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Contribution of Women Dairy Cattle Keeping to Household Food Security in Arumeru District, Tanzania

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Abstract
This study investigated the contribution of women dairy cattle keeping to household food security in Arumeru District. The specific objectives for this study ware to (i) identify the amount of milk produced, sold and consumed per household, (ii) examine the expenditure of income obtained from milk sales in household food security and other social services (iii) identify problems associated with cattle keeping that affect dairy cattle production. The study sample was 50 women who were randomly selected in two villages (Ndatu and Nshupu). The target population was women from dairy cattle keeping households that received dairy cattle from development projects such as Tanzania Social Action Fund (TASAF). Data were collected by using structured questionnaires and checklists. The statistical package for social sciences (SPSS) software was used to process and analyze data collected. The research proves that, women dairy keeping cattle have a significant contribution in household food security since more than 50% of respondents were able to milk, sale milk and milk products at reasonable prices.
Key words: Household Food Security, Women, Dairy Cattle Keeping

1.0 Introduction

In Tanzania, livestock is among the major agricultural sub-sectors. Arusha region is second after Shinyanga region keeping the highest cattle in the country. Furthermore, the leading regions in terms of milk production during wet season are Shinyanga (13%), followed by Arusha (12%), Tabora (9%) and Mbeya (10%). Milk prices vary between regions and for the majority of the regions, the prices fluctuated between wet season and dry season. Highest prices are found in Dar es Salaam, Mtwara and Kilimanjaro regions (URT, 2012). Among the known source of variation in milk yield and related traits are breed, herd, party, year and season of calving. Accordingly, total milk production has increased at the rate of about 2.8% per annum largely due to increases in cattle population (TDB, 2014). The dairy sector has therefore a great potential to the economic development of the country (Tanzania) in terms of improving food security, contributing to national income as well as creating employment to rural households (Njombe and Msanga, 2007). In Tanzania dairy farming has been in rapid transition over the last 20 years with a new policy promoting small scale dairy farming assisted in Tanga district, by Dutch and in Iringa by the Swiss. This aims to have household which are food secure (Mike, 2001) through smallholder dairying. Traditional dairy cattle still contribute a significant amount that is over 70% which are sold and consumed on the farm. Milk produced from dairy herd is 30% which is consumed at home and 70% are sold informal as well as formal market (ILRI, 2013). In this regards the participation of women dairy cattle keepers is increasing to meet demand in the market. Both governmental and non-governmental organization introduced beef, dairy cattle and goats to villages in order to promote production of meat and milk to alleviate malnutrition and enhance income generation at household level (Guardian, 2004). The introduction intends to reduce poverty through local employment creation; reduce child mortality through improved nutrition and health (UN, 2014).

The study by Mwakalebela *et al*., (1998) shows that cross breed dairy cows to smallholder faming systems has emproved household economy as well as health status of most families in Turiani (Morogoro Region). Dairy cattle keeper families were able to construct better houses (from muddy to brick) through the money obtained from milk selling. Literature is silent on the status of dairy keepers in Arusha Region and in particular the Arumeru District regardless the fact that the region mentioned to be the second region keeping the highest cattle in the country. Although in Tanzania there programmes which support women, still few women who have gone into self-employment their status to sustain food for the household and income is questionable (ILO, 2000 and Richardson, *et al*., 2004). In addition, there is a big debate among authors whether household of small-scale farmers (dairy cattle keepers inclusive) in Kilimanjaro and Arusha regions are food secure or not with the fall of coffee prices since 1980s (Oxfam, 2000; Eakin *et al*, 2009; Meena and Sharif, 2008).

Study by Maarifa (2001) and Oxfam (2000) illustrates that; the fall of coffee prices have twin effect, one being to undermine household food security and adding extreme labour burden on women. According to Craig and Patil (2006) declining rates of food has implications to economic development and population growth in terms of causing cases of protein energy malnutrition (PEM) in under five, the adequacy of food availability and low income. These are among the signs of food insecurity at the household level. Despite the prevalence of food

insecurity in coffee growing regions, there has been relatively little analysis with a specific focus on this link. Therefore, the study aimed at assessing the contribution of women dairy cattle keeping to household food security in Arumeru District.

