

KEY FUNCTIONS OF LIVESTOCK IN SMALLHOLDER FARMING SYSTEMS: A SOUTH AFRICAN CASE STUDY

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SUMMARY

Two thirds of the world's domestic animals are kept in developing countries, where over 90% are owned by rural smallholders. Through its contribution to income generation, animal production is a significant component of the livelihoods of more than 60% of the world's poor, and is an efficient entry point for rural development and poverty alleviation. The purpose of this article is to report on the key functions of livestock and the role of gender in livestock management by smallholder owners under communal tenure, in the northern part of South Africa. The study area comprised two rural villages in the northern part of South Africa, where a random sample of households were surveyed through Participatory Rural Appraisal (PRA) techniques. The survey conducted showed that 79% of respondents own less than 10 head of cattle. The 'cattle complex', where cattle are kept for prestige and status as well as capital wealth still hold true, but cattle also make significant contributions with respect to meat and milk supply and arable inputs such as draught and fertilizer. Small ruminants are most important in the household economy through its contribution to income generation and food production. Women benefit directly from livestock, mainly through smallstock i.e. sheep, goats and poultry. These include improved household nutrition and alleviation of hunger, better livelihoods and increased self-reliance.

Keywords: livestock, functions, gender, smallholder, South Africa

INTRODUCTION

Two thirds of the world's domestic animals are kept in developing countries, where over 90% are owned by rural smallholders. Through its contribution to income generation, animal production is a significant component of the livelihoods of more than 60% of the world's poor, and is an efficient entry point for rural development and poverty alleviation (ILRI 1999). A summary of benefits and products derived from livestock are presented in Table 1 (Swanepoel, Stroebel and Nthakeni 2000).

Table 1. A summary of benefits and products derived from livestock

Benefit	Product
Food	Milk; meat; eggs; blood; fish; honey; processed products.
Clothing	Wool; hides; skins; leather.
Work	Draught power – cultivation; transport of goods and people; threshing; milling; pumping water.
Monetary	Capital wealth; investment; income from: hiring working animals; sale of products; sale of animals.
Social	Lobola (bride price); ceremonial; companionship; recreational; status.
Manure	Fertiliser; fuel; flooring.
Other benefits	Feathers; bone meal; soap production.

The purpose of this article is to report on the key functions of livestock and the role of gender in livestock management, by smallholder owners under communal tenure, in the northern part of South Africa.

MATERIALS AND METHODS

The study area comprised two rural villages in the northern part of South Africa, where a random sample of households (smallholder livestock owners) were selected to participate. Comprehensive Participatory Rural Appraisal (PRA) techniques have been used to gather qualitative information as follows (see Table 2).

For the purpose of this article, only the key functions of livestock combined for the two villages, are being reported on and discussed as the case study.

Table 2. Information gathered and tools used in this PRA exercise

Basic Information	Diagrams, Matrices, Sketches
General	General information and social organization of the community, institutional relationships
Spatial	Map of the community
Time	Community history (timeline) and trend analysis
Socio-economic	Livelihoods, income and expenditure, migration calendar, wealth ranking and analysis
Production and technical information	Community and farm transects, flow diagram of the production system, farm sketch, seasonal farm calendar, pair-wise ranking, activity calendar
Constraints and solutions	Listing and ranking problems, problem tree, proposing solutions, SWOT

RESULTS

Results obtained from this case study, are reported on in Table 3-6. The average herd size varied from 15% of owners with less than 5 head of cattle, to 8% with more than 20 head of cattle (Table 3). The majority owned less than 10 head of cattle.

Table 3. Average herd size for cattle

Herd size category	Percentage of owners
<5	15
5 – 10	64
10 – 20	13
>20	8

The pair-wise ranking for the uses of cattle, and for sheep and goats, are presented in Tables 4 and 5.

Table 4. Pair-wise ranking for the uses of cattle

Uses	Ranking
Capital Wealth/ Investment	5
Milk	4
Draught	3
Manure/ Fertilizer	2
Meat/ Sales	1
Other	0

Table 5. Pair-wise ranking for the uses of small ruminants (sheep and goats)

Uses	Ranking
Sale	5
Meat	4
Capital Wealth/ Investment	3
Social/ Ceremonial	2
Skins	1
Manure	0

Cattle are valued for their multiplicity of functions, with the most important being capital/wealth investment, emphasizing the important social role of cattle. Sheep and goats are mainly sold to generate income. Men are mostly responsible for the management of cattle, while women mainly take care of the management of sheep, goats and poultry (Table 6).

