THE CONTRIBUTION OF SMALL SCALE DAIRY FARMING TO COMMUNITY WELFARE: A CASE STUDY OF MOROGORO MUNICIPALITY

[1] **Urassa, J.K. and** [2] **Raphael, E.**

[1] **Development Studies Institute, Sokoine University of Agriculture, P. O. Box 3024, Morogoro, Tanzania.**
[2] **Department of Food Science and Technology, Sokoine University of Agriculture, P. O. Box 3006, Morogoro, Tanzania.**

ABSTRACT

A socio-economic survey was conducted in Morogoro Municipality to study the contribution of the small-scale dairy farming to the welfare of the community. The main focus was on the identification of the production level of milk from the dairy cows, amount of income earned by the dairy farmers, items on which income from the dairy enterprise is spent and the constraints faced by the small-scale dairy farmers. A total of thirty seven smallholder dairy farmers from Morogoro Municipality were selected at random and were interviewed using structured questionnaire. Information on daily milk yield per cow and the amount sold by each household was collected through the questionnaire. Information was also collected on the contribution of the dairy enterprise to the family income, level of education of the respondents, employment status of respondents and constraints associated with the dairy enterprise as identified by the farmers. Results from the study show that about two thirds of the respondents had some formal employment and about a quarter (24.3) were involved in business. All the respondents reported the dairy enterprise to be an income supplementing activity to the household. The average milk yield for the respondents ranged between 6-10 litres per cow per day. Average milk production per farmer per day was 22 litres whereas the average daily income earned by the respondents was 3,950/= Tshs. The results from the study show that the dairy enterprise was mainly a male domain (94.6%) whereas only 5.4 percent were women. The major constraints experienced by the respondents in this study were lack of land and high costs of supplementary feeds as reported by 32.4% and 21.6% respectively. Other constraints included, diseases, lack of adequate capital, and theft of animals, milk market and death of animals, which were reported by less than 20% of the respondents. The study observed that income from the dairy enterprise was used to meet costs of various items including; buying food, paying for health services, school fees, purchase of new assets, paying bills for water and electricity and building houses. It can be concluded from this study that small-scale dairy farming has a potential of improving the welfare of households. In order to protect, promote and develop the smallholder dairy enterprise in Morogoro Municipality and elsewhere there is need for the farmers to form co-operative societies, which could assist them to acquire more capital needed in improving dairy production, and also seek markets for their milk. The Government should also improve the infrastructure for milk marketing so that small-scale dairy farming could contribute towards poverty alleviation.

Key words: small-scale dairy farming, community welfare.

1.0 INTRODUCTION

Urban and peri-urban agriculture has been gaining popularity in Tanzania in the past years. Low-income families are undertaking most of horticultural production where as high income families have biased towards raising dairy cattle. Most dairy cattle in urban and peri-urban areas are of the improved breeds (Nyange and Mdoe, 1995). The availability of milk markets, high economic status of elite; availability of space near housing units, labour, concentrate feeds, extension services, and lastly the laxity of urban authorities to enforce by laws governing the keeping of animals in urban areas has facilitated the development of the dairy industry in Dar es Salaam and Morogoro (Mlozi *et al*, 1989).

In the 1980's Morogoro experienced an increased in urban population due to the commencement of an industrial complex (Mlozi *et al.,* 1989). This posed serious strains on the socio-economic services and food supplies that need to be provided to meet the demand of the urban population (Kurwijila and Henriksen, 1995). The deteriorating economic circumstances since 1970's forced the urban population who mainly depended on salaries or wages to look for alternative sources of income to supplement their incomes (Sarwatt and Njau, 1990). Kurwijila and Henriksen (1995) reported that most of the milk available in towns is either produced within the urban areas or brought in by milk vendors operating within 40 km radius. In Morogoro Municipality milk is also sold from farmers who keep cattle away from the Municipality. This phenomenon shows that the milk market is still present. A problem is to be established to know as to why the smallholder farmer does not increase to the extent of bridging the milk market. Livestock production systems are an important component in local economies at both the national and farm household level, where cattle constitute the main livestock species kept by farmers (Mlambo *et al.,* 1998). Improving productivity of the dairy animals in the smallholder sector is crucial for increased output and family welfare. Improved management in terms of feeding, breeding and disease control is essential for productivity improvement (Mdoe and Kurwijila, 1998). The main objective of the study was to assess the contribution of small-scale dairy farming to community in Morogoro Municipality with a view of suggesting strategies for improving the current performance levels which could in turn assist in improving welfare of the urban dwellers in Morogoro municipality and elsewhere in Tanzania.

METHODLOGY OF THE STUDY

Description of the study area

Morogoro Municipality is found in Morogoro region that has an altitude of 500-600m above sea level and which is also located between longitude 37°-39ºE and latitude 6°-5° S. Morogoro Municipality with a population of more than 177, 760. Morogoro Municipality is situated 220 km south west of Dar es Salaam and enjoys a mixture of warm and cool temperature ranging between 27°C to 33.7°C in the dry/warm season and 14.2°C to 21.7°C in cold/wet season. The Uluguru Mountains, which rise to 3000 metres above sea level, have a major temperature moderation effect (Mlozi *et al*, 1989). Morogoro Municipality experiences a sub-humid tropical climate with a bimodal rainfall pattern characterized by two rainfall seasons in a year with a dry season separating the short rains (October to December) and long rains (which fall from March to May/June). There are about 6

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months of dryness, the peak being September. The mean annual rainfall is about 870mm and total annual evapotranspiration is about 1300mm(Balirwa, 1990).

