by affordability. Both male and female headed households have access to hire labour. Male headed households can afford to hire labour better than female headed households because men have many sources of income from brick moulding and selling of firewood.

Sometimes labour is paid in kind. It was indicated that daily labour can be paid in different ways such as such as 20 litre bucket of maize/sorghum; 2 litre bottle of cooking oil; 20 litre bucket of groundnuts or 2 kg certified maize seed. Another form of payment (although uncommon these days) is when the owner of the field brews beer, prepares sadza and meat and invites labourers to work and later enjoy the feast (***nhimbe***). It is mostly used during time of manure application, ploughing and grain harvesting and shelling.

Migration

Migration percentage was around 20% of the ward population. Of the total migrants, 50% are youths who migrate to seek education, jobs, girls getting married and escape police radar. Women migration constitute 30% as they migrate for trading and to seek jobs while men covers the least proportion of 20% to seek farm land and jobs.

Irrigation accessibility

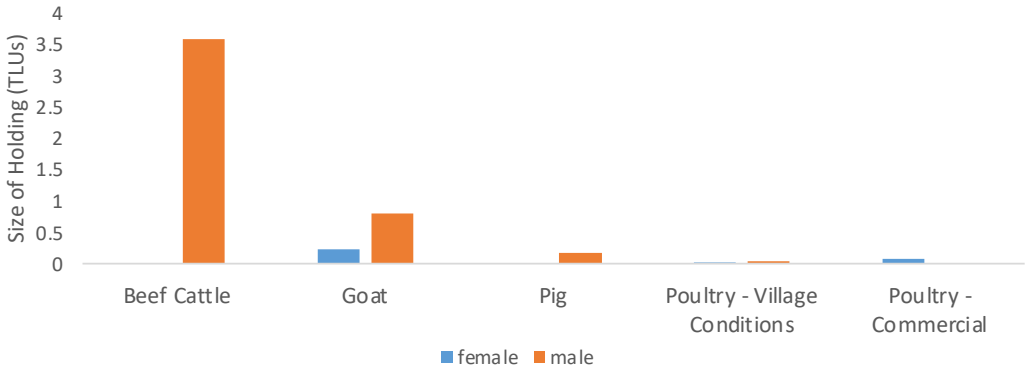
About 30% of the total households have access to irrigation. People who are excluded from irrigation facilities are farmers who do not have land near water sources and those living further from the water sources. However, those who have access to the water source, both male and female headed households have equal opportunities to irrigation. Common systems used for irrigation are buckets, siphoning and engine powered pumps. A wide range of horticultural crops are being produced from irrigated fields and these include tomatoes, vegetables, cucumbers etc.

3.2 Livestock production system

Local draught cattle are the primary type of cattle in ward 7, Mutoko (Figure 6) where 80% of households own an average of 2 draught cattle. However, only 30% of the households milk their local cows since an average number of local dairy cows are 1 per household. The only breed there is Mashona (local breed). No cattle fattening is practised in ward 7 Mutoko as farmers do not grow any fodder crops nor purchase commercial feeds. Other livestock types include goats, pigs, poultry, donkeys and rabbits. Goats are mainly kept as a source of income, for meat, manure and paying lobola with 80% household owning an average of 15 goats. The most common livestock is village poultry

