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Strengthening livestock market flows and feeding practices for improved livelihoods in southern Zimbabwe

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1 Abstract

The growing demand for livestock products in developing countries offers income opportunities for small-scale farmers in the semi-arid areas of Zimbabwe provided they could increase off-take rates and improve animal quality. To achieve this, farmers need to increase their investments in feeding practices – but with poorly developed markets for livestock products and services, farmers have little incentive to make the necessary investments. Household surveys were conducted on goat production in six districts and on cattle production in three districts, at sites with differences in market access and human population densities. The survey examined off-take rates, management practices and socioeconomic profiles of livestock owners. In addition, focus group discussions with livestock traders provided information on market opportunities and input technologies required. Goats are an important source of cash income required for household expenses. No formal markets exist for goats, but large numbers are sold to traders and transported to urban areas. Prices are low because of a lack of market competition and poor animal condition. Cattle provide only limited income, although they are the preferred form of investment. Farmers use formal market systems in remote areas, whereas informal marketing strategies are used in areas closer to urban markets – bypassing levies and other transaction costs. Significant numbers of cattle on sale at official sales pens remain unsold – largely as a result of low prices offered by buyers due to poor animal condition or because of imperfect market situations where few buyers offer very low prices and farmers prefer to take their animals back home. The main challenges are to establish improved livestock marketing facilities and coordinated sales in rural areas and to disseminate information on prices and market requirements to small-scale producers. Premium prices paid for animals in better condition will create incentives for farmers to invest in improved animal feed and management technologies that will lead to higher production and off-take rates. The concept of market-led feeding development applies to drylands in southern Africa and will require joint investments by both private and public sectors.

2 Rationale and aim of the study

Improving livestock market participation by small-scale producers is critical to achieving income growth and enhancing livelihoods in the marginal rainfall areas of Zimbabwe. Crop–livestock production systems are the most common form of land use. Livestock is regarded as a source of income, food and insurance, whereas crop production is a subsistence activity with maize, sorghum and millet being the most important crops (Ryan and Spencer, 2001). However, less than 15% of farmers in marginal rainfall areas of Zimbabwe have enough cattle to commercialize. Most farmers keep goats for immediate cash needs and home consumption (Hargreaves *et al.*, 2004).

Since the early 1970s, the consumption of livestock products in developing countries has increased dramatically (Delgado *et al.*, 1999). Higher demand for animal products is predicted, as human populations continue to grow and urbanization and higher living standards change consumer preferences towards more meat and milk (Tacher and Leteneur, 2000). However, trend analyses show that cattle populations are stagnant in southern Africa, but are increasing for goats. In Zimbabwe, the production of beef has declined substantially and this has contributed to a shortage in supply and higher prices (VanRooyen, 2006). Fast track land reform has caused a reduction of the commercial cattle herd by 75% from 1996 to 2004, while recurrent droughts contributed to further losses of cattle in the small-scale farming sector. However, during the same time the goat population has increased, with more than 90% of the goats owned by small-scale farmers (Sibanda, 2005). Prices for goat meat are now at the same level as beef, offering opportunities for small-scale goat farmers to enter commercial markets.

In order for small-scale farmers to benefit from the market trends, incentives in the form of appropriate price–cost ratio are needed. Farmers must have better access to livestock markets and market information, as this will provide the incentive to invest in improved management. But an increase in livestock production can only be achieved through more intensive feed and forage utilization, particularly during the dry season when grazing is limited.

This paper presents the preliminary results of a study on dry season feeding of livestock in the semi-arid areas of Zimbabwe. The results will contribute to a larger regional program on livestock and livelihoods in southern Africa, funded by the Implementation and Coordination of Agricultural Research and Training (ICART), Competitive Regional Agricultural Research Fund (CRARF). The specific objectives of this study are:

- ✓ to analyze small-scale farmers' constraints and options in participating in livestock markets, and
- ✓ to determine the relationship between market access and farmers' investment in livestock.

