

The contribution of dairying to household welfare of the small commercial dairy keepers in Khartoum north province (KNP), Sudan

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Abstract

A total of 53 small livestock commercial producers of which 32 were in Silate, 9 in Kadaro and 12 in Halfaya divisions were randomly selected and interviewed using structured questionnaire. Following this, 9 small commercial households, 3 of each division were selected based on milk production activity. The aim of the research was to study, quantify the socio-economic aspects and to develop recommendations for future research and development of the small commercial households in the peri-urban region of KNP. The study revealed that livestock production especially dairying was ranked first (75.6%) as the most important source of household income in the study area. Income from livestock was used on the farm needs, family needs, house construction, investment and stock replacement. The majority of farmers (71.7%) sold their products at the farm gate homestead or neighbourhood (0-15 km), while 28.3 % at markets far from their location (16 - < 25 km). On average, Silate and Kadaro households earned 214.7 Sudanese Pound (SDG) and 322.5 SDG a year per cow, respectively. In terms of economic profitability, both Silate and Kadaro households engaged in livestock production earned a profit. High variability between the three divisions was observed due to losses of money e.g. Halfaya (-118.6 SDG). It could be concluded that under the current husbandry practices, the contribution of livestock to small commercial farmers in KNP was satisfactory but does not fulfil farmers' goals.

Key words: Commercial Producers, Small Livestock, Socio-Economic Aspects

Introduction

Smallholder urban or peri-urban commercially oriented milk production enterprises are common in and around the cities. Rey et al. (1993) stated that these enterprises involve the production, processing and marketing of milk and milk products to consumers in urban centers. It also has evolved in response to the increasing demand for milk in urban centers as a consequence of increasing urbanization, rising per capita income and increasing costs of imported milk and milk products. De Jong, (1996) reported that smallholder dairy system, in Sub-Saharan Africa is marked by declining farm size, upgrading into dairy breeds and an increasing reliance on purchased feeds, both concentrates and forage, resulting in milk yields per lactation increasing by as much as five times, while milk yield ha⁻¹ of land planted with forage rose by a

factor of 40. On the other hand Moorosi et al. (2000) argued that this productivity is in most cases insufficient to ensure food security to urban population let alone its inadequate financial returns. The contribution of UPLP to smallholder household's economy in KNP has not fully been studied. This study will help understand the importance of livestock production in general and in characterizing livestock production systems in KNP in particular.

Materials and Methods

The study was carried out in two of the administrative units of Khartoum North Province (KNP) in the Sudan. From two administrative units Halfaya, Kadaro and Silate divisions were chosen. A total of 90 small and large commercial producers of which 53 small producers were distributed as follow: 32

in Silate, 9 in Kadaro and 12 in Halfaya divisions. The households were randomly selected and interviewed using structured questionnaire. Following this, 9 small commercial households, 3 of each division were selected based on milk production activity as a selection criterion to cover the relative profitability and income contribution of the small commercial households (case studies). The geographical characteristics of the study area were described by (Elniema, 2008). For the purpose of this study, two questionnaires were reproduced. The general questionnaire assessed the basic information at household level for both small commercial householders, while the second one covered the relative profitability and income contribution as suggested by Creswell, (1998). The general questionnaire was pre-tested in the three divisions. The Single-visit, multiple-subject approach to data gathering as described by (Gilbert et al. 1980) were used in this study e.g. taking notes (questionnaires), as well as taking photographs and the help of some key informants in the area complemented by secondary data. The assessment of the economic performance of the small commercial householders was based on the enterprise budget analysis using the accrual accounting methods. The collected survey data were coded and analyzed using Statistical Packaging for the Social Sciences (SPSS/PC version 11.5) for windows.