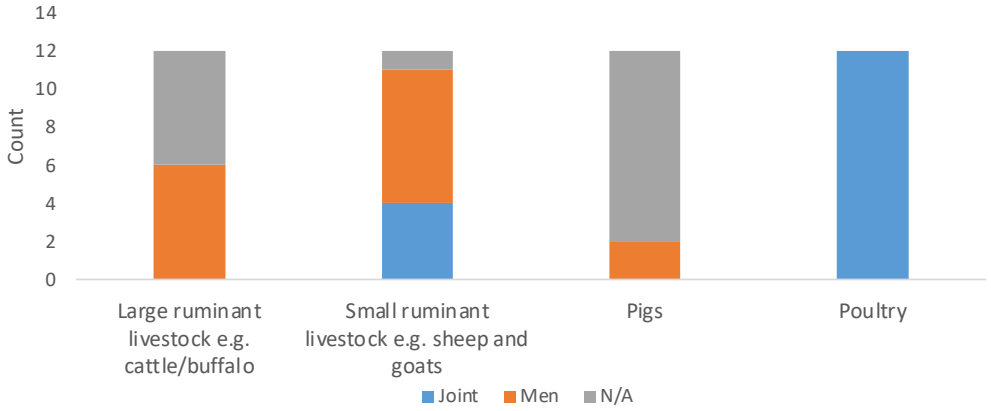
where 100% of the household own an average of 8 chickens for meat, eggs, manure and income. Only 2% own an average of 100 commercial poultry mainly for income and to some extent for meat. Donkeys and rabbits are owned by 2% of the household who have an average of 2 and 4 animals, respectively.

Figure 6. Average household livestock holdings by category in tropical livestock units (TLUs) by gender of household head.



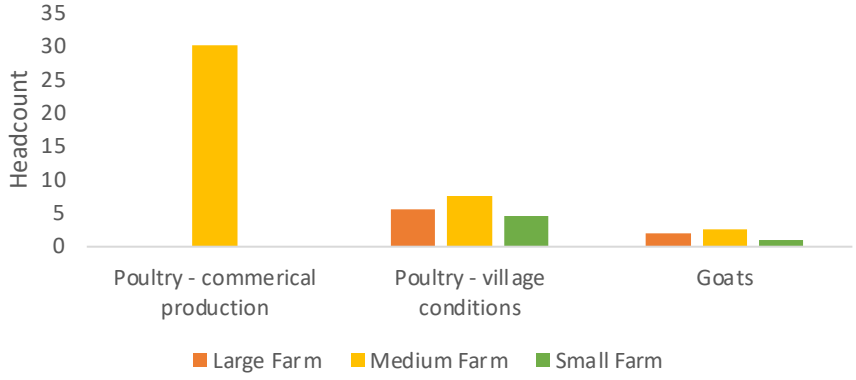
The household livestock holdings by category in Tropical Livestock Units (TLUs) showed that male headed households own large stock, goats, village poultry and pigs while female headed households own goats and poultry only (Figure 6). The trend can be reflected in the decision-making process in either household whereby men and women make most decisions jointly or individually (Figure 7).

Figure 7. Gendered decision-making on livestock.



Medium farms specialize on commercial poultry production while village poultry production and goats are kept across all the landholding sizes (Figure 8).

Figure 8. Average livestock holdings per household by farm size (head count).



In ward 7 of Mutoko District, male headed households and female headed households use all the stated livestock for same purpose/primary use.

Cattle are kept in kraal pens and animal houses. They graze and drink water from open sources while for small stock and poultry, feeding troughs and bedding are provided. Cattle kraals are bedded if the kraal position is not changed when it gets uncomfortable for livestock to sleep. All the livestock is partially housed throughout the night and some type of animals are housed together despite age, class and sex.

Cattle graze in rangelands during the day and is attended by at least one person in wet seasons. During the dry season, cattle freely graze in both fields and rangelands. At night, the cattle are housed. Thus, time required to attend to cattle is ranked as medium. Local poultry practice free ranging and are released and closed in by anyone at the homestead, thus time required is low. Goats are tethered or open graze during the wet season while they are released for free ranging during the dry season. During wet season, animal graze in rangelands while during the dry season they graze in both rangelands and fields.

All households with livestock keep crop residues on raised platform which they give to livestock from August to November without any special processing. They do not mix the residues with anything and thus no feed concentrate is given. Both male headed households and female headed households use the same feeding styles and management methods.

Major livestock health problems in the area are eye problems, lack of dipping chemicals and mahumba for chickens. Main health service providers are the government veterinary officers which live 20 km away from the ward. The common drugs cost from USD 1–4. They also get veterinary drugs from veterinary dealers which are also situated 20 km away from the ward and prices depend on the of the drug. Ethnoveterinary drugs are also used by locals and paraveterinarians (retired people with veterinary knowledge).