The study conducted in Arumeru District because milk production by dairy cattle is practiced by women who received dairy cattle from projects and/or supported by the government through Tanzania Social Action Fund (TASAF) (Okali, 2011). It has to be noted that, from 1990s in Tanzania there have been number of dairy programmes that attempted to address household food security by dealing with vulnerable women (FAO, 2006). The programmes give women opportunity to acquire grade cattle through rotating animal credit schemes, known as Heifer in Trust (HIT) schemes, which required distributing cattle to low income families by providing relatively high value female stock through a loan in kind agreement. Standard schemes involved female dairy animals as foundation heifers with repayment being the first heifer calf (Afifa-Affat, 1998). Accordingly, the study takes into account the fact that women have been responsible for livestock kept at the homestead, and for processing and marketing of milk and milk products (FAO 2009 and 2006; IFAD 2007) in rural and urban areas. The study is also in line with the Livestock Sector Development Programme (LSDP) in implementing the National Livestock Policy (NLP) of 2006 and LSDP strategy of 2009 that identifies interventions so called components and sub components. Among of those sub components were milk production and gender mainstreaming in the livestock industry (MLFD, 2011). This paper therefore, specifically attempts to:

(i) identify the amount of milk produced, sold and consumed per household;
(ii) examine the expenditure of income obtained from milk sells in household food security and other social services; and
(iii) identify problems associated with cattle keeping

2.0 Literature review

Dairy cattle concepts can be explain as farm management on livestock and farm enterprises dairying that is an economic entity/enterprise aimed at maximizing the potential resources (such as land, labour, capital, managerial ability and technology) in a given area or locality. Whereas dairy keeping can be describe as an important role in provision of nutritional status of the people and country's economy though production of milk and milk products (FAO 2014). For the good achievements of dairy activity factors that influencing its economic should analyzed. This largely may depend on efficiency of the cow used and second is feed and care. Although profitability vary from farm to farm depending on the situation, so one has to look on the main factors that affect the profitability. Generally, milk yield in many tropical countries have been through imported various temperature breeds in order to increase milk production. Among the known source of variation in milk yield and related traits are breed, herd, party, year and season of calving (FAO, 2011, Okali, 2011 and UN, 2014).

In Tanzania, women comprise of about (52%) of the total population and account for (75%) of the labour force engaged in agricultural production. They are mostly cash crops and in the livestock sector they are mainly engaged in small stock production. In addition to this, to a large extent, they are sorely responsible for feeding their families. Women produce 60 – 70% of all food that is consumed by rural households and generates about (35%) or more of all household income mainly through small-scale production business. Women responsibilities vary according to the different regions, and also their social and economic status within the household setting (Bitende *et al.,* 2001and Okali, 2011). In the country challenges facing women in development activities has been addressed to fulfill a number of polices such as international ones like Millennium Development Goals, but women specially in rural areas faces a number of problems. Despite the vital played by women to enhanced income in reducing poverty and household food insecurity still women faces a number of constrains mainly be inadequate control, access and benefit in various resources. Study by Friedl (2012) revealed that equality between sexes is rare in patriarchy societies.

