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Socio-economic aspects of goat farming enterprise in Teso region, Uganda

C. Byaruhanga[1], J. Oluka[2] and S. Olinga[1]

[1]Nabuin Zonal Agricultural Research and Development Institute, P. O. Box 132, Moroto, Uganda
[2]National Livestock Resources Research Institute, P. O. Box 96, Tororo, Uganda

Author for correspondence: cbyaruhanga27@yahoo.com

Abstract

A study was conducted to document the socio-economic aspects of goat production in Teso sub-region of Uganda. Data were collected by using a questionnaire administered to 114 purposively selected goat owners in five districts. Majority (87%) of *de fecto* household heads were male. About 41.2% of the farmers were aged 51 years and more. The average number of goats per household was 9.2 ± 6.38. Most farmers (63.2%) owned five or less acres of land. Indigenous goats were mainly acquired by buying (85%) while exotic goats and their crosses were acquired from government programs (34%). Goats have a number of roles, though mainly kept as a source of regular cash income (98.2%), followed by socio-cultural values (69.3%). A large percentage of farmers (67%) earned UShs 150,000 or less from goat production. The biggest problem in marketing of goats was high taxation. Majority of goat owners were men (84.86%) but a few cases (average 15.14%) of women that owned goats independently were also reported. Women and children participated less in decision making, although they were responsible for many goat production related activities. In conclusion, goat production plays an important role in improving the livelihoods of the Teso communities. There is need to encourage and develop the participation of women and youths in the goat production and marketing sector, and promote commercialisation so that farmers can increase their present holdings for improved profitability.

Key words: Benefits, farming system, goat production, Uganda

Introduction

Goats are important in resource-poor communities because they provide tangible benefits such as cash income from animal sales, meat for home consumption, manure, skins and fiber (Semakula *et al*., 2010; Hassen and Tesfaye, 2014). They are also a source of intangible benefits, e.g. savings, insurance, and for socio-cultural purposes (Dossa *et al*., 2007; Tadesse *et al*., 2014). The Teso Farming System (TFS) of Uganda comprises nine districts of the semi-arid eastern sub-region. The system is agro-pastoral with rural communities heavily dependent on subsistence mixed annual cropping and livestock production for their livelihoods (Ebanyat *et al*., 2010).

In order to improve goat productivity and marketing it is important to have in place appropriate intervention measures. This requires a good understanding of the characteristics of the goat production systems (Kosgey *et al*., 2008; Assan and Sibanda, 2014). Farmers' socio-economic

and personal attributes have been identified as being instrumental to their access and utilisation of various technologies (Aslan *et al.*, 2007; Hassan *et al.*, 2008). Moreover, it is important to have knowledge of the reasons why farmers keep goats in order to improve goat breeding, health and feeding interventions. Such elaborative information in the Teso farming system was still lacking.

The objective of the present study was therefore, to establish the socio-economic situation of the goat enterprise in the Teso sub-region, identify critical constraints and opportunities which could impact on the potential expansion of the goat farming activities. This information provides a basis for intervention programmes that can sustain and increase goat productivity. This would help to meet the needs and demands of the human communities in and outside the region.

Materials and methods

Description of the study area

The study was conducted in the Teso sub-region of eastern Uganda between June 2010 and September 2011. The sub-region is composed of nine districts and is a typical representative of rural areas in Uganda. It is home to an estimated 2.4 million people of Iteso and Kumam ethnicities. The total land coverage is 14,855 sq km (UBOS, 2014).

The area experiences a humid and hot climate, receiving bimodal rainfall with an annual average between 1,000 to 1,350 mm, much of which is received between March and May. There are decreasing light showers between June and August and heavier rains gain between September and November. The dry season begins in December up to February. Minimum and maximum temperatures are 18° and 31.3°C, respectively. However, extremes usually occur in February, when the temperatures can exceed 35°C.

Sampling and questionnaire methodology

A total of 114 households from Kumi (n = 27), Kaberamaido (n = 25), Soroti (n = 23), Katakwi (n = 19) and Pallisa (n = 20) were sampled for the study. Two sub-counties per district and two parishes per sub-count were included in the survey. This was using prior information obtained from the field staff. Consequently, a total of 10 sub-counties, 20 parishes and between four and seven households per parish were sampled. In each parish, households heads who owned goats were identified using guiding information obtained from extension workers. Goat keepers that were willing to participate in the study were then approached and interviewed.