3 Description of the study areas

The study was conducted in the western and southern districts of Zimbabwe, which fall in agro-ecological zone IV (seasonal droughts and 450–600 mm average annual rainfall) and zone V (very erratic and less than 500 mm average annual rainfall) (Table 1). Farming systems in region IV are semi-extensive, based on crop–livestock production and have a limited potential for drought-resistant fodder crops. Cattle population densities

tend to be higher here than in the drier region V. Binga (region IV) is an exceptional case with a low cattle density but very high goat density. The farming systems in region V are extensive and are based primarily on livestock production due to the highly erratic rainfalls, which limit the potential for crops.

Table 1 Characteristics of livestock production systems in the selected study districts

	Beitbridge	Gwanda	Matobo	Binga	Nkayi	Tsholotsho
Agro-ecological zone	V	V	IV and V	IV	IV	IV
Human population density (n km ⁻²)*	78	118	153	117	249	181
Cattle population density (n km ⁻²)**	53	62	120	77	231	139
Goat population density (n km ⁻²)**	95	117	108	283	65	153
% Households with cattle	56	51	53	59	81	68
Cattle herd size (household mean, std.dev.)	5.0 (9.2)	3.4 (6.0)	4.2 (8.1)	6.6 (8.9)	6.6 (5.9)	4.4 (4.8)
Goat flock size (household mean, std.dev.)	14.2 (15.0)	14.3 (17.9)	18.5 (13.7)	12.6 (16.7)	8.8 (9.5)	6.8 (5.7)

* Source: Central Statistics Office (2002); ** Source: Department of Veterinary Services (2005).

4 Research project and activities

The research project covers a three-year period (June 2005–May 2006), implemented in the semi-arid areas of southern Zimbabwe (region IV and V); the initial results are presented here. Baseline diagnosis of goat and cattle production, management and marketing was done through household surveys, in collaboration with Agricultural Research and Extension Service (AREX), Department of Livestock Production and Development (DLPD), Desert Margins Program (DMP) and SNV (Netherlands Development Organization). Two surveys, one focusing on goat production and one on cattle production, were carried out from April to August 2005, covering the 2005/2006-production season. The data included socioeconomic aspects, herd dynamics, livestock marketing and management (feeding, water, veterinary, breeding, housing) as well as farmers' priorities for interventions. The surveys were conducted during a post-drought period and livestock figures are therefore probably below the normal trends.

For the goat survey, six districts (Beitbridge, Gwanda, Matobo, Binga, Nkayi, Tsholotsho) with high livestock production potential and different human population densities as main determinants of land use intensification processes were selected. Within each district, two wards, one near and the other far from the main livestock markets were sampled, targeting three villages per ward. A total of 825 households were randomly selected from household lists prepared by local authorities, indicating farmers who kept at least one goat. The cattle survey covered 438 households in three of the sampled districts (Beitbridge, Nkayi, Tsholotsho). Goat keepers that also kept cattle were revisited

and other randomly selected households replaced those without cattle. Data collected during the surveys were used for comprehensive analysis, using the SPSS (11.0) package.

Key informant discussions with government officials, local authorities and livestock traders and processors provided additional information to explain the goat and cattle value chain in Zimbabwe.

5 Research highlights

5.1 Livestock ownership

All households involved in the survey own at least one or two goats, but 39% of the households do not own cattle. Livestock ownership per household is generally low, with a mean of 5 cattle (std. dev. 7.4) and 13 goats (std. dev. 14.3). Livestock ownership differs between the districts. Cattle ownership is more common and median herd sizes are larger in region IV that has a better feeding potential. However, the largest herds are found in region V, with a maximum of 51 cattle in Matobo, indicating higher heterogeneity of cattle herds in the drought-prone areas. Goat flock sizes are larger in the drier areas (region V), and Gwanda has the largest goat flock (151) in the sample districts.

5.2 Importance of livestock for small-scale farmers

Farmers ranked livestock as the most important source of on-farm income (Poster Figure 1); 65% of the farmers derive a significant share of income from livestock. Yet, farmers ranked draft power as the most important function of cattle (50.9%), followed by income (38.8%) and milk (6.4%). For goats, 62.2% of the farmers considered income as the most important function, followed by meat (25.4%) and manure (5.2%).