Data Collection and Sampling Procedure

In conducting the study a cross-sectional design in which data was collected at a single point and time (Creswell, 1994) was used. The population of study constituted thirty-seven small-scale dairy farmers who had dairy cattle at the time of study in Morogoro municipality. The respondents were selected at random. Structured questionnaires were used to acquire information on dairy farming practices of the respondents. The questionnaires comprised of closed and open-ended questions, which were answered by respondents through interviews. Pre-testing of the questionnaire was done in the study area and necessary changes were incorporated before embarking on the actual study. The study was conducted in Morogoro municipality between January 2001 and April 2001.

Data Analysis

The collected survey data was coded and analyzed using statistical package for social sciences (SPSS version 9.0) for windows. In which the following major parameters: household characteristics (age, sex, occupation of respondent, number of dairy cattle) and general management (feeding, milk marketing, constraints) were considered. Descriptive statistics were computed for the above parameters and cross tabulation was done for some variables to test their relationship.

RESULTS AND DISCUSSION

Socio-economic household characteristics, management and status of dairy enterprise:

Major farm and household characteristics of the respondents are shown in Table 1. The age of the respondents ranged between 31-80 years with the modal class being that of 51-60 years.

The study indicated that most (59.5%) of the respondents were above the age of 51 years. From the study 94.6% of the respondents were male where as only 5.4% were female. In Morogoro Municipality the results show that men have more interest in milk production. Similar observations have been reported in Tanga region by Mulangila *et al* (1997) and in Turiani by Mollel *et al* (1999). The educational level of the respondents ranged from primary school education to those with university education. More than 50%(59.4%) of the respondents had attained post secondary education including some with university education Table 1. Nevertheless the level of education had no significant effect on the level of milk production of the dairy cattle. Results of the study show that the dairy enterprise did not constitute the major source of income. Most of the respondents (86.4%) depended on other activities (Table 1). Nyange and Mdoe (1995) established that high-income families have biased towards raising dairy cattle. But generally in urban areas many people who depend mainly on salaries are now looking for alternative sources of supplementing income as reported by Sarwatt and Njau, (1990). Dairy cattle ownership ranged between one to more than six dairy cattle with about 60%(59.5%) having less than 6 dairy cattle (Table 1).

Table 1: Socio-economic characteristics of the small-scale dairy farmers

Parameter	Frequency	Percentage

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Total farmers surveyed	37	100
Age of respondents		
31-40	8	21.6
41-50	9	24.3
51-60	15	40.5
61-70	2	5.4
71-80	3	8.1
Farmers gender		
Male	35	94.6
Female	2	5.4
Respondents Education		
Primary school	3	8.1
Secondary	8	21.6
University	11	29.7
Others (certificates)	15	40.5
Respondents Occupation		
Business	9	24.3
Formal employment	23	62.1
Farmers	4	10.8
Others	1	2.7
Dairy cattle ownership		
1-2	3	8.1
3-4	9	24.3
5-6	10	27
> 6	15	40.5

Source: Survey data 2001.

Dairy cattle Management by the respondents.
Dairy cattle feeding

Results from the study show that most farmers (89.2%) used zero grazing system to rear their cattle as compared to partial grazing (10.8%) as shown in Table 2. Farmers mostly prefer the zero grazing concept as it reduces disease challenge especially East Cost Fever (ECF) and a very strict isolation of the exotic stock and indigenous cattle (De-wit, 1990). It was also observed in the study that all the respondents were supplementing their cattle. However some of them (16.2%) only offered maize bran and minerals to their cattle where as the rest (83.7%) offered maize bran, cotton seed cake and sunflower cake (Table 2).

Table 2: Dairy cattle feeding by the respondents

Parameter	Frequency	Percentage
Feeding system		89.2
Zero grazing	33	10.8
Partial grazing	4	
Supplementary feeding		
Farmers not practicing	0	0
Farmers practicing	37	100
Maize bran and minerals only	6	16.2
Maize bran, cotton seed cake and minerals	31	83.7

Source; Survey data 2001

Prices of the concentrates used frequently
The prices of the feeds used in supplementing the dairy cattle are shown in Table 3.