Data collection

A questionnaire, which was a slight modification of that designed by Rowlands *et al.* (2003), was used to obtain information from respondents on the general household characteristics, acquisition and importance of goats, type and number of livestock kept, sales and marketing of goats and the gender aspects of goat production. The questionnaire was tested before the survey started to ensure that all questions were clear to the interviewees. The questionnaire consisted of both open and close ended questions and it was administered by a team of trained enumerators.

Statistical analysis

Chi-square (χ^2) values and Pearson correlation coefficients were used to test the associations between districts, herds and household characteristics, using

PASW® Statistics 18 (Predictive Analytics Software). Analysis of Variance (ANOVA) and independent samples T-test were also used to compare the significance of difference in means of continuous variables. Indices were calculated to provide overall ranking of reasons for keeping goats according to the formula: index = sum of [3 for rank 1 + 2 for rank 2 + 1 for rank 3] given for an individual use divided by the sum of [3 for rank 1 + 2 for rank 2 + 1 for rank 3] summed over all uses.

Results

Gender, education level and source of livelihood

Of the households surveyed (n = 114), only 13.3% of the farmers were female, and most household heads in the area (84.1%) had attained formal education: primary (52.6%), secondary (21.9%) and tertiary (9.6%). All households surveyed indicated crop farming and livestock keeping as important activities in their livelihoods. However, majority of the households (92.1%) indicated crop farming as their main livelihood activity (Table 1), while only 5.3% and 2.6% regarded livestock keeping and regular employment, respectively, as their main livelihood activities. Off-farms activities such business related activities were also reported. Of the livestock types kept, goats were kept in bigger numbers ($f = 38.58$, $p < 0.001$), on average (with SEM) 9.2 ± 6.38 followed by cattle (6.21 ± 8.8), sheep (2.53± 5.73) and lowest for pigs (1.19 ± 2.12).

Age, size of household and land

In general, for most households (58.8%), the age of the household heads fell within the range of 18-50 years. However, a considerable proportion of farmers (41.2%) were 51 years and above. Most households had 6-9 members (43%) or more than 9 members (44.7%) compared ($f = 43.54$, $p < 0.001$) to households with 1-5 members (12.3%) in the five districts. More households (63.2%; $f = 43.22$, $p < 0.001$) owned five or less acres of land than those who owned 6-10 acres (25.4%), and >10 acres (11.4%). For each of the categories of age, household and land size, there was no significant difference in the percentage of households across districts (χ^2, $p > 0.05$).

Acquisition of goats

A part from offsprings produced, goat owners acquired indigenous goats mainly by purchase from livestock markets and from other farmers (Table 2). Other ways of acquiring goats were through barter

Table 1. Ranking of source of livelihood in households

Source of livelihood	Households[a]	Households[b]
Crops	114	105
Livestock	114	6
Business (retail shopping)	24	0
Regular employment	4	3
Casual labor	2	0

a Households that considered activity as important source of livelihood (n = 114)
b Households that ranked source of livelihood as number one

Table 2. Means of acquiring indigenous goats by owners

Means of acquiring goats	Ranking (Proportion of households)[1]						
	Kumi (n = 26)	Kaberamaido (n = 25)	Soroti (n = 17)	Katakwi (n = 19)	Pallisa (n = 20)	Total (n = 107)	p-value
Bought	1 (0.92)	1 (0.88)	1 (0.82)	1 (0.90)	1 (0.70)	1 (0.85)	0.267^{ns}
Sale/exchange of chicken	2 (0.5)	5 (0.04)	2 (0.06)	2 (0.32)	2 (0.35)	2 (0.26)	0.001**
Government and NGOs	6 (0.08)	2 (0.20)	5 (0.06)	3 (0.32)	4 (0.10)	3 (0.15)	0.126
Gifts	3 (0.35)	6 (0)	3 (0.06)	4 (0.05)	3 (0.15)	4 (0.13)	0.003**
Dowry	4 (0.27)	3 (0.12)	4 (0.06)	0	5 (0)	5 (0.1)	0.013*
Exchange for food crops	5 (0.08)	4 (0.08)	6 (0)	5 (0.05)	6 (0)	6 (0.05)	0.561^{ns}