Table 6. Gender analysis of livestock management tasks (out of a maximum score of 5)

Type of livestock	Task	Men	Women
Cattle	Herding	3	2
	Ploughing	5	0
	Milking	4	1
	Sales	5	0
	Dipping	4	1
Goats/Sheep	Herding/ Flocking	2	3
	Sales	2	3
	Milking	3	2
Poultry	Sales	1	4
	Slaughter	1	4

DISCUSSION

The household level has increasingly become the focus for study in farming systems. Farming Systems Research (FSR) approaches further encouraged this change and have increased our

understanding of the role and importance of livestock in the farming system, hence the interviews with selected households. By concentrating on objectives at the household level, it is recognized that livestock, although small in number, have a wide range of functions within the household economy.

The survey found that 79% of the respondents own less than 10 head of cattle (Table 3). It is widely reported and accepted that the herd size is regarded as one of the major constraints that have an adverse influence on increased cattle productivity. Low productivity measures, including poor calving rates, high mortality and low offtake rates are common under smallholder systems. This has been highlighted by a number of studies (Bembridge 1987, Steyn 1988; Coppock 1994; de Leeuw and Thorpe 1996; Moyo 1996; Swanepoel *et al.* 2000).

Capital wealth/ investment

It is evident that there is social-economic status related to the ownership of cattle. This is commonly referred to as the “cattle complex”, where cattle are kept for prestige and status and not for production (Mtetwa 1978). The finding by Bembridge and Burger (1977) that the socio-economic status can be regarded as being a very useful predictor of successful and progressive cattle farming is important in this analysis. Whilst Wilkering *et al.* (1962) define social status as the ranking given to an individual based upon consensus of members of a community or society as to what they regard as “high” or “low” characteristics, it has been concluded from this study that education, income, size of enterprise, social participation in village and district affairs, standard of living and a linkage to urban cities were identified as important in determining the socio-economic status. This conclusion, and the fact that successful cattle farmers had a high socio-economic status in their communities, emphasizes the relationship of rural livestock production to his/her level of social development. Such an analogy is reasonable and understandable, because the production and subsequent significant consumption of animal products are not in the first instance necessary for survival but adds quality to life. The normal sequence of events in developing nations from an agrarian point of view is the production of enough foodstuffs (milk, meat). Improvements in animal production have often represented one of the best avenues of raising the smallholder producer from the level of subsistence to that of a small commercial entrepreneur (Kadzere 1996).

Milk production

Milking strategies of herd owners are guided by a complex set of factors, such as herd size, family subsistence needs and whether there is a market for milk. Within the herd, the yield potential of cows and the condition of calves influences milking frequency and daily milk production (Grandin 1988). Within the study, herd size and cattle wealth (number of cattle per person) influences milk offtake, since milking is primarily focused on household needs. Thus, the number of cows in milk per household is negatively correlated with milk offtake yield. The results of this study is substantiated by Coppock (1994) who reported that households with only 3 cows extracted 213 litres, compared to those with 28 cows who extracted only 70 litres of milk.

Draught and manure

Draught can be valued in terms of the output of crops. Clearly this will vary between years and regions. The opportunity cost of not having draught to plough is high. The alternative of land preparation by hand is time-consuming and likely to result in lower yields. The issue of timeliness of ploughing is also significant. An economic assessment would have to assess the alternatives of hiring draught teams or tractors (Scoones and Wilson 1989). Livestock contribute to achieving more efficient and more sustainable resource use through enhanced energy and nutrient cycles. For instance, animal manure increases soil fertility, soil structure and water-holding capacity. About two-thirds of the world’s “walking crops” – livestock – are utilised in farming systems in developing countries where nutrients are scarce and limited. The livestock component of agricultural land-use thus may be viewed as a crucial biophysical and social-economic link of organic and mineral nutrient cycling for the maintenance and resilience of productivity of the natural resource-base, primarily, but not exclusively, in complex land use systems.