Natural service is the only livestock reproduction service available. Artificial insemination is not practised in the area. Local bulls are used for reproduction for free as the livestock mate during open grazing. The major problem with bull service is that the breed of the bull is very poor and the bull has to service many cows.

Farmers severely struggle to find enough feed for animals during the dry or cool season. However, during the wet growing season, farmers do not struggle to find enough feed for animals as they graze freely in rangelands. Thus, throughout the year there is problem of feed scarcity and cattle will be in poor condition worsened by the poor breed available. Most of the available feed is of low quality as cattle mainly graze and feed on cereal crop residues during the dry season. Feed from legume residues may just last for 1 month in June or July. Legume residues are few because farmers prioritize growing maize as staple food.

Local markets are 20 km away from the ward and it cost them USD 5 per kg of tomatoes/vegetables to transport their produce to market. Roads to the market are not tarred, thus some difficulties in accessing markets during the rainy season, although the roads are accessible during the dry season.

For field crops, government supported scheme is one of the main input suppliers. Other input suppliers include NGOs who mainly supply horticultural inputs and agrodealers who supply all the inputs range. Few farmers get inputs from other farmers through the pass on schemes. Crop/livestock and farm inputs are always available in the local markets especially agrodealers although not all farmers can afford to buy them. Both men and women have equal access to inputs and services.

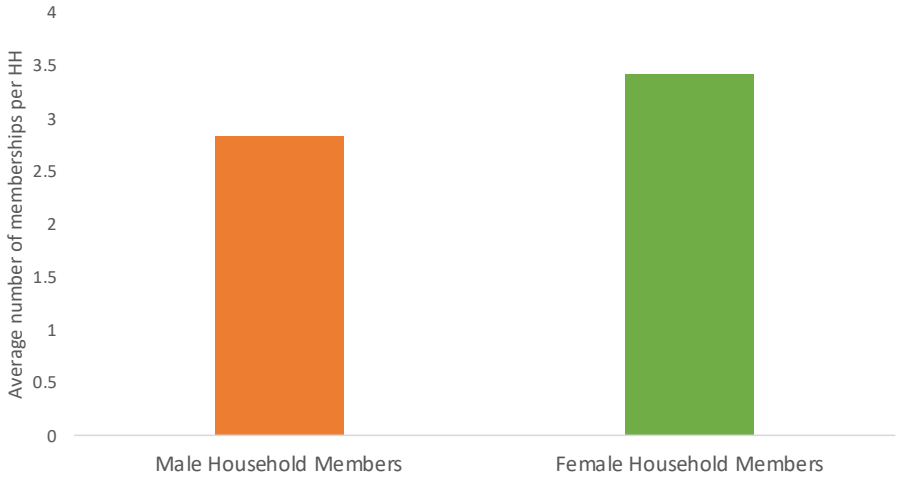
In Mutoko ward 7, there is no source of credit for livestock and cropping activities. Only few women participate in rounds called 'internal lending and saving schemes' (ISALS). Members of the group are charged 2% interest while non-members pay 3%. Almost 60% of the women can access these ISALSs, the selection criteria on which women get credit is based on reliability and history of repayment. The borrowed money is mainly used for non agricultural activities such as school fees and groceries. Only 40% of the FGD participants aspired to access credit in the last two

years. Accessing credit is relatively difficult since there is no formal source available except that women belong to informal groups through which they access loans.

Both male headed and female headed households have equal opportunities to extension services and vaccinations. Their input suppliers are the same. Both male and female are equally knowledgeable about the needs of livestock though men would sacrifice more than women.