3.0 Material and Methods

The study was conducted in Arumeru District which geographically lies between 3.5 and 3.7 degrees south of the Equator on the slopes of Mount Meru, the second highest mountain in the country with a height of 14,000 feet above sea level. The main activities carried in this district include crop farming perennial and annual crops such as coffee, banana and maize, beans sunflower. Most of the households keep livestock's like cattle, goat, sheep, donkey, dogs and pigs in the District (Hakikazi, 2004). To ensure objective results are obtained, a cross-sectional research design was employed. The design chosen since allows collection of data at one point in time (Bryman and Bell, 2011). The study targeted population of households that keep dairy cattle. Random sampling technique was used to select two villages (Ndatu and Nshupu). The respondents were purposively chosen from households that received dairy cattle from TASAF and the development projects in the two villages. The sample size of 50

respondents was selected from dairy cattle keepers who were sparsely distributed. Both primary and secondary data were collected. Primary data was collected through the use of structured questionnaire and checklist. Physical observation was employed too. Secondary data sourced from e-sources and hard copies. In addition, secondary data were collected from village extension officers, Arumeru District Livestock Officer and nongovernmental organization. Quantitative data were analyzed by using Statistical Package for Social Science (SPSS) software while qualitative analyzed by using content analysis.

4.0 Results and Discussion

4.1 Household demographic information

The study results show that, the majority of respondents' age ranged from 20-40 years old on both villages. Many of the respondents (64%) were between 30 – 40 years at Nshupu Village and between 20 - 30 years (48%) at Ndatu Village. This implies that many women were relatively young. According to Minga (1998), the age between 25 – 45 years old considered a very active age group that can participate in various activities such as domestic, farm, livestock keeping and other income generating activities. Results show that, majority (44%) of the respondents had primary education. This implies that women in the surveyed area were able to adopt effective methods to fight against household food insecurity. Studies have shown that women's education affects social development issues and it has been noted as a cross-cutting issue in development processes (ILO, 2000). Furthermore, results shows most women (68%) were married in both villages and their household size ranged from 5-10 members (60%). It is expected that family labor would be more available where the household heads are married (Amaza *et al*., 2009). However, the study indicates few men participated in dairy cattle keeping activities. The findings affirms Friedl (1978 and 2012) findings that, equality between sexes are rare as in patriarchy societies, men control significant goods which are exchanged with people outside the family regardless of whom produces them.

4.2 Milk produced, sold and consumed per household

FAO (2014) approximate that 150 million households around the globe are engaged in milk production and daily management of milk cattle is done by women. The study shows that women managed to run milk production and 40 percent were getting 4000 – 5500 litres of milk per year. But an interesting trend is that 20 percent of women interviewed managed to get 7000-8500 litres of milk per year. The average milk production per respondent was 24 litres per day/household. However, literature indicates that modern dairy cow can produce over 30 litres of milk per day if good agricultural practices for dairy farm are implemented (FAO, 2011). The data implies still the average production of milk per one cow (12 litres) which is still low compared to 30 litres stated above. 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 57,600/= per day while the average income for all the respondents was 19,200 Tshs per day. It was noted in the study that 46% of the respondents had two milking cows, followed by 36% who had three and above number of milking cows. 18% of the respondents had cow but were not milked during the time of data collection (some were in gestation period and others were still young). Women interviewed (80%) agreed that there was a significant gain from modern dairy milking cows compared to the indigenous cattle they were used to keep. Accordingly they affirmed milk produced improves their household income, food and nutrition security. Moreover, study survey observed that not all the milk was sold; usually 1 – 2 litres were kept for home uses. Four women were making cheese and sell them instead of milk since the market of cheese reported by the interviewer respondents to be large in Arusha urban centres due to tourism. The study result affirms Howland (2004) findings that cheese making is a profitable business and increases market of milk.

4.3 Expenditure of income obtained from milk sales for household food security

Tanzanian women have shown strong performance in market economy of different business that they are doing (IFC, 2007). In the milk production, the income have trickle down to the family to sustain the household food security and other social serves (Okali, 2011 and Sarris, *et al*., 2006). In the country dairy farming has been improved because of new polices of promoting small scale dairy farming as to achieve nutrition status of the people and country's economy (Mike, 2001). Study results show that respondents could utilize 1,100,000 – 1,300,000 Tshs obtained from milks sales to buy foods for their household (Table 1). Women interviewed said, they were able to buy and save foods for the family, number of meals taken in a day were three and/or four, as well as dietary diversity in the households. IFAD (2010) reveals that, rural livelihoods and rural life in developing countries can overcome poverty when survey-based on household and village level focused on economic and consumption indicators. Therefore, food and nutrition security were observed in the study area which depended from women dairy cattle production that proves what anticipated by IFAD (2010) report.