The two most common expenses covered by goat and cattle sales are food purchases and education (80%, Poster Figure 2). Goats particularly contribute directly to food security through meat and milk and indirectly through purchase of other food items. Goats are critically important for empowering vulnerable groups such as female and child headed households or households afflicted by HIV/AIDS or food shortages. Small-scale farmers thus depend on cattle to sustain cropping activities and they derive their income from goats.

5.3 Improved feeding: A key challenge for increased livestock production

Livestock production in the semi-arid areas of Zimbabwe is primarily dependent on rangelands, which are highly variable in space and time, resulting in nutritional shortages during dry seasons. Ninety-seven percent of the farmers stated that they face feed shortages for cattle production and 93% for goat production. Feed shortages commence in July, with a peak in September/October and phase out in December/January (Poster Figure 3). Although the trends are similar across all districts, the magnitude of feed shortages might be area specific and therefore require localized feeding interventions.

Despite the importance of livestock for income generation, households' sale rates of cattle (4%) and goats (11%) are low. Only 26% of the farmers sold cattle and 44% of the farmers sold goats during the one-year observation period. Slaughter rates are also low, 1% for cattle and 7% for goats. It appears that more than 50% of all outflows are a result of mortality (26% for goats and 20% for cattle). The seasonal trend of mortality for goats

and cattle are similar, with most deaths occurring from September to October, the period of feed shortages (Poster Figure 4). The study confirmed that the most critical constraint in livestock production in the region is dry season feeding.

Based on the information obtained from the surveys, strategic feeding interventions should reduce livestock deaths. Supplementary feeding should start before the animals lose body condition and continue as long as the rangelands are able to support the nutritional requirements of the animals. This could increase the number and quality of animals available for own use and sale drastically.

5.4 Market development: Driver for higher off-take and quality production

The main market destination for cattle and goats sold to urban consumers in the survey districts is Bulawayo, the second biggest city after the capital Harare (Figure 1). Fewer animals are transported to Harare, other growth points or marketed within the districts. Formal market facilities are well established for cattle. Six to eight cattle sale pens are unevenly distributed within each district. The local authorities run cattle auctions at six-week intervals. Other sale facilities for cattle are local collection points, organized by individuals and traders. Abattoirs in Bulawayo also source cattle in large quantities. The beef is then sold to urban retailers and butcheries. No formal market facilities exist for goats and most farmers rely on farm gate sales. In a few areas traders used basic holding facilities to buy goats at cattle sale pens or they communicate through the local authorities to announce their intention to purchase goats at certain collection points. Traders either sell the goats to urban butcheries that use the service slaughter facilities of few abattoirs or directly to consumers at informal peri-urban market places.