[1]The proportions were calculated by dividing the number of households that acquired goats by particular way by the number of households interviewed in a district. The greater the proportion, the more important is the means of acquiring goats

*$p < 0.05$, ** $p < 0.01$: proportion of households across districts significantly different. ns, no significant difference, by Chi-square test

trade with chicken and food crops, government programs and NGOs, gifts and dowry. Goats were not acquired by dowry in Katakwi and Pallisa, while exchange with food crops was not reported in Soroti and Pallisa. Irrespective of district, exotic goats and their crosses were acquired mainly from government programs and non-government organisations (proportion 0.34, n = 41). Other farmers acquired exotic goats and crosses by buying (proportion 0.32), barter trade with chicken (0.27) and gifts (0.22), but neither by dowry nor exchange for food crops.

Reasons for keeping goats

The important reasons for keeping goats in the five districts are reported in Table 3. A large percentage of farmers (98.2%) indicated cash income from sale of goats as important in goat farming, followed by socio-cultural values (69.3%), and meat (59.6%). A few farmers in Soroti (47%) and Pallisa (25%) considered goat meat production as important. Irrespective of the district, only a few farmers kept goats for manure (27.2%), skins (15.8%) and milk (1.75%) all of which were ranked very low, however, the importance of manure from goats was more reported in Pallisa (50%) and Katakwi (47.4%).

Table 4 shows the index ranking by farmers for the various reasons of keeping goats. The ranking was highest for cash income and ranged between 0.44 and 0.52. Use of goats for socio-cultural values such as dowry for marriage and gifts was ranked second with index 0.21 to 0.24 except in Katakwi district where they were ranked third (index 0.18).

Sales of goats and products

In all districts, a high number of farmers (77%) sold indigenous goats 12 months

Table 3. Reasons for keeping goats as perceived by respondents

Purpose	Households[a]						
	Kumi (n = 27)	Kaberamaido (n = 25)	Soroti (n = 23)	Katakwi (n = 19)	Pallisa (n = 20)	Total (n = 114)	p-value
Cash sale	27 (100)	24 (96)	23 (100)	19 (100)	19 (95)	112 (98.2)	0.527^{ns}
Socio-cultural	22 (81.5)	20 (80)	12 (52.2)	12 (63.2)	13 (65)	79 (69.3)	0.141^{ns}
Meat for sale and home	21 (77.8)	17 (68)	11 (47.8)	14 (73.7)	5 (25)	68 (59.6)	0.002**
Manure	4 (14.8)	4 (16)	4 (17.4)	9 (47.4)	10 (50)	31 (27.2)	0.023*
Skins	9 (33.3)	2 (8)	2 (8.7)	4 (21.1)	1 (5)	18 (15.8)	0.034*
Milk for sale and home	1 (3.7)	1 (4)	0 (0)	0 (0)	0 (0)	2 (1.75)	0.657^{ns}

[a]Households ranking purpose as important (i.e., 1, 2, 3 or just a tick). Percentages in parentheses
*p < 0.05, **p < 0.001, importance of goats is significantly different across districts, ns = no significant difference, by Chi-square test

preceding the interview (Table 5). The proportion of households selling indigenous goats was highest ($\chi^2 = 18.205$, $p < 0.01$) in Kumi and Kaberamaido, where indigenous goats were most predominant, than the rest of the districts. Similarly, the average number of indigenous goats sold was highest in Kumi (4.5 ± 3.3) and lowest in Katakwi (2.4 ± 3.8). Few exotic goats and/or crosses were sold and this was only reported in Soroti, Katakwi and Pallisa; where relatively high proportions of households kept exotic goats and/or crosses. Sales of skins and meat was generally low, i.e. 11.5% and 2.7%, respectively in all districts.

Table 6 compares goat sales among three categories of herd size (small, medium and large) in 12 months preceding the interview. The average number of goats sold per household was biggest ($f = 9.63$, $p < 0.001$) in large size herds (12.66 ± 9.83) and smallest in small size herds (3.00 ± 3.35). Although not statistically significant ($p > 0.05$) male-headed and literate households sold more goats than female-headed and illiterate households, respectively (Table 6).