Table 1: Average money used from milk sales per month to buy food

Parameters		
Money used (Tshs)	**Frequency**	**Percentage**
500,000 – 700,000	3	6
700,000 – 900,000	5	10
900,000 – 1,100,000	11	22
1,100,000 – 1,300,000	13	26
1,300,000 – 1,500,000	10	20
1,500,000 – 1,700,000	5	10
1,700,000 – 1,900,000	2	4
1,900,000 – above	1	2
Total	**50**	**100**

Source: Survey data, 2005

Table 2 shows that women in the surveyed were able to use money source from diary production to get services such as education, treatment of dairy cattle and in crop production activities which highly supported family growth. This implies that milking business is an important source of cash income which economically attracts short and long run that raises rural income and therefore reduces poverty and food insecurity as well (Bitende *et al.*, 2001,Okal, 2011 and FAO 2014). Furthermore, FAO (2001) report revealed that support of income from milk production as well as manure increases food due to high yield of production which implies the contribution of dairy cattle keeping to food security proves success to the household.

Table 2: Money used for education, medical services and crop production

Parameters	**Frequency**	**Percentage**
Amount of money used (Tshs)		
Education		
100,000 – 400,000	19	38
400,000 – 800,000	10	20
800,000 – 1,200,000	12	24
Total	**50**	**100**
Treatment		
100,000 – 400,000	2	4
400,000 – 800,000	18	36
800,000 – 1,200,000	4	8
Total	**50**	**100**
Food production		
0	10	20
100,000 – 400,000	28	56
400,000 – 800,000	11	22
800,000 – 1,200,000	1	2
Total	**50**	**100**

Source: Survey data 2005

4.4 Problems associated with dairy cattle keeping

From the study area, respondents' cattle were affected by diseases, lack of supplements feeds, small land for grazing and high prices of veterinary drugs. In addition withdraw of government from provision of veterinary services (including inputs) in the 1980s led to the emergence of new and resurgent livestock diseases (Presidents office, 2002/3). Majority (56%) of respondents were to travel or walk far distance to get veterinary services, this affected women participation in the management of dairy cattle production. Kurwijira (1991) stated that distance to livestock extension services played a significance role in dairy cattle production. Furthermore, number of visits done by village livestock extension officers per month in the study area was unsatisfactory, in Nshupu village 20% respondents had no visit from the extensions at all, the month survey conducted and Ndatu (32%) respectively. Majority (60%) from Ndatu and (40%) from Nshupu said they only get one visit per month and sometimes not.

5.0 Conclusion and Recommendations

It can be concluded from this study that dairy cattle keeping by women in Arumeru District contributes a great deal to the household welfare in terms of food security, nutrition, shelter, income generation and other social

services (education, medication). It may also be concluded from this study that dairy cattle farming in the district is mainly carried out as an income supplementing activity rather than as a main source of income. It may further be concluded that the zero grazing dairy cattle keeping under the repayment scheme of female first heifer calf is mostly a female domain in Arumeru District. Majority of women who was kept dairy cattle in the study area were young (between 20 – 30 years) and married. Furthermore, it is conclusively that 50% of the money obtained from sales of milk was used for food while the remaining 50% was spent for social services like education, treatment of dairy cattle and the household members and for the agriculture activities.

In order for the women dairy cattle keeping to contribute more to household food security and nutrition, 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.