Small ruminants

From Table 5 it is clear that small ruminants (sheep and goats) have a slightly different role to play. Although their manure is not valued highly, it is used for gardening. They are however, most important in the household economy through mobilizing cash for school fees and other household

expenditures, and in the provision of meat. Devendra (1999) substantiates this by confirming that goats provide the means for survival as food and income for many of the rural poor, and especially the landless. These data together indicate that the ownership of small ruminants increases as land get scarcer, and confirm the view that the poorest people find food and financial security in the ownership of these animals. Even more important is the fact that for these same reasons, ownership provides a most important means of survival in harsh environments. The contrast between cattle and small ruminants (sheep and goats) is clear. In terms of household objectives, cattle are kept as part of a "cattle complex", not only for prestige and status, also as a way of capital savings, but additionally to provide meat and milk and for arable inputs (draught and fertilizer), whereas small ruminants are kept for cash and meat.

Gender issues

Women are most often the most disadvantaged and vulnerable of the victims of extreme poverty. For these reasons, and from Table 6, it is clear that women (and children) are the ones primarily concerned with the ownership and management of small ruminants and poultry, while men own and take decisions relating to cattle. This is the case in most parts of Latin-America, most sub-Sahara African countries, the Indian subcontinent and South-East Asia (Devendra 1999). During droughts and migrations, women take on the added responsibility of collecting supplementary fodder for small ruminants. Ownership of small ruminants represents prestige some and security to the women. Smallstock (sheep, goats and poultry) ownership and decision-making relating to slaughter and sales allows them to meet family and social obligations, such as the purchase of clothes, care for the sick and ceremonial costs (Safilio-Rothschild 1983).

CONCLUSION

The significant contribution of livestock to rural development and poverty alleviation is evident. Associated with this is the concurrent need to assist the poor with increasing productivity and protecting the environment, resulting in direct benefits linked to food security and sustainable livelihoods. To address these issues, and ensure impact, the way forward will necessitate a wider recognition of their attributes, better resource-use, strong interdisciplinary approaches and institutional support to ensure future contribution of livestock in the developing countries. Gandhi's (1959) remark that: "...the greatness of a nation and its moral progress can be judged by the way its animals are treated" is highly appropriate.

REFERENCES

- BEMBRIDGE, T.J. (1987). 'Aspects of cattle production in Transkei'. *S.Afr.J.Anim.Sci.* **17**, 74-8.
- BEMBRIDGE, T.J. and BURGER, P.J. (1977). *Rhodesia Ag. J.* pp. 1-41.
- COPPOCK, D. (1994). 'The Borana plateau of southern Ethiopia: synthesis of pastoral research, development and change, 1980 – 1991'. (ILCA. Addis Ababa. Ethiopia).
- DE LEEUW, P.N. and THORPE, W. (1996). In 'All Africa Conf. Animal Agriculture'. Pretoria, South Africa.
- DEVENDRA, C. (1999). *Outlook on Agriculture.* **28**, 215-26.
- GANDHI, M. (1959). *The Moral Basis for Vegetarianism.* (Novajivan Publishing. Ahmedabad. India).
- GRANDIN, B.E. (1988). *Human Ecology* **16**, 1-21.
- ILRI (1999). 'Report of the First External Program and Management Review of the International Livestock Research Institute (ILRI)'. (Consultative Group on International Agric. Res., Washington D.C.).
- KADZERE, C.T. (1996). *J. Soc.Dev. Afr.* **11**, 17-31.
- MOYO, S. (1996). 'The Productivity of Indigenous and Exotic Beef Breeds and their Crosses at Matopos, Zimbabwe'. (Unpublished PhD Thesis. University of Pretoria. South Africa).
- MTETWA, R.M.G. (1978). *Zambesia* **6**, 23-35.
- SAFILIO-ROTHSCHILD, C. (1983). 'Women in sheep and goat production and marketing'. FAO Expert consultation on Women in Food Production. (FAO, Rome).
- SCOONES, I. and WILSON, K. (1989). In 'People, Land and Livestock. Proceedings of a workshop on the socio-economic dimensions of livestock production in the communal lands of Zimbabwe' (Ed B. Cousins) pp. 17-122. (University of Zimbabwe: Harare).
- STEYN, G.J. (1988). (DSc Agric Thesis. University of Fort Hare. South Africa).
- SWANEOEL, F.J.C., STROEBEL, A. and NTHAKENI, D. (2000). *Asian-Aust. J. Anim. Sci.* **13 (Vol C)**, 321-4.
- WILKERING, E.A., PRESSER, H. and TULLEY, J. (1962). *Rural Sociology.* **27**, 166-97.

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