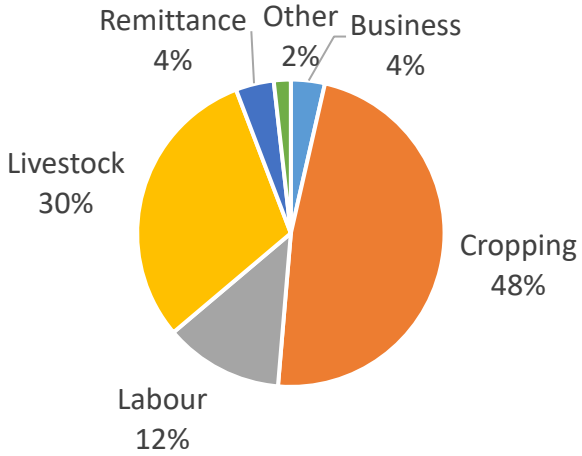
Figure 9 shows the household membership in cooperatives or farmer groups by gender. Both women and men are members of cooperatives and farmer organizations although female household members are more likely to belong to cooperatives or farmer organizations than male members.

Figure 9. Average number of household members of cooperatives and farmer organizations by gender.



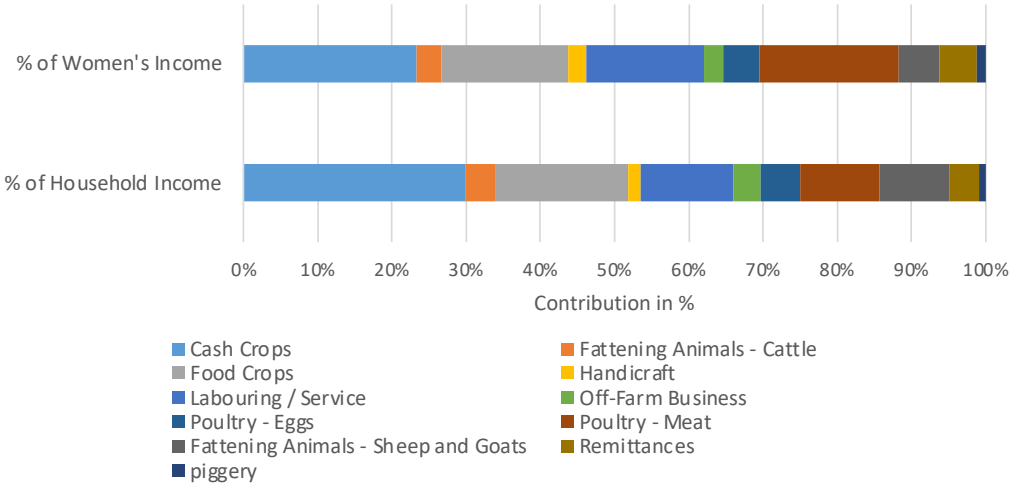
Cropping related activities contribute the highest share (48%) to household income where food and horticultural crops are the main income sources. Livestock contributed 30% of income followed by provision of labour services contributing 15%, while business activities, remittances and other activities contributed 4, 4 and 2%, respectively (Figure 10).

Figure 10. Primary sources of household income by category.



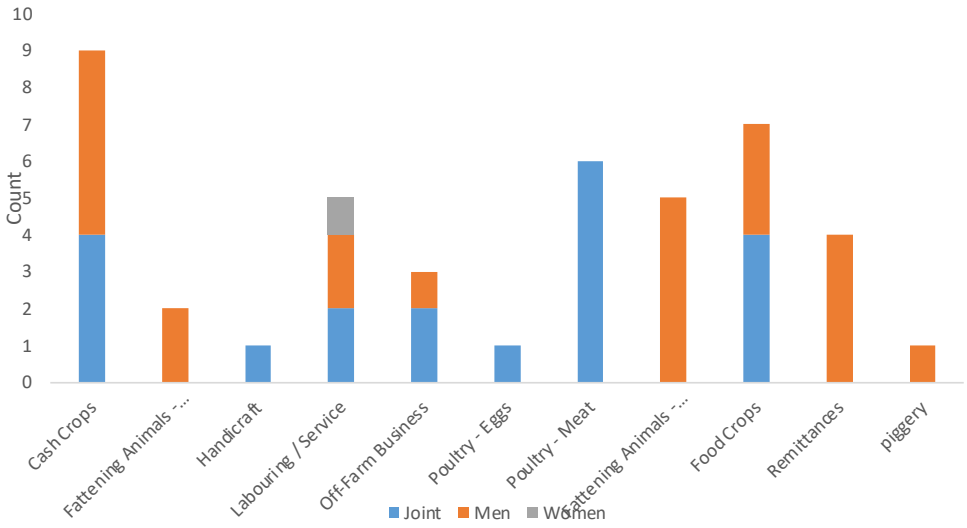
Cash crops, food crops and labouring services contribute the highest share to both household and women income (Figure 11).

