

**THE SOCIO - ECONOMIC FACTORS INFLUENCING DAIRY GOAT MILK PRODUCTION IN KITUI TOWNSHIP,
KYANGWITHYA EAST AND KYANGWITHYA WEST WARDS OF KITUI CENTRAL SUB COUNTY – KENYA**

Stephen M. Musyoka

Ministry of Agriculture, livestock and fisheries development
Mbeere south – Embu County
Email: musyokaste@yahoo.co. Tel +254721568567

Titus I. Kanui

Department of Range and Wildlife Sciences
School of agriculture and veterinary sciences – South Eastern Kenya University
Email: tituskanui@rocketmail.com Tel.+254722448952

Simon Nguluu

Department of Dry land Agriculture
School of agriculture and veterinary sciences – South Eastern Kenya University
Email: nguluu@yahoo.com Tel. +254733986011

Stephen Wambua

Department of Agricultural economics and agribusiness
School of agriculture and veterinary sciences – South Eastern Kenya University
Email: swambua@seku.ac.ke Tel +254732401510

Alphaxard Ndathi

Department of Range and Wildlife Sciences
School of agriculture and veterinary sciences – South Eastern Kenya University
Email: andathi@seku.ac.ke Tel+254727633358

ABSTRACT

A study was carried out in Kitui Township, Kyangwithya east and Kyangwithya west wards of Kitui central sub county to assess the socio - economic factors influencing dairy goat milk production. Both exotic and indigenous goats were surveyed. Multi stage and purposive sampling techniques were used to select 90 households from two agro ecological zones (semi arid and sub humid) within the wards. Social and economic factors analyzed were education, experience, affiliation to groups, household income, income sources, availability and accessibility of credit facilities. Both the social and economic factors were found to have significant ($p < 0.05$) effects to milk production across the two breeds. It was concluded that when farmers are organized into self help groups, they can mitigate against challenges related to limited resources like land, water, labour, finances, skills, knowledge and marketing.

Key words: Goat keeping, Milk production, Credit facilities, Farmer groups, Experience, Education

1. INTRODUCTION

Increasing human population is demanding for high returns but less land requirement production enterprises. Dairy goat farming has emerged as a high-return option for the small-scale farmers especially in the Central and Mount Kenya regions Kinyanjui et al (2010), but in Kitui County of Kenya; the benefits enjoyed by dairy goat farmers in other areas are not realized due low milk production.

The average milk production per goat has remained low even after much intervention by various development agents. In 2012, extension officers reported a production level of between 0.5 litres to 0.75 litres of milk per goat per day while previous reports had indicated an average production of between 0.75 litres to 1.5 litres DLPO (2002; 2012). Decrease in milk production has affected the livelihoods of households by lowering their income and consumption levels.

This decreasing trend may be due to many factors ranging from environmental, management to social economic. The socio economic factors may relate to household income, availability and accessibility to credit, education levels, experience in goat keeping and affiliation to self help groups. Low household income among the farmers has resulted to low milk production due to inadequate feed supplementation, poor routine animal husbandry practices and inaccessibility high value breeding material. Several development agents in the county, like Kitui agricultural project (KAP), Farm Africa, World vision, Arid lands resource management project (ALRMP), Catholic diocese of Kitui (CDK) and Kitui development(KDC) have initiated dairy goat projects with various dairy goat breeds and intensified farmer capacity building since the year 1999 DLPO (2007). However, there was no proper documentation on the levels of milk production by different dairy goat breeds and the social and economic factors which affects the production levels. The aim of the study therefore was to assess and document the social and economic factors influencing dairy goat milk production.

2. MATERIALS AND METHODS

The study was conducted in Kitui Township, Kyangwithya east and Kyangwithya west wards of Kitui central sub county, Kitui county – Kenya which are located between latitudes $1^{\circ}31''$ and $1^{\circ}15''$ south and longitudes $37^{\circ}58''$ and $38^{\circ}7''$ east. It has an altitude ranging between 600 m and 1400m above sea level, rainfall ranging between 500mm-1200 mm per annum and temperatures of between 14°C to 34°C .

The wards have an area of 198.61 Km^2 and an estimated population of 66,772 people (Census, 2009) which constitute 15,806 households.

Multi stage sampling procedure and purposive sampling technique was used to select the Sub County, wards, sub locations, and households for the study where a total of 90 households were obtained following the formula described by Magnani (1997). Data was collected through observation and recording, photography and field surveys using both closed ended and open-ended questionnaires. The data collected was on socio economic factors influencing dairy goat milk production. The respondents included households keeping exotic goats (Alpines and Toggenburgs) and indigenous goats (local and Galla). Data analysis using Crosstabs Chi- square tests was used to measure the level of association between variables affecting dairy goat milk production. Variables for which are statistically significant are considered associated, while those which are insignificant are not associated. Data coding was done and SPSS (statistical package for social sciences) software was used to do the analysis.