Results and Discussion

The characteristics of the households surveyed are presented in table 1. The results showed that hundred percent of those responsible for livestock were males. The reason behind this could be attributed to the fact that in the study area, traditionally investment in livestock is male business. The middle aged (31-60 yrs) was the most numerous group of the livestock keepers in the study area (67.8%). Young people (21-30 yrs) (20%) ranked next and then those of retirement age (61-more than 70 yrs) (12.2%). The middle aged (31-60 yrs) was the most numerous group of the livestock keepers in the study area (67.8%). For this category livestock keeping seems to supplement other informal or formal employment (47% of the households). For some older people livestock keeping provides a coping strategy for retirement. This result is in agreement with the findings reported by DFID (2002) in East Africa. Almost a quarter of the investigated HHs heads in the study area did not have any formal education and only 4.4% had Khalwa. The main types of farming systems investigated in this study were: Dekka (small plots constructed from locally available materials) (58%), non-mixed farm (9%), mixed farm with fodder (24%),

and mixed farm with fodder and other types of crops (8.9%).

Table 1: Characteristics of households surveyed and households categories

Parameter	%
Age (N=90)	
21-30	20.0
31-40	24.4
41-50	30.0
51-60	13.3
61-70	08.9
More than 70	03.3
Respondents Gender (livestock owner) (N=90)	
Male	100.0
Female	00.0
Education Level (N=90)	
Illiterate	26.7
Khalwa*	04.4
Primary	26.7
Intermediate	12.2
Secondary	17.8
University	10.0
Higher studies	02.2
Types of farming systems (N=90)	
Dekka	57.8
Non-mixed farm	08.9
Mixed farm – fodder	24.4
Mixed-farm -fodder+ crops	08.9

* Khalwa is a traditional education based on Islamic teachings

In this study concentrate feeds were purchased from local markets as commercial concentrates or on-farm mixed ingredients. The sources of agricultural and industrial by-product were mainly rural markets. This is important in terms of rural-urban linkages, as it could be assumed that livestock feed supply depends on existing relations between urban-peri-urban and rural relations.

The study also revealed three main types of feeding methods (Table 2): these are zero-grazing, grazing and partial grazing. It was shown that 92.5%, 50% and 88.2% of Silate, Kadaro and Halfaya divisions, respectively adopted stall feeding. Feeding methods were highly significantly and negatively correlated with

Table 2: Feeding methods in the study area by region

Area	Feeding system (% of households)				
	Grazing	Partial grazing	Stall feeding	Partial grazing + stall feeding	Poultry keepers (Stall feeding)
Silate (N=53)	0	3.8	92.5	3.8	0.0
Kadaro (N=20)	5	40.0	50.0	0.0	5.0
Halfaya (N=17)	0	00.0	88.2	0.0	11.8

region ($r=-.334$) ($P<0.001$). This explains why grazing or partial grazing was not practiced in Halfaya division which is the nearest region to city center, while it existed in Kadaro and Silate divisions (peri-urban areas). The practice which is an exact example of a peri-urban system (Thys et al. 2005) points directly to the availability of pastures around Kadaro and Silate regions.

Livestock production especially dairying was ranked first (75.6%) as the most important source of household income in the study area. The rank of livestock production according to economic importance was highly significantly and positively correlated with type of farming ($r=0.338$), land size and level of education ($P<0.001$). The reasons why farmers complemented dairying may be attributed to its immense contribution as a source of income and regular flow of cash and milk for household consumption. Similar results are reported by Leslie et al. (1999) in East African countries. Table 3 in the present study shows the contribution of livestock to welfare of the small commercial farmers. Income from livestock was used on farm needs (feeds, veterinary medicines, and wages), family needs, house construction, investment and stock replacement. The flock dynamics data (During, 2007) which is vital in assessing the viability of the household shows that 94% of the investigated small commercial households sold milk, 5.7% sold eggs and 83% sold manure during the year. In addition to these sources of income empty concentrate bags constitute another source of income. The value of stock itself was the major benefit from livestock keeping. The farmer benefited from this amount of money when forced to sell animals to finance specific occasions e.g. a festivity, build a house or pay school fees. This agreed with the findings of Hanyani-Mlambo et al. (1998) who reported that dairying is an income supplementing to households in African countries.