Figure 11. Relative contribution of income sources to household and women's income.



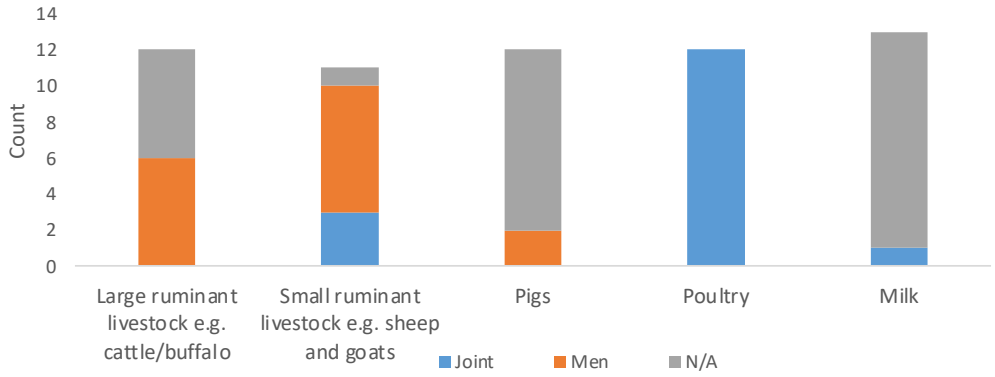
Men decide solely on income from fattened livestock, remittances and piggery (Figure 12). In some households, the decisions for the enterprises such as cash and food crops can be made by either men or women depending on household values. Decisions on labouring services are sometimes made jointly between the man and spouse as both of them could have worked together. In other households, women make some decisions on income from handicraft and poultry eggs.

Figure 12. Gendered decision-making on major sources of household income.



Focusing on income from the sale of livestock, it can be observed that women do not make any sole decisions on livestock sales (Figure 13). They jointly make decision on poultry and sale of small ruminants such as goats. Men make most decisions on large ruminants, small ruminants and pigs. However, there is a considerable number of not applicable (N/A) responses since most household rarely sell large livestock, small ruminants, pigs and milk. Most households do not milk their cattle as they are meant for draught power.

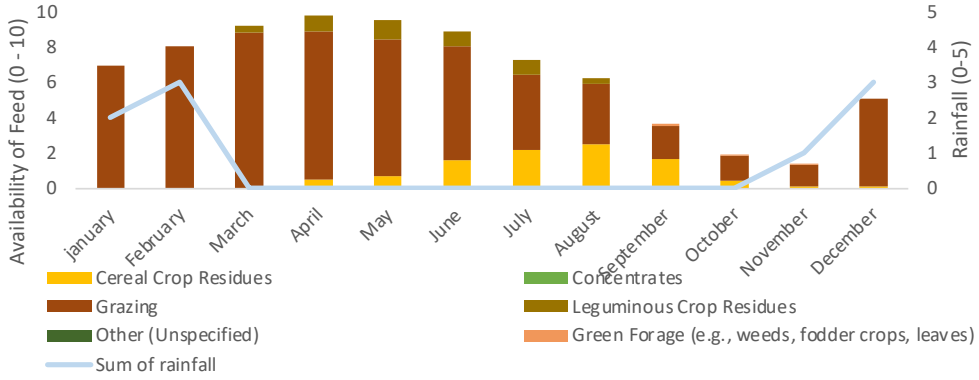
Figure 13. Gendered decision-making on sales of livestock and milk.