- Sensitize on awareness that small- scale business operated by women are economically profitable at all levels.
- The government to provide services of vaccination treatment and control of disease, at reasonable costs in such a way that every dairy cattle keeper can afford them.
- To provide short courses, workshop seminars to the dairy cattle keepers plus importance of forming groups so as they can find the reliable market of their products (milk, cows).
- Provision of loans to women for the purpose of buying supplements and veterinary drugs e.g. from non-government organization/government.
- Accessible of services to all dairy cattle keeper as well as improvement or modernization of the existing government veterinary clinics/extension services.
- To educate them the importance of keeping exotic cows (good breed), which they can have few ones but with high milk production.
- 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.
- 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.

6.0 References

Afifa-Affat, K.A. (1998). “Heifer-in-Trust. A Model for Sustainable Livestock Development?” World Animal Review, 91: 13-20.

Amaza P, Tahirou Abdoulaye, Patrick Kwaghe, and Amare Tegbaru (2009). Changes in household food security and poverty status in PROSAB area of Southern Borno State, Nigeria. [http://www.iita.org/c/document_library/get_file?uuid=c484ccbb-f211-4f15-8529-19be3ce12661&groupId=25357] site visited 20/02/2014

Bitende, J. K. Msechu, V.K Rugambwa, S. Kaduma and Mkambo (2001). Food Security, TSAP Proceedings Vol. 28 FAO.

Bryman, A. and Bell, E. (2011). *Business Research Methods 3rd Ed*. Oxford University Press Inc. New York. 765pp.

Craig H. and Patil C. L. (2006). Food Insecurity in Rural Tanzania Is Associated with Maternal Anxiety and Depression.
[http://deepblue.lib.umich.edu/bitstream/handle/2027.42/50663/20505_ftp.pdf?sequence=1] site visited 21/02/2014

Eakin, H, Winkels, A, Sendzimir, J. 2009. Nested vulnerability: exploring cross-scale linkages and vulnerability teleconnections in Mexican and Vietnamese coffee systems. Environmental Science & Policy 12(4): 398-412.

FAO (2001). Food Balance Sheet FAO. Rome.

FAO (2006). The State of Food and Agriculture, 2006. Rome, FAO.

FAO (2009). The State of Food and Agriculture, 2009. Rome, FAO.

FAO (2011). Guide to Good Dairy Farming Practice. [http://www.fao.org/docrep/014/ba0027e/ba0027e00.pdf] site visited 17/03/2014

FAO (2014). Dairy production and products.
[http://www.fao.org/agriculture/daity-gateway/milk - production/en] site visited 26/03/2014

Friedl E. (1978). Socieety and sex roles.
[http://web.mnstate.edu/robertsb/380/Society%20and%20Sex%20Roles.pdf] site visited 22/03/2014

Friedl E. (2012). Society and sex roles: Why is equality between the sexes so rare? [http://www.enotes.com/homework-help/society-sex-roles-by-ernestine-friedl-394628] site visited 22/03/2014

Guardian, (2004). Introduction of beef, dairy cattle and goats to villagers by NGO. (http:www.ippmedia.com/ipp/newspapers/index.html) site visited on 11/10/2004.

Hakikazi C. (2004). Participatory Monitoring of PRS and Pro Poor Expenditure in Selected Districts and Area of Arusha Region, Tanzania

Howland, D. (2004). Say cheese, say flavor.
[http://www.bluecatmedia.com/images/print/Bluecat_FlavWin04.pdf] site visited 23/02/2014

IFAD (2007). Women Livestock Managers in the Third World: a Focus on Technical: A Review. IFAD Gender Portal, 14 March.

IFAD (2010). Enabling poor rural people to overcome poverty [http://www.ifad.org/mpat/resources/flyer.pdf] site visited 10/04/2014

IFAD (2012)The future of world food and nutrition security Investing in smallholder agriculture – an international priority
[http://www.ifad.org/pub/factsheet/food/foodsecurity_e.pdf] site visited 17/02/2014

IFC (2007). Voices of Women Entrepreneurs in Tanzania
[http://www.ifc.org/wps/wcm/connect/557b5a004886580cb3eef36a6515bb18/Voices%2Bof%2BWomen%2BEntrepreneurs%2B%2BTanzania.pdf?MOD=AJPERES&CACHEID=557b5a004886580cb3eef36a6515bb18] site visited 28/03/2014