3. RESULTS AND DISCUSSION

The social factors considered in the study were education levels, experience in goat keeping and affiliation to self help group. The analysis revealed that education levels had significant ($\chi^2 = 42.824$, $p = 0.000$) effects on milk production by exotic goats since 79.1% dairy goat keepers who had above primary education produced more than 2 litres of milk per day. Low to moderate literacy levels were reported among dairy farmers within the study area. This was consistent with Wozniak (1984) who reported a positive significant relationship between education and adoption of technologies has direct impact on productivity. Experience on dairy goat keeping was significant ($p < 0.05$) at ($\chi^2 = 23.538$ $p = 0.000$) with 66% of respondents who had more than 5 years' experience producing more than 2 litres of milk per day. Farmers who had more experience produced more milk than those had less experience since they were capable of coping with challenges related to diseases, feeding, housing, breeding and marketing among others. Makokha et al (2008) revealed that dairy farmers use their experience in dairying to control the risks associated with dairying and have better control of diseases and management of dairy animals. Similarly, Kinambuga (2010) reported that experienced farmers had better skills of management of dairy animals and forage to improve production.

Affiliation to self help group by exotic goat keepers had also significant ($p < 0.05$) effects to milk production at ($\chi^2 = 44.754$ $p = 0.000$) with 82.1% of respondents who said they were members of a self-help group producing more than 2 litres milk per day. This was in line with Wakhungu et al (2007) who noted that the co-operative concept allows dairy farmers to benefit from farm inputs, credit or market of the milk produce. The farmers can also be easily accessed by development agent especially where there are new innovations which need to be transferred. Wambugu et al (2003), found that participation in learning activities related to fodder shrubs, often through groups, lead to successful uptake and increased production (Table 1).

Table 1 Social factors affecting exotic goat milk production

Social factor		Milk production from exotic goat		χ^2	p
		< 2 litres	>2 litres		
Level of education (%)	Primary	89.4	10.6	42.824	0.000*
	Above primary	20.9	79.1		
Experience (%)	< 5 years	85	15	23.538	0.000*
	>5 years	34	66		
Group membership (%)	Member	15.8	84.2	44.754	0.000*
	Non member	86.5	13.5		

***Significant at (p<0.05)**

The study found that education levels had significant ($\chi^2 = 35.336$ p = 0.000) effects on level of milk production by indigenous goats with 72.1% of indigenous goat keepers who had above primary education producing more 1 litre of milk per day. Caswell et al (2001) reported that education creates a favorable mental attitude for the acceptance of new practices in agriculture which in turn improve productivity. Where technologies are sophisticated, farmers are not able to understand and apply them thus having direct impact on productivity. Experience on indigenous goat keeping was highly significant (p<0.05) to milk production at ($\chi^2 = 18.750$ p = 0.000) with 85% of respondents who had less than 5 years' experience producing less than 1 litre of milk daily. Consistently, Juma and Ciamarra (2013) reported that personal experience was a source of knowledge to 18% of dairy goat farmers in Zanzibar and concurred with Adesina and Forson (1995) that older farmers have more experience in farming and are better able to assess the characteristics of modern technology than younger farmers. Farmers with little experience will also shy off from new technologies which is a breakthrough for early adopters. Affiliation to self help group by indigenous goat keepers was also significant (p<0.05) to milk production at ($\chi^2 = 36.141$ p = 0.000) with 75.3% of respondents who said they were members of a self-help groups producing more than 1 litre of milk daily. Farmers organized into self help groups have one voice in procuring inputs and sourcing market for their produce thus enhancing improved productivity. Similarly, Maina (2009) suggested that membership in community groups using a certain technology was likely to lead to better adoption of the technologies by more farmers and translate into other advantages (Table 2).