3.3 Major feed sources

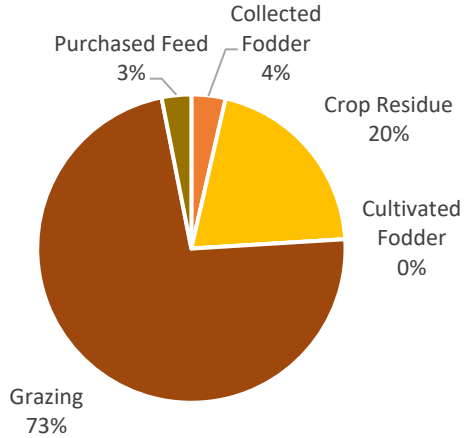
Livestock diets are primarily composed of grazing, cereal and leguminous crop residues and to a lesser extent green forages and concentrates (Figure 14). The contribution made by these feed sources to the diet varies throughout the year. Grazing makes up the most significant portion of animal diet. Livestock communally graze in rangelands during wet season and also graze in fields during the dry season (December–March). Farmers use their expansive land to graze their animals on naturally occurring grasses. Grazing intensity increases during the wet season (March–June) and (September–December). During the dry season, cereal crop residues and legumes are found in larger quantities in the diet. Green forages and collected feeds are incorporated more during the wet season. Concentrates are used in very little quantities; they appear higher in April–August compared to the rest of the year.

Figure 14. Major feed sources.



Grazing contributes 73% to the total dry matter intake on farms, followed by crop residues (20%) from cereals and legumes. Collected and purchased feeds contribute 4 and 3%, respectively of the dry dietary matter. Crop residues contribute about 3% and consist of residues from cereal crops.

Figure 15. Contribution of dietary dry matter (DM) to the total livestock diets by feed source on farms in Mutoko District.



The contributions of total metabolizable energy (ME) measured in MJ/kg and crude protein (CP%) are mainly from grazing which contributes the highest share in terms of ME (MJ/kg) at 72% and crude protein at 75% (Figures 16 and 17). Crop residues contribute 20% of the total ME (MJ/kg) and a high crude protein at 17%. Both collected fodder and purchased feed contributes 4% to the total ME (MJ/kg) and 4% to crude protein each (Figure 16). There is no fodder cultivation practised in Mutoko.

Figure 16. Metabolizable energy intake by source.

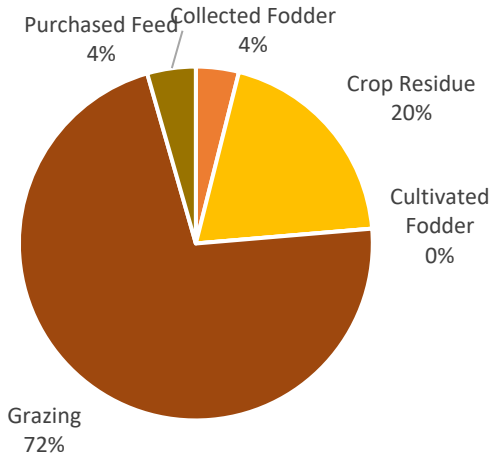
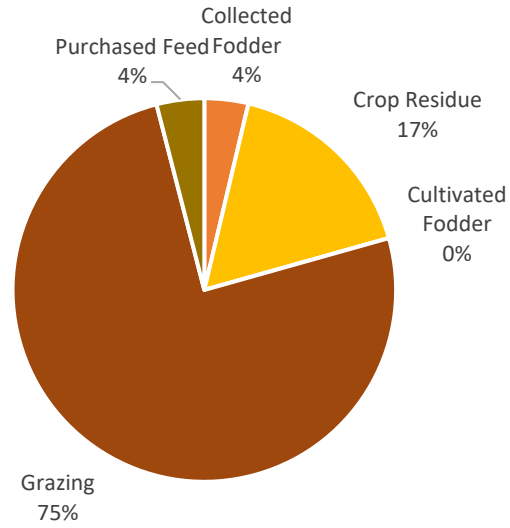