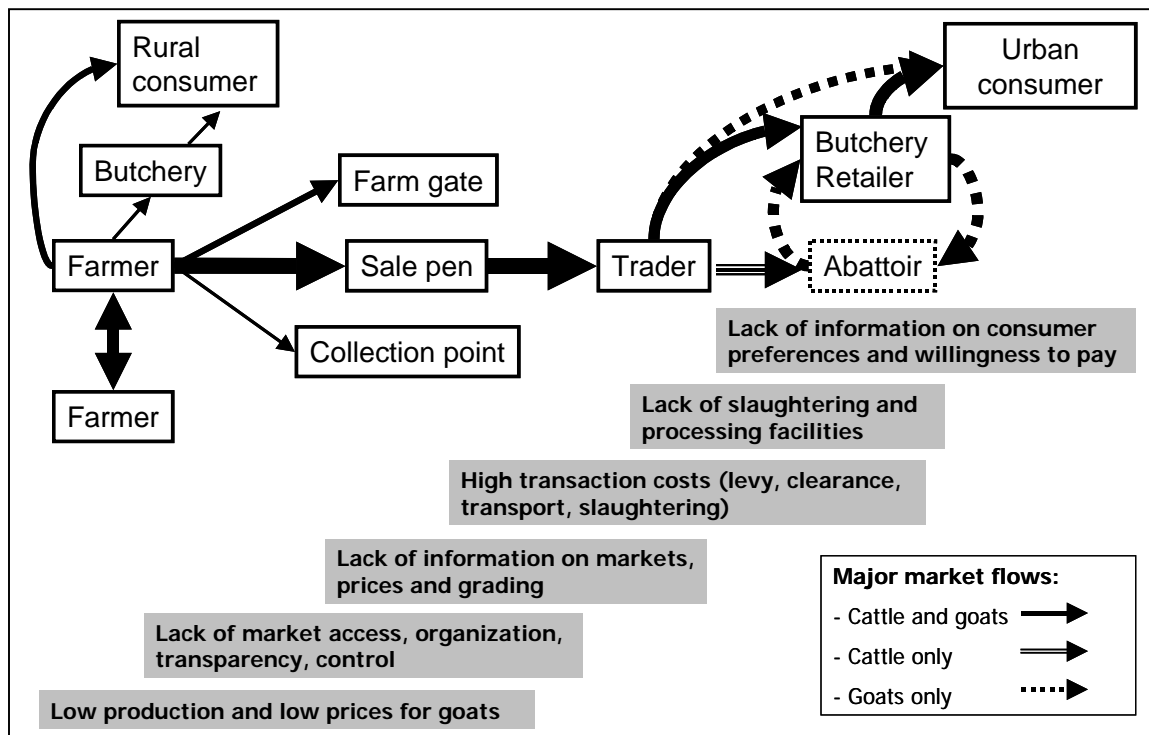


Figure 1. The market chain of cattle and goats in Zimbabwe and most critical constraints.

Discussion with livestock market participants (traders, abattoirs, butcheries, retailers) revealed major shortcomings along the value chain of cattle and goats: lack of information on consumer preferences and markets, shortage of slaughtering and processing facilities in urban and rural areas, high transaction costs and difficulties in accessing markets, ultimately resulting in low prices for the farmer. Correspondingly, farmers identified main constraints as related to market facilities (41%), difficulties in contacting buyers and lack of price information, as well as low prices (31%). But they also identified production related constraints (29%), such as insufficient numbers and low productivity of cattle and goats, which prevent them from selling more animals.

The results of the study show that farmers attempt to use either formal or informal market strategies to their advantage. Farmers sell a substantial number of cattle at formal sale pens in remote areas, like Beitbridge, or where sale pens are well established, as in Nkayi (Table 2). They prefer informal direct sales and therefore the numbers of cattle sold at sale pens in areas closer to Bulawayo, like Tsholotsho, are low. This allows farmers to bypass marketing levies and transaction costs and puts them in a better position to compare prices and negotiate with buyers. Yet, significant numbers of cattle are yarded but not sold at cattle sale pens, either because buyers reject animals in poor condition or because farmers withdraw animals for which the prices offered by buyers are too low.

Table 2. Total number of cattle sold per district and yarded and sold at formal sale pens in sub-selected districts, 2005.

	Beitbridge	Nkayi	Tsholotsho
Total number of cattle sold per district	8422	3507	2892
Number of cattle yarded at sale pens	2993	3622	996
Number of cattle sold at sale pens	2928	2458	674

Source: Department of Veterinary Services (2005) and Rural District Councils (2005). Note that in Nkayi and Tsholotsho, sale pens were closed for four and three months respectively, because of disease outbreaks, contributing to a low number of cattle sold.

Farmers also respond positively to the accessibility of goat market facilities within districts (Table 3) – selling more goats in the wards with better market options in Gwanda, Beitbridge and Binga, than in Nkayi and Tsholotsho where no such structures exist and farm gate sales are the only other option. The number of goats sold per household is also significantly higher in the wards with better goat market facilities in Binga and Gwanda.

Table 3. Proportion of farmer who sold goats and mean sale rates by districts and wards, from May 2005 to April 2006.