It was also observed that the number of goats sold per household increased with the households' herd size ($r = 0.361$, $p < 0.001$). However, considering the total number of goats sold in the households interviewed (n = 114), about 41% of goats sold were from small herds, 43% from medium herds and only 16% from large herds.

About 31% of farmers earned less than Uganda Shillings (UShs) 50,000/- as their annual income from goat production, while only 6.1% of goat farmers had their annual income from goat production above UShs 400,000 (Table 7). Majority of farmers (69.3%) spent less than UShs

Table 4. Purpose of keeping indigenous goats as ranked (index) by respondents

Purpose	Ranking (Index)				
	Kumi (n = 27)	Kaberamaido (n = 25)	Soroti (n = 23)	Katakwi (n = 19)	Pallisa (n = 20)
Cash sale	1 (0.44)	1 (0.47)	1 (0.47)	1 (0.45)	1 (0.52)
Socio-cultural	2 (0.24)	2 (0.24)	2 (0.23)	3 (0.18)	2 (0.21)
Meat for sale and home	3 (0.22)	3 (0.22)	3 (0.21)	2 (0.22)	4 (0.1)
Manure	4 (0.05)	4 (0.045)	4 (0.061)	4 (0.11)	3 (0.15)
Skins	4 (0.05)	5 (0.015)	5 (0.023)	5 (0.036)	5 (0.015)
Milk for sale and home	6 (0.008)	5 (0.015)	6 (0.00)	6 (0.00)	6 (0.00)

Index = sum of [4 for rank 1 + 3 for rank 2 + 2 for rank 3 + 1 for tick] divided by the sum [4 for rank 1 + 3 for rank 2 + 2 for rank 3 + 1 for tick] for all purposes of keeping goats. The greater the index, the greater the importance.

50,000 on goat production while only 3.5% spent more than UShs 400,000.

Market for goats

Majority of respondents (85.1%) reported that the main option of selling goats was at weekly markets. Other options were home sales (45.9%), shops (2.8%) and least for daily markets (0.9%). Goats at weekly markets were sold to traders who acted as middle men.

Most goat farmers across all districts (93.5%) cited high taxation as the biggest problem faced in the marketing of goats and their products. This was followed by low prices offered by traders (79.4%) and occasional low demand for goats (29%). The problem of long distances and/or lack of transport to the market was least cited by the farmers (12.1%).

In all districts, walking and the use of bicycles were the only means of transporting goats to the markets. Transport by walking was significantly associated with the distance to the market ($\chi^2 = 21.772$, $p < 0.001$). About 97.5% of goat owners within a distance of 10 kilometers to the market walked their goats to the market. This is compared to 2.5% of farmers in areas where distance to the market was over 10 kilometers. On the other hand, the use of bicycles as a means of transporting goats was not influenced by distance to the market.

Patterns of goat ownership in households

Patterns of goat ownership in households

Table 8 shows a summary of patterns of goat ownership and decision making in goat production by gender and district. Joint family ownership of goats and decision making to sell or give away goats was the most predominant in Kumi, Kaberamaido, Soroti and Katakwi followed by ownership by men. In contrast, men owned majority of the herds and made more decisions to sell or give away goats in Pallisa.

Fewer cases of women and children having independent ownership were reported. Goat ownership by women was most reported in Pallisa (35%) and followed by Katakwi (21.1%) and least in Kaberamaido (4%). There was a variation across districts in the independent

Table 5. Sales of goats by district in 12 months preceding the study

District	n	Indigenous goats sold		Exotic and/or crosses sold	
		Households	Number of goats (Means ± SD)	Households	Number of goats (Means ± SD)
Kumi	27	25	4.5 ± 3.3	0	0
Kaberamaido	25	23	4.5 ± 4.5	0	0
Soroti	23	11	2.5 ± 3.7	5	0.5 ± 0.99
Katakwi	19	14	2.4 ± 3.8	2	1.3 ± 4.82
Pallisa	20	15	3.4 ± 4.2	2	0.7 ± 2.31
		χ^2= 18.205, p= 0.001**	f = 1.57, p = 0.186^{ns}	χ^2 = 10.823, p = 0.029*	f = 1.143, p = 0.34^{ns}

*p < 0.05, **p < 0.01, number of households selling particular goat breed are significantly different across districts.
ns means are not significantly different

ownership of goats by women (χ^2 = 11.892, p < 0.05) and children (χ^2 = 12.569, p < 0.05).