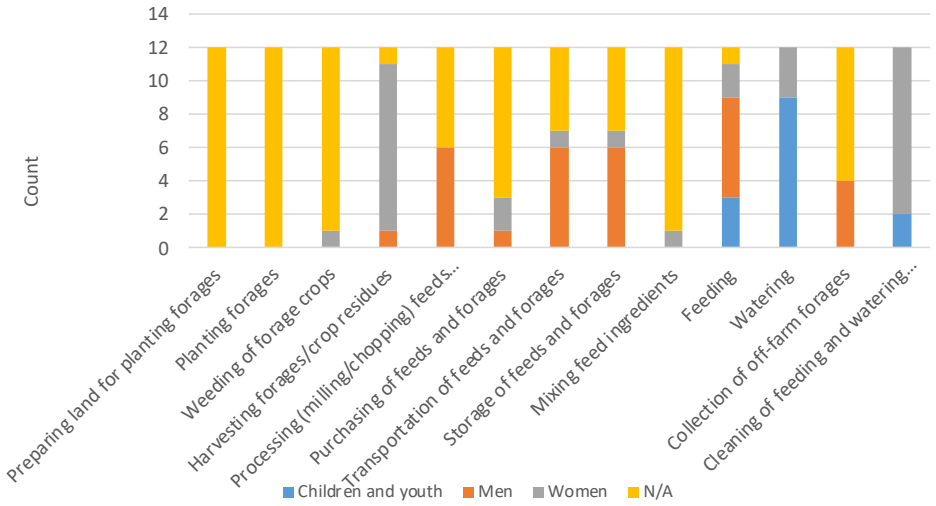
Figure 17. Crude protein intake by source.



3.4 Gendered division of labour and gendered decision-making on livestock, feed related activities

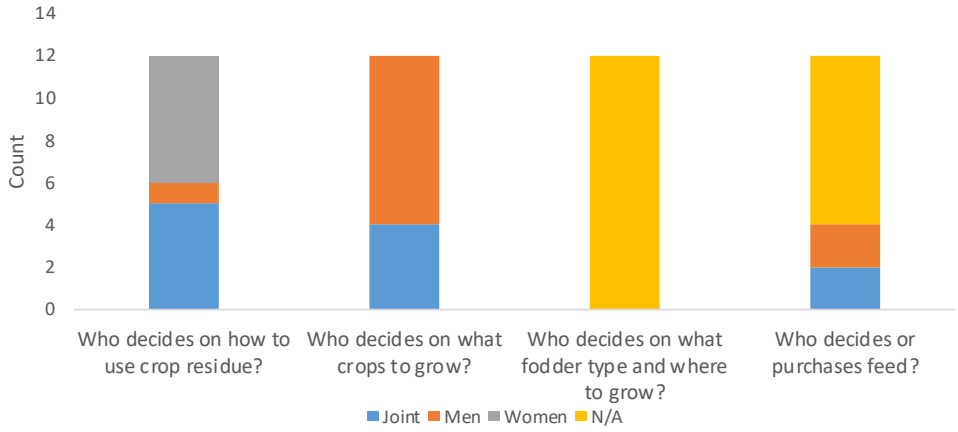
Figure 18 shows the different roles of children and the youth, women and men in forage production activities. Men dominate in processing, transporting and storage of feeds as well as feeding the livestock, collecting crop residues and off-farm forages. In Mutoko ward 7, no household plant forage crops thus land preparation for planting forages is not applicable. Of all the practices, watering and cleaning feeding troughs are the only practices done by all the households. Women are mostly involved in harvesting crop residues and cleaning feeding and watering facilities. They are also involved in watering, feeding, purchasing, transporting and storing feeds and forages. Children and the youth are mainly involved in cleaning livestock feeding and watering facilities and collecting off-farm forages. In general, it is observed that all the household members provide considerable labour in producing and managing forages and livestock.

Figure 18. Gendered division of labour in producing feed, harvesting and feeding practices on farms in Mutoko District.



It is evident that in a household, both men and women make joint decisions about what to grow, where and how (Figure 19). Regarding decisions relating to crops grown, its either female decide on her legumes such as groundnuts while men decide on cereal crops, thus both of them can make sole decision depending on household. No fodder crops are grown in Mutoko and most households do not buy feeds. However, women are involved either as sole decision-makers or in joint decision-making, e.g. on use of crop residues.