Milk supply and marketing are influenced by many factors such as environmental (season), location of the farm with regards to marketing points and the availability of means of transportation. Table 4 shows the percent of HHs and quantity of milk production in the small commercial households. The results indicated that milk yield was highly significantly and positively correlated with the number of cross- bred cows ($r=0.818$); $P<0.001$). Milk yield was highly significantly

and negatively correlated with farm size ($r= -0.587$) and type of breed ($r= -0.387$; $P<0.001$). It was also shown in this study that 71.7% of farmers sold their products at the farm gate homestead (6-15 km) and 18.9 % at markets far from their location (16-more than 25 km). Similar findings are reported by Waithaka et al. (2000) who stated that livestock products especially milk marketing is mainly informal and it is the most common channel for milk marketing in some African countries.

Table 3: Contribution of livestock to household welfare of the small commercial farmers

Use of income from livestock (N=53)	Frequency	Percent
farm needs (feeds, veterinary	09	17.0
house construction	00	00.0
Investment	00	00.0
stock replacement	01	01.9
family needs + farm needs	21	18.9
family needs + farm needs + house construction	05	09.4
family needs + farm needs + investment	03	05.7
family needs + farm needs + investment+ stock replacement	03	05.7
family needs + farm needs + stock	11	20.8

The case study also revealed that small commercial households in Silate and Kadaro were operating efficiently (Table 5). On average, the Silate and Kadaro households earned 214.7 Sudanese Pound (SDG) and 322.5 SDG a year per cow, respectively. In terms of economic profitability, both Silate and Kadaro households engaged in livestock production earned a profit. However, the results indicate high variability between the three regions because some households were losing money e.g. Halfaya (-118.6 SDG). By spending more money on feed per cow and due to high concentrates prices Halfaya farms were not operating efficiently. They spent 2230 SDG on feed per cow which is 491 SDG more than in Kadaro farms and 1397 SDG more than in Silate farms. This finding is in line with that reported by Doyle (1983) who stated that

Table 4: Percentage and quantity of milk production ton/yr in small commercial households

Area	None	3-10 t/yr	11 - 20 t/yr	21 - 50 t/yr	51 - 100 t/yr
Silate	3.1	25	46.9	21.9	3.1
Kadaro	0	55.6	22.2	22.2	0
Halfaya	16.7	16.7	58.3	8.3	0

Table 5: Partial budget statement (SDG/cow/yr) of small commercial households during the past 12 mo (yr 2007)

Farm operating income per cow	Silate	Kadaro	Halfaya
	(Figures in SDG*)		
Sales of livestock products (1)			
Milk	972	1848	1731
Live animals	00.0	174	192
Manure	33	56.5	242
Empty bags	22	21.7	23
Sub-total	1027	2100	2188
Farm operating expenses (2)			
Feed	833	1739	2230
Disease treatment	35	35.3	38
Insemination	0	3.1	0
Labour & opportunity cost for family members	111	174	154
Sub-total	979	1951.4	2422
Net cash operating income (3) = (1-2)	48	148.6	-234
Value of dairy products consumed by HH (4)	166.7	173.9	115.4
Gross margin (Value of Net cash operating income and consumption) (5)= (3+4)	214.7	322.5	-118.6

*SDG = Sudanese Pound (1\$US = 2 SDG)

feeding more concentrates to high yielding cows increased overall lactation yield but decreased profit per cow. The major constraints according to the results obtained in this study were high concentrates prices (74.4%), high taxes (55.6%), poor extension coverage (51.1%), small land area (51.1%) and pressures from governmental health authorities (48.9%).

It can be concluded that under the current husbandry practices, the contribution of livestock to small-scale farms in KNP from the perspective of overall development through income and employment generation, food security, asset accumulation and improving human nutrition was satisfactory but does not fulfill farmers' goals.

In order to improve the competitiveness of small commercial livestock producers and sustain high productivity and profitability, development of innovations (technical, institutional and policy) are essential.

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