ILO (2000). National report for promoting the linkages between womens employment and the reduction of child labour.
[http://www.tanzaniagateway.org/docs/ILOreport_promotinglinkagebtwnwomenemplymentandchildlabour.pdf] site visited 28/03/2014

ILRI (2013). Overview of the Tanzanian dairy industry challenges and opportunities [http://www.slideshare.net/ILRI/cleaned-project-mutagwabasep2013-26691249] site visited 20/02/2014

Kurwijila, R. L. (1991). Dairy production and management, vol. II, genetic and environmental aspect of milk production tropical environment.

Maarifa (2001) 'Cost-sharing in education: A Case study of Education in Kilimanjaro, and Moshi in Tanzania.

Meena H. E. and Sharif S. Z. (2008). Gender, Poverty and Food Security in Relation to Climate Change Impact and Adaptation, a case of Kilimanjaro [http://www.nlcap.net/fileadmin/NCAP/Countries/Tanzania/032135.070212.TAN.CON-02.Output12.Gender_poverty.pdf] site visited 20/02/2014

Mike, B. (2001) Milk production in smallholder dairy farms in Tanzania the quality and safety of milk. University of reading. UK.

MLFD (2011) Livestock Sector Development Programme. Draft. Ministry of Livestock and Fisheries Development, Dar es Salaam.

Mwakalebela, A. W, Mdoe, N.S.Y., Sarwatt and F.P Lekule (1998). The economics of Smallholder dairy production. A case of Turiani. Proc. TSAP, 25:221 – 226.

Njombe A. P. and Msanga Y. N. (2007). Livestock and dairy industry development in Tanzania. Department of Livestock production and Marketing Infrastructure Development Ministry of Livestock Development [http://www.mifugo.go.tz/documents_storage/LIVESTOCK%20INDUSTRY%20DAIRY%20DEVELOPMENT%20IN%20TANZANIA%20-%20LATEST3.pdf] site visited 17/02/2014

Okali, C. (2011). Livestock, Food Security and Gender Equity. [http://www.fao.org/docrep/014/i2426e/i2426e00.pdf] site visited 17/02/2014

Oxfam (2000). 'Report on field research in Coffee-Farming Communities in Kilimanjaro, Tanzania'.

Richardson P., Howarth R. and Finnegan G. (2004). The Challenges of Growing Small Businesses: Insights from Women Entrepreneurs in Africa.
[http://www.ilo.int/wcmsp5/groups/public/@ed_emp/@emp_ent/documents/publication/wcms_111395.pdf] retrived on 26/02/2014

Sarris A., Savastano S., and Christiaensen L. (2006). The role of agriculture in reducing poverty in Tanzania: A household perspective from rural Kilimanjaro and Ruvuma [ftp://ftp.fao.org/docrep/fao/009/ah468e/ah468e00.pdf] site visited 20/02/2014

TDB (2014). Opportunities for Investors in the Dairy Industry in Tanzania[http://www.tanzaniadairyboard.or.tz/sites/default/files/newAttachments/TDB%20Presentation%20SAGCOT%20Investment%20Partnership%20Program.pdf] site visited 20/02/2014

UN (2014). Tetra Pak and others work with UNDP to improve dairy production in Tanzania [http://business.un.org/en/documents/1402] site visited 17/02/2014

URT, (2002/3). President office-Planning and Privatization. Participatory Poverty Assessment.

URT (2012) National Sample Census of Agriculture Small Holder Agriculture Volume III: Livestock Sector – Nationa Report. [http://www.agriculture.go.tz/agricultural%20statistics/web/Nationa%20sample%20census%20of%20Agriculture%20200708%20vol.%20111/FINAL%20LIVESTOCK-%20NATIONAL%20Final%20Draft%2010%20March%202012.pdf] site visited 17/02/2014

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