Figure 19. Gendered decision-making on cropping and feeding activities.



3.5 Problems and opportunities

The main problems (Table 4) identified by women in the community are diseases, limited access to water, scarcity of fodder, poor quality feeds and poor breeds. Men identified major problems as stock theft, predators, poor breed, scarcity of forage and diseases.

Table 4. Problems, issues and proposed farmer solutions within the production systems

Main problem	Who is affected most? (small/medium/large farms; men/women; MHH/FHH etc.)	Proposed farmer solutions	Ranking in men FGD	Ranking in women FGD
Diseases	Everyone	Availing drugs	5	3
		Improving feed quality and nutrition		
		Controlling internal and external parasites		
		Vaccinating		
Poor quality forages	Everyone	Practicing fodder production		4
		Trainings on fodder production		
		Capacitating through financing		
Scarcity of forages	Everyone	Giving supplements	4	2
		Producing and preserving fodder		
Poor access to water	Everyone	Drilling more boreholes		1
		Constructing/rehabilitating dams		
Poor breeds	Everyone	Availing good/better breeding stock	3	5
		Introducing AI		
Stock theft	Everyone	Promoting neighbourhood watch	1	
		Constructing pens near homesteads		
Predators	Everyone	Improving water availability to reduce distance travelled in dry seasons	2	
		Improving structures		

4. Potential interventions

The proposed interventions include:

- Training farmers on the importance of water harvesting and proper water storage and use. There is need of financial assistance for farmers to establish water harvesting structures, to drill boreholes and construct/ rehabilitate dams.
- Introducing new fodder varieties with higher nutritive quality adapted to the agro-ecological production system.
- Training farmers on proper feed management practices such as feed conservation and processing, e.g. haymaking and silage.
- Assisting with veterinary drugs.
- Bringing new improved breeds to the area and/or introducing artificial insemination.
- Farmers need to be trained on artificial insemination.

The suggested potential interventions are equally necessary for both the female headed and the male headed households.

5. Conclusion

Farmers in ward 7 of Mutoko District are inclined towards food and horticultural crop production. In addition, most households own an average of two draught cattle, while about 20% milk their cows for household consumption only. The local livestock breed, Mashona, is also poor, yet the cattle reproduce through bull system using these poor breeds. Feed is only available during wet season. During dry season they feed on poor quality crop residues and thus livestock condition during dry season is bad. Providing improved bulls and artificial insemination could improve livestock production. A series of trainings on producing fodder, processing and feeding through market and grading should be given to farmers if livestock production is to be improved. Water access needs to be improved for both crop and livestock production. Overall, all opportunities and challenges affect female headed and male headed households the same.

References

Lukuyu, B., van Eerdewijk, A., Kinati, W., Sultana, N., Mulema, A. et al. 2019. ***Gendered feed assessment tool (G-FEAST) focus group discussion guide***. Nairobi, Kenya: International Livestock Research Institute (ILRI). https://hdl.handle.net/10568/100243

LIPS-Zim is a four-year (Jan 2020–Dec 2023) project funded by the European Union. It aims to improve livelihoods in Zimbabwe's semi-arid agro-ecological regions IV and V by increasing the adoption of climate-smart innovations in livestock-based production systems, and by improving the surveillance and control of livestock diseases. Led by the International Livestock Research Institute (ILRI), the project is implemented in partnership with the International Maize and Wheat Improvement Center (CIMMYT), the French Agricultural Research Centre for International Development (Cirad), the University of Zimbabwe (UZ), and the Department of Research and Specialist Services (DR&SS).

This publication was produced with the financial support of the European Union. Its contents are the sole responsibility of the authors and do not necessarily reflect the views of the European Union.

Funded by the European Union

Implemented by

ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE
CGIAR
cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT
CIMMYT International Maize and Wheat Improvement Center
UNIVERSITY OF ZIMBABWE
ZIMBABWE