Districts	Nkayi		Tsholotsho		Binga		Matobo		Gwanda		Beitbridge	
	Near	Far	Near	Far	Near	Far	Near	Far	Near	Far	Near	Far
Number of farmers who sold goats (%)	52	20	36	22	63	25	58	23	76	47	64	35
Goats sold / household mean (std.dev.)	2.2 (1.6)	1.4 (1.2)	2.1 (1.2)	1.6 (0.9)	7.9 (10.3)	3.2 (3.4)	2.8 (1.9)	2.8 (3.2)	6.0 (6.4)	2.3 (1.6)	3.4 (2.6)	2.3 (1.6)

Although farmers have a basic market understanding, they do not invest in the technologies to achieve higher livestock production. For instance, there is no significant relationship between the numbers of animals sold and investments in improved feeding technologies. This leads to the conclusion that there is not yet a planned allocation of resources for the development of commercial livestock production, and thus no regular livestock supply. On the other hand, quality standards are not consistently applied and this reduces the incentive for increased investments in supplementary feeding. The potential of livestock production is therefore not sufficiently exploited. Apart from a lack of market incentives, there is also a lack of predisposition to commercialize. Farmers most often sell out of distress with livestock being considered as a financial reserve. This is aggravated by the fact that farmers lack information on market requirements and thus reduced ability to respond to market needs. A further conclusion of this study is that farmers currently invest in herd maintenance rather than commercialization.

6 The way forward

Development interventions that aim at improving livelihoods for resource-poor farmers must recognize the importance of livestock, especially goats. The key issue is to reduce livestock mortality during the dry season, in order to increase the potential for off-take and quality production. Increased benefits from livestock production through improved feeding technology need to be demonstrated under local-specific farming conditions.

The entry points for transfer of knowledge and technology development are rural livestock markets. Improving the accessibility and efficiency of livestock markets by establishing more formal market options closer to the farmers is expected to increase off-take and quality production. Through a better price–cost ratio farmers will invest more in livestock production and management, enabling higher production. A more consistent supply of goats in better conditions would reduce the transaction costs for traders, resulting in a win–win situation for farmers and traders. Commercializing farmers will be targeted for the identification, testing and dissemination of improved feed technologies. Traders will be supported in their role as providers of information and services, in areas with high potential for cattle and goat production. Facilitating farmer–trader linkages through multi-stakeholder workshops will help to define intervention priorities, enhance knowledge generation and also increase the cost effectiveness of development interventions.

The approach of market-led technology development for higher incomes of small-scale farmers will be studied in a regional program on Livestock and Livelihoods in Southern Africa (ICART/CRARF). Pilot activities will target Mozambique, Namibia and Zimbabwe, and will be implemented by a consortium of public and private partners. Lessons learned will be shared at a regional forum for judging potential transferability and wider application in other countries.

7 Literature

Central Statistics Office, Census (2002) Harare, Zimbabwe.

Delgado, C.M., Rosegrant, H., Steinfeld, H., Ehui, S. and Courbois, C. (1999) Livestock 2020: The next food revolution. Discussion Paper 28, International Food Policy Center, Washington DC, USA.

Department of Veterinary Services, Province livestock statistics (2005), Bulawayo and Gwanda, Zimbabwe.

Hargreaves, SK, Bruce, D. and Beffa, L.M. (2004) Disaster mitigation options for livestock production in communal farming systems in Zimbabwe. 1. Background information and literature review. International Crops Research Institute for the Semi-Arid Tropics, Bulawayo, Zimbabwe.

Rural District Councils, District cattle sale statistics (2005), Beitbridge, Nkayi and Tsholotsho, Zimbabwe.

Ryan, J.G. and Spencer, D.C. (2001) Future challenges and opportunities for agricultural R&D in the semi-arid tropics. International Crops Research Institute for the Semi Arid Tropics, Patancheru, India.

Sibanda, R. (2005) Livestock development in southern Africa: future research and investment priorities. Zimbabwe country report. International Crops Research Institute for the Semi-Arid Tropics, Bulawayo, Zimbabwe. Unpublished.

Tacher, G. and Lateneur, L. (2000) Le secteur des productions animales en Afrique subsaharienne des independences a 2020. III Perspectives de la demande et de l' offre pour 2020 et voies de reponse au necessaire development de l'eleavage. Revue Elevage Medicine Veterinaire en Pays Tropicaux, 53 (4): 365–375.

Van Rooyen, A.F. (2006) Livestock development in Southern Africa: Future Research and Investment Priorities. International Crops Research Institute for the Semi-Arid Tropics, Bulawayo, Zimbabwe. Unpublished.