Table 3: Price of supplementary feeds

Parameter	Price in Tshs/Kg
Supplementary feeds	
Cotton seed cake	300
Sunflower seed cake	150
Maize bran	50
Minerals	1500

Source; Survey data 2001

Milk production and income generated
Milk production ranged between 0-185 litres per day with most respondents (Modal class) producing between 6-10 litres per day. The average milk production per day per respondent was 22 litres per day/household. However the average milk production per cow per day of 6.3 ±2.1 was lower than those reported in literature for other small-scale dairy farmers elsewhere in Tanzania (Sarwatt and Njau, 1990; Biwi, 1993; Aboud *et al*., 1995, Mulangila, 1997 and Urassa, 1999). The low production may have been due to a number of factors including lack of proper supplementary feeding of the dairy cattle, poor nutritive value of pastures and forages offered to the animals and lack of dairy husbandry training as none of the respondents had received any formal training in dairy husbandry. Gross income from milk sales ranged between 800/= to 37,000/= per day while the average income for all the respondents was 3,950 Tshs per day (Table 4).

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Table 4; Daily Milk Production and Sales for the Surveyed Smallholder Dairy Farmers

Parameter	Frequency	%	Gross income (Tshs)
Milk Production/cow/day			N.A.
0	1	2.7	N.A.
1-5	14	37.8	N.A.
6-10	22	59.5	N.A.
Average milk production/cow/day	6.3 ±2.1 litres	N.A.	N.A.
Milk sales (Litres per day)			
1-5	7	19.4	200-1,000
6-10	9	25	1,200-2,000
11-15	6	16.6	2,200-3,000
16-20	6	16.6	3,200-4,000
21-25	1	2.7	4,200-5,000
26-30	4	11.1	5,200-6,000
31-185	3	8.3	6,200-37,800
Average milk sales/day	19.75 litres		3,950

Source; Survey data 2001

Table 5: Sale of animals by smallholder dairy farmers

Year	Number of animals sold	Average price (Tsh)
2000	32	113094
2001	5	128000

Source: Survey data 2001

Contribution of the dairy enterprise to household welfare

The study revealed that small-scale dairy farming contributed very much to the Welfare of the household involved in it. Income or profit from the dairy enterprise was mainly used on the following activities, furnishing houses 15.7%, house construction/rehabilitation (20%), investing in other income generating activities (22.9%), Education and on other things (such food, health services etc) 21.4% as shown in Table 6.

Table 6: The contribution of the dairy cattle to household welfare of the smallholder farmers

Parameter	Frequency	Percentage
Item on which income from dairy enterprise is used		
Education	9	12.9
Investing in business	16	22.9
House furnishing	11	15.7
House construction/rehabilitation	14	20

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Buying land	5	7.1
Others (food, health services etc)	15	21.4

Source; survey data 2001.

The above results comply with findings by others Mlambo (1998) who said that the dairy enterprise is an income supplementing to households. Practically animals are themselves forms of capital through sale of live animals or when slaughtered and their meat sold. Result from the study show that in the year 2000 a total of 32 animals with a total value of 3,619,008/= (Tshs) were sold by the respondents where as in the year 2001 only five animals were sold (Table 5).

Major problem encountered by the small-scale dairy farmers in Morogoro Municipality

A number of production constraints are seriously affecting small-scale dairy farming in Morogoro municipality as shown in Table 7 below. The major constraints to smallholder dairy farming according to the results obtained in this study were lack of land 32.4%. Other constraints included milk-marketing problems, small capital invested in dairy enterprise, theft of dairy animals, and diseases, which were mentioned by less than 19% of the respondents (Table 6). The mentioned constraints conform to those cited in literatures for other smallholder dairy farmers in Tanzania Sarwatt and Njau (1990), and Urassa (1999).

Table 7: Major problems encountered in dairy enterprise

Parameter	Frequency	Percentage
Diseases	2	5.4
Small capital	4	10.8
Theft	4	10.81
Milk market	7	18.92
Animal deaths	1	2.7
Concentrates being expensive	8	21.6
Land	12	32.4

Source; survey data 2001

In addition to the highlighted problems in Table 7, lack of capital to acquire more dairy animals face many farmers. Farmers face difficulties in procuring suitable breeds and end up using any that come their way (Mambo, 1998).

CONCLUSION AND RECOMMENDATIONS

It can be concluded from this study that small-scale dairy farming in Morogoro Municipality contributes a great deal to the household welfare in terms of food security, shelter, income generation and other social services. It may also be concluded from this study that small-scale dairy farming in

Morogoro municipality is mainly carried out as an income supplementing activity rather than as a main source of income. It may further be concluded that the dairy enterprise is mostly a male domain in Morogoro Municipality. In order to protect, promote and develop the smallholder dairy enterprise, the following recommendations need some due consideration by all the stake holders in the dairy industry at all levels i.e. district/regional and national authorities. This includes both local and central governments.

- ❑ Improvement or modernization of the existing government veterinary clinics/extension services.
- ❑ The small-scale dairy farmers should struggle to establish co-operative unions through which they could establish milk collecting centers and also provide the inputs such as supplementary feeds, drugs, extension services at affordable costs to its members.
- ❑ Provisions of capital (loans/Credits) support to small-scale dairy farmers. The capital should be directed towards modernization of production and marketing such as establishing the private processing plants and cold rooms in the milk collection centres.
- ❑ Provision of training in dairy husbandry to the small-scale dairy farmers.
- ❑ Provision of the good quality heifers to small-scale dairy farmers which will reduce the tendency of them accepting any dairy cattle coming their way as sometimes they turn out to be of low productivity.

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