There was a positive correlation (r = 0.818, p = 0.09) between goat ownership and decision making by men. However, the correlation for women (r = 0.036, p = 0.95), though positive, was less than for men. On average, male-headed and literate households owned more goats, i.e., 9.96 ± 9.59 and 10.11 ± 9.58, respectively than female-headed (7.62 ± 3.11) and illiterate (7.11± 4.10) households.

Labor in goat production

All family members contributed to labor with regard to goat production. Overall, men were more involved (64%) in the health care for goats than women (32.5%) and children (8.8%) (Table 9). However, in all districts women and children provided more labor for tethering/grazing and watering for goats than men.

Discussion

Results of the present study indicate that the production system in Teso sub-region is mainly small holder of mixed crop and livestock. The high literacy level in the study area is strength in enhancing goat production, because literate communities are more likely to take risks and thus more inclined to commercialise and take up new technologies (Homann *et al*., 2007). A considerable proportion of farmers (41.2%) fell above 50 years of age. This could be attributed to the fact that tendering of the goats under tethering system, which was predominant in the area, does not require much attention. Therefore, it is easy for older people to manage this type of system. The fact that the youth (18-30 years) were only 11.4% of the farmers means that the enterprise

Table 6. Number of goats sold by herd size, sex and education level of household head in Teso region

Herd categories	Number of goats sold (Mean ± SD)	
	1-8 (Small)	3.00 ± 3.35
	9-19 (medium)	4.43 ± 6.50
	e" 20 (Large)	12.66 ± 9.83
		f = 9.629, p < 0.001
Sex of HH	Male	4.20 ± 5.92
	Female	3.19 ± 2.90
		t = 0.672, p = 0.503
Education of HH	Literate*	4.31 ± 5.92
	Illiterate	2.72 ± 3.08
		t = 1.108, p = 0.27

HH; household head, *House head with formal education, i.e., Primary level and beyond

Table 7. Percentage of households for various categories of total income and cost of goat production in Teso region

Category	Production income		Production cost	
	Number of households	Percentage	Number of households	Percentage
<50,000	36	31.6	79	69.3
50,000-150,000	41	36.0	28	24.6
151,000-250,000	21	18.4	3	2.6
251,000-400,000	9	7.9	0	0.0
>400,000	7	6.1	4	3.5

is missing out on a more active group, who would enhance productivity and commercialisation. Most households (63.2%) owned five or less acres of land. Since land is required for the grazing of animals or for production of fodder, inadequate land limits the size of goat herds that the farmers can keep. There is, therefore, need to develop and promote efficient practices of goat farming to maximise output per unit area of land.

It is important to know how farmers acquire their goats as it determines the herd dynamics and breeding practices. Indigenous goats were mainly acquired through purchases. Other ways were through barter trade with chicken, from government programmes, gifts, dowry and exchange with food crops. Similar ways of acquiring goats by goat owners have been reported in other parts of Uganda (Semakula *et al*., 2010). Our findings are in agreement with those of Assan and Sibanda (2014) in Zimbabwe who reported that households acquired goats mostly through purchases. Exotic goats

Table 8. Patterns of goat ownership and decision making in sale and give away of goats and goat products across districts of Teso region

District	n	Aspect	Households (%)			
			Men	Women	Children	Whole family
Kumi	27	Ownership	29.6	11.1	22.2	63.0
		Decision[a]	22.2	18.5	0.0	59.3
Kaberamaido	25	Ownership	40.0	4.0	8.0	52.0
		Decision[a]	44.0	12.0	0.0	44.0
Soroti	22	Ownership	36.4	4.5	0.0	63.6
		Decision	40.9	0.0	0.0	59.1
Katakwi	19	Ownership	36.8	21.1	31.6	52.6
		Decision	15.8	21.1	0.0	63.2
Pallisa	20	Ownership	60.0	35.0	5.0	20.0
		Decision	60	5.0	0.0	35.0

[a] Decision making to sell or give away goats and products
Note: In 16% of households, goats were owned by at least two different persons