Table 2 Social factors affecting indigenous goat milk production

Social factors		Milk production from exotic goat		χ^2	p
		< 1 litres	>1 litres		
Level of education (%)	Primary	89.4	10.6	35.336	0.000*
	Above primary	27.9	72.1		
Experience (%)	< 5 years	85	15	18.750	0.000*
	>5 years	40	60		
Group membership (%)	Member	23.7	75.3	36.141	0.000*
	Non member	86.5	13.5		

***Significant at ($p < 0.05$)**

The economic factors affecting exotic goat milk production analyzed were household income, and credit facilities. Chi square procedure was used to do the analysis and it revealed that all economic variables were significant ($p < 0.05$) on milk production levels by exotic goats. Per capita house hold income was significant at ($\chi^2 = 20.445$ $p = 0.000$) with 95.8% of exotic goat keepers who earned less than Ksh15,000 per capita income producing less than 2 litres per day. This could be linked to their capacity to adopt new technologies related to dairy goat production such as proper housing, pasture improvement, feed supplementation, disease control and purchase of high quality breeding stock which in turn improves milk production. It was consistent with Diagne and Zeller (2001) who reported that poor rural households in developing countries lack adequate access to credit which in turn impinges a significant negative impact on technology adoption, agricultural productivity, nutrition, health, and overall household welfare.

Similarly household income sources was significant at ($\chi^2 = 6.210$ $p = 0.013$) with 61.3% of exotic goat keepers who said they had other sources of income apart from farming producing more than 2 litres of milk per day. This could be related to complementary funds which can be used in purchasing feed supplement, breeding material, drugs and other inputs. This was contrary to (Gould et al. 1989) who revealed that increasing involvement in off-farm employment for income generation reduced production performance.

Availability and accessibility to credit facilities were significant to milk production at ($\chi^2 = 5.269$ $p = 0.022$) and ($\chi^2 = 38.077$ $p = 0.000$) respectively with 50.8% of exotic goat keepers who said that there were credit facilities making use of it and producing more than 2 litres of milk per day. Credit can be used to facilitate adoption of technologies which require capital investment hence improving productivity. This is consistent with Nguthi (2007) who noted that credit or savings are often required to finance the inputs associated with a new technology. Mamudu et al (2012) reported that lack of access to credit made it difficult for farmers to afford capital-intensive technologies (Table3).

Table 3 Economic factors affecting exotic goat milk production

Economic factors		Milk production from exotic goat		χ^2	P
		< 2litres	>2 litres		
Per capita household income (%)	<15,000 Ksh	95.8	4.2	20.445	0.000*
	>15,000 Ksh	42.4	57.6		
Household income sources (%)	Farming	66.1	33.9	6.210	0.013*
	Other sources	38.7	61.3		
Presence of credit facilities (%)	yes	49.2	50.8	5.269	0.022*
	no	76	24		
Accessibility to credit facilities (%)	yes	0.0	100	38.077	0.000*
	no	75	25		

*Significant at ($p < 0.05$)

Per capita household income was found to significantly ($\chi^2 = 17.509$ $p = 0.000$) affect milk production in indigenous goats with 95.8% of indigenous goat keepers who earned less than Ksh15000 per capita income producing less than 1 litre of milk per day. Households which earned low income were disadvantaged because they constrained in accessing technologies which require money. This is consistent with Mamudu et al (2012) that younger farmers may not be able improve production since they cannot adopt modern capital intensive agricultural technologies, due to inadequate resources.

Access to credit facilities was found to be highly significant ($\chi^2 = 37.309$ $p = 0.000$) to milk production with 95.5% of indigenous goat keepers who said they had access to credit facilities producing more than 1 litre of milk per day. Farmers who are skeptical and poor risk takers will not accept to access credits even if they are available. The farmers within the study area have a long history of fear of credit facilities and this does not concur with what was reported by Senyolo (2007) that farmers cannot access credit facilities to finance their different projects because of the unavailability of formal credit institutions in rural environments where they reside and carry out their agricultural activities (Table 4).

Table 4 Economic factors affecting indigenous goat milk production

Economic factors		Milk production from indigenous goat		χ^2	P
		< 1litres	>1 litres		
Per capita household income (%)	<15,000 Ksh	95.8	4.2	17.509	0.000*
	>15,000 Ksh	47	53		
Household income sources (%)	Farming	71.2	28.8	8.931	0.003*
	Other sources	38.7	61.3		
Presence of credit facilities (%)	yes	53.8	46.2	3.692	0.055
	no	76	24		
Accessibility to credit facilities (%)	yes	4.5	95.5	37.309	0.000*
	no	77.9	22.1		

*Significant at ($p < 0.05$)

4. CONCLUSION AND RECOMENDATIONS

Education levels, long experience and membership to a group positively improved milk production due to increased likelihood of adoption of new technologies. Uniting farmers into self help and producer user groups could help them mitigate challenges related to limited resources like land, water, labour, finances, skills, knowledge and marketing of their produce.

Improved per capita household income and accessibility of credit facilities increased milk production levels and consequently improving the living standards of the households within the study area.

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