Table 9. Provision of labor for goat production by gender among districts of Teso region

District	n	Role	Percentage of households		
			Men	Women	Children
Kumi	27	Provision of water	63.0	96.3	74.1
		Animal health care	59.3	51.9	11.1
		Tethering/grazing	70.4	96.3	77.8
Kaberamaido	25	Provision of water	24.0	76.0	80.0
		Animal health care	52.0	20.0	4.0
		Tethering/grazing	56.0	76.0	76.0
Soroti	23	Provision of water	60.9	100	73.9
		Animal health care	73.9	13.0	13.0
		Tethering/grazing	69.6	95.7	78.3
Katakwi	19	Provision of water	52.6	89.5	78.9
		Animal health care	78.9	21.1	0.0
		Tethering/grazing	57.9	89.5	73.7
Pallisa	20	Provision of water	45.0	95.0	55.0
		Animal health care	60.0	55.0	15.0
		Tethering/grazing	45.0	75.0	65.0

Total households = 114

and/or crosses were mainly acquired from government programs and buying, followed by sale/exchange of chicken and gifts. However, exotic goats and crosses were not acquired through dowry and exchange for food crops. This is because bride price is a cultural practice which involves mainly indigenous goats. Furthermore, exchange of food crops for exotic goats is difficult because such breeds cost higher than the indigenous ones. This implies that big quantities of food would be required to exchange for goats.

It is also important to have knowledge on reasons why farmers keep goats as ignorance of it can be a major huddle in the success of breeding, health and feeding interventions in the tropics (Kosgey *et al*., 2006; Tadesse *et al*., 2014). In all districts, majority of the respondents ranked cash income as the most important reason for keeping goats. To a lesser extent, farmers also considered socio-cultural values and meat as important. The findings of the present study are in agreement with those of Hassen and Tesfaye (2014) in Ethiopia and Semakula *et al*. (2010) in Uganda who reported cash income as the most important in goat farming followed by other tangible and intangible benefits. Income from goats is of utmost importance to sustain human nutrition and education for small-scale farmers (Tadesse *et al*., 2014). Socio-cultural values were ranked second indicating the value of livestock in the cultural settings of Teso communities. The importance of manure as a fertiliser in crop production and skins from goats was mainly reported in Pallisa, Katakwi and Kumi.

A high number of farmers (77%) marketed live goats, and very few sold meat and skins from the goats. This emphasizes the finding that on-farm activities (crop and livestock) were an important source of livelihood for farmers in Teso sub-region. This was also reported by Egeru (2012). In general, few exotic goats and crosses were sold. This is explained by the fact that most farmers were in the early stages of rearing exotic goats and crosses and therefore, had very few to offer to the market. Exotic goats and/or crosses were sold only in Soroti, Katakwi and Pallisa where relatively high proportions of households kept exotic goats and/or crosses.

Households with large herds sold significantly more goats on average than those with medium and small herds. Such households presented a significant source of goats for the market and they could, therefore, be a target group for commercialisation. Insufficient number of goats among farmers with small herds restricts sales (Homann *et al*., 2007). They, therefore, limit their sales so as to maintain the potential to expand the enterprise. However, the total number of goats sold was higher from medium and small herds. This implies that although they have limited resources, they can contribute significantly to the market. Therefore, particular attention should be paid to smallholder farmers in interventions that intend to enhance goat production, as this will increase supply of goats to the market, and thereby contributing to food security and economic growth.

Male-headed and literate households owned and sold more goats compared to female–headed and illiterate households, respectively. This may imply that the importance of goats as a source of income is more realised in male-headed and literate households than in female-headed and illiterate households. Therefore, male-headed households are in a better position

to commercialise the goat enterprise. In order to have a greater impact in livestock farming, there is need to strengthen female-headed households in goat production and marketing, since they involved in ownership, decision making and provision of labor. Besides, packages that specifically target illiterate communities should be designed in the dissemination of technologies.

Most farmers (67%) earned less than UShs 150,000 from goat production, while only 6.1% of them had their annual income above UShs 400,000. This implies that the farmers were earning low from goats. Most farmers owned small herds of 1-8 goats (55.3%) and medium herds of 9-19 goats (39.5%), and only few owned large herds of 20 or more goats (5.3%). Therefore, few goats and goat products were available for sell. This calls for efforts to build farmers' capacity to efficiently enhance goat productivity thereby increasing income from goat production. According to Ahuja *et al*. (2003), livestock is an important source of supplementing income for a large proportion of rural households.

In order to improve benefits from goat production, it is important to understand the opportunities and challenges faced by farmers in the marketing of goats. The main option for selling of goats was at weekly markets. To a lesser extent, sales were made at home, shops and daily markets. This indicates that although goat owners had access to markets, the market options were inadequate. Goats at weekly markets were sold to traders who acted as middle men. Findings of the present study are in agreement with those of Budisatria (2006) and Dossa *et al*. (2007) who reported that goat owners in Benin sold their goats mainly to middle men who purchase animals and resale at markets and/or to butchers and caterers. In contrast, Kosgey *et al*. (2008) reported that most goats were sold to butchers and to a lesser extent to individuals and at auctions in Kenya.

The biggest problem in marketing of goats was high taxation, followed by low prices offered by traders and occasionally low demand for goats and long distances and/or lack of transport to the market. High taxation is explained by the fact that such rural districts generally have a low tax base, and therefore relie mostly on weekly livestock markets for their revenue. This is a burden to farmers, as it reduces potential benefits from goat production. Therefore, local authorities should tax goat sellers in a considerable way that they are encouraged to produce. This will increase market flow of goats.

The problem of low prices for goats is because livestock traders, who buy the goats, travel long distances of up to 200 kilometers. Therefore, since they bear the bulk of the transport cost, they transfer the cost to the farmers, by offering low prices. Furthermore, because of the long chain marketing which involves middlemen, the final sellers to the consumers are expected to benefit more from the goat trade at the expense of the producers (Budisatria, 2006).

The other problem is that farmers cannot arrange to sell their animals at periods when prices are high because most of the sales are made to solve urgent cash needs. Therefore, farmers should be provided with adequate and reliable market information so that they can benefit fairly from goat farming. Farmers can be advised to organise themselves into groups so that they can market their animals in better markets and in peak periods when demand is high so that they can reap maximum benefit from sales.

Ownership and decision to sell or give away goats was done mainly by the whole family. Fewer cases of women owning goats independently were reported, whilst ownership by children was the least reported in all districts. In contrast, other researchers have reported predominance of men in ownership and decision making with regard to goat production (Homann *et al*., 2007; Semakula *et al*., 2010). Although some women and youths owned goats, a few made independent decisions as regards to sales. Similar findings on the ownership and decision making in goat production by women and children have been reported (Webb and Mamabolo, 2004). Limited decision making by women may suggest strong cultural setting biased against women. In many tropical countries, the concept of gender imbalance is common, and it is as result of a strong cultural background biased against women (Chukwuka *et al*., 2010).

All family members contributed to labor with regard to goat production. Overall, men were more involved in the health care for goats than women and children. However, women and children provided more labor for tethering/grazing and watering for goats than men. Goats were tethered mainly in the vicinity of homesteads. This brings them closer in the cycles of women and children involvement. Furthermore, as men direct their labor towards off-farm income generating activities, they leave some of the farm work for women and children (Semakula *et al*., 2010). The involvement of women and children in the various aspects of goat production underlines the importance of targeting them in goat productivity improvement programmes that intend to improve household nutrition and income.

Conclusion

It was concluded that goat production provides a number of socio-economic benefits which can improve on the livelihoods of communities. Regular cash income from selling of goats was the most important reason for keeping goats, followed by other tangible and intangible benefits. Therefore, goat production has got a potential to significantly contribute to household income given the ever increasing local and regional demands. Women and children played an important role in rearing of goats, although they owned fewer goats than men and were less involved in decisions regarding sales. It is important to target women and children in goat productivity improvement programmes that intend to improve household nutrition and income.

Given the inadequacy of grazing land for goat production, farmers need to adopt more efficient management practices that can maximise returns from a given area. Goat owners face difficulties in marketing goats due to high taxation, and low prices offered by traders. Farmers should be organised in groups for marketing and also be provided with adequate and reliable market information so that they can benefit fairly from goat farming. Information generated from the present study is useful to stakeholders in the goat farming enterprise to develop and promote appropriate intervention measures that can improve goat productivity.

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