



## Common Factors Influencing Fodder Availability for Smallholder Dairy Farms in Mogadishu, Somalia

Shuaib Abdullahi Siad<sup>1\*</sup>, Abdullahi Omar Mohamud<sup>1</sup>, Ahmed Aidarus Ahmed<sup>1</sup>,  
Abdullahi Abdinasir Garane<sup>1</sup>

<sup>1</sup>Department of animal production, faculty of Veterinary and Animal husbandry, Somali National University (SNU), Mogadishu, Somalia

\*Corresponding author

**ABSTRACT:** The availability of feed and fodder is hugely significant for smallholder dairy farms because it influences the production of livestock. This study was carried out to evaluate the factors influencing fodder availability for smallholder dairy farms in Mogadishu, Somalia. Three districts, which have significant smallholding dairy farms, have been selected for the study. The study was based on cross sectional survey design and the sampling procedure was chosen purposively. An estimated target population of 105 from small holder dairy farmers was based on the study. Slovin's formula was used to calculate the required sample size from the target population. The data was collected from a sample of 83 farmers. The primary data for this study was collected through the use of structured questionnaire. According to objectives of the study, socioeconomic variables and the common factors influencing fodder availability was examined. The results from the study indicate that the socioeconomic variables of farmers play a significant role in fodder production. The result also shows that the common factors such as lack of technical knowledge (97.6%) and the scarcity of fodder (96.3%) are adversely impacting the fodder availability in the study area. An overall agreement level of 89.8% has been recorded for these common factors. It is recommended that agricultural inputs should be introduced in order to improve forage production and conservation in the study area. It is also advisable that agricultural facilities should be provided for smallholder dairy farmers.

**KEY WORDS:** Smallholder dairy farms, socioeconomic factors, fodder availability

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### I. INTRODUCTION

Dairy production is practiced by many Somali people in the rural areas and places adjacent to big cities. It is a source of food and supports the people during the cropping season when there is no much food to depend on. It provides products such as milk and ghee which are very important dietary component for the Somali people. The contribution of livestock to the quality of food consumed by the Somalis is very important because livestock contribute high quality protein and vitamins that are especially important in the nutrition of children. In fact 88% of the cattle keepers and 83% of the sheep and goat keepers indicate that the most essential feature for livestock is its ability to produce milk (Muigai, *et al.*, 2016). Dairy farming is also a form of wealth and an investment to the rural people (Oppong-Anane, 2001). Somali dairy animals comprise a wide range of livestock species including cattle, camels, and goats, each with a few recognized breeds (Muigai, *et al.*, 2016). The dairy cattle of Somalia are mainly the East African Zebu type of which the types such as the Somali Boran, Gasara, Dauara and Surqo are recognized (Rege, 1999; Nur, 2005).

Smallholder dairy farming is crucial in sustaining the livelihoods of many farmers in Somalia. Systems like this are gradually expanding to the urban areas of east Africa (Lukuyu, *et al.*, 2016). This emerging trend of urban dairy farming is mainly motivated by the availability of milk market, need for creation of employment opportunities and ease of integration with other agro-economic activities (Njombe, *et al.*, 2011). Nevertheless, feeding for cattle and small ruminants in most of parts of the country is almost entirely dependent on grazing of natural pastures and rangelands that are characterized by poor pastures, with extreme seasonal variation in quantity and quality (Oppong-Anane, 2013). Likewise the availability of sufficient high quality feed is a key constraint to improving milk yields and this curtails dairy income for smallholders through intensification of smallholder dairy systems. Furthermore the rising demand for dairy products coupled with small size farm

holdings and declining soil fertility present a problem to smallholder dairy farmers (Delgado, *et al.*, 1999; Gerosa and Skoet, 2012).

At the moment there is apparent growth of dairy farming in Mogadishu, so obtainability of feed resources will remain an important limitation to livestock productivity. And in the event of increasing smallholder dairy farms against the backdrop of expanding human population and hence pressure on land for food and feed production, fodder production will become increasingly important for smallholder systems (Lukuyu, *et al.*, 2016). This will be even more pronounced as producers shift towards more intensive systems of dairy production that will increase the population of dairy cattle, become more market oriented and focus on the requirement to be competitive in the livestock product market by higher production per animal and unit of land with better feeds (Manyawu *et al.*, 2013). Studies show that different fodder types (Rhodes grass, maize stovers, oat straws and Lucerne hay) are needed to be produced if sufficient feed is expected to be available for dairy farms (Nangole, *et al.*, 2011). Nevertheless dairy farmers often do not meet their all year round feed demand from on-farm production due to a number of reasons among them, limited land to grow forages, and low yields of forage due to poor fodder production practices (Lukuyu, *et al.*, 2016; Moran, 2009). Literature review indicates that there is very small information about fodder production and marketing in Somalia. Also inadequate work has been done about production of important forages. In addition, little has been explored in socioeconomic problems relating to fodder production. Therefore the current study was undertaken to explore the common factors influencing the availability of fodder for smallholder dairy farms in Mogadishu.

## II. METHODOLOGY

The present study was carried in Mogadishu, the capital and most populous city of Somalia. The city serves an important port that connects trading around the Indian Ocean and has an estimated population of 1,899,000 residents. Three districts, *Daynile, Wadajir and Hodan*, which have significant smallholding dairy farms, have been selected for the study. The study was based on cross sectional survey design and the sampling procedure was chosen purposively. Since it wasn't possible to study the entire population of these villages, an estimated target population of 105 from small holder dairy farmers was used in the study. Slovin's formula was used to calculate the required sample size. Slovin's formula allowed the researchers to sample the population with a desired degree of accuracy (Glen, 2012).

**Slovene's formula:** 
$$n = \frac{N}{1 + N(e)^2}$$

Where,

n= is the required sample size,

N= is the target population size, and

e= is the standard error or level of significance, which is popularly known to be 0.05 or 5%.

For this study, N = 115 and so the sample size was calculated as follows;

$$n = \frac{105}{1 + 105 (0.05)^2} = 83$$

Data for this study was collected using questionnaire. Descriptive statistic such as frequency counts, Std. Deviation, means and percentage were used in analyzing the data with the help of SPSS software (Version 22.0).

## III. RESULTS AND DISCUSSION

**Table 1. Socioeconomic characteristics of the dairy farmers**

	Socio-economic variables	Frequency	Percentage
1.	<b>Age</b>		
	18-24 years old	16	19.3
	25-34 years old	35	42.2
2.	<b>Marital status</b>		
	Married	47	56.6
	Single	29	34.9
3.	<b>Educational level</b>		
	Primary Education	23	27.7
	Secondary Education	18	21.7
	Tertiary Education	21	25.3
	No School	21	25.3
4.	<b>Main occupation</b>		
	Farming	57	68.7
	Teaching	3	3.6
	Business	9	10.8
	Other Services	14	16.9

5.	<b>Farming experience</b>		
	less than 5 years	32	38.6
	5-10 years	37	44.6
	15 and above	14	16.8
6.	<b>Type of dairy animal</b>		
	Dairy cattle	45	54.2
	Dairy goats	35	42.2
	Dairy camel	3	3.6
7.	<b>Type of Breed</b>		
	Indigenous	71	85.6
	Exotic	6	7.2
	Crossbred	6	7.2
8.	<b>land allocated for fodder production (ha)</b>		
	less than 0.5 ha	33	39.8
	0.5-1 ha	23	27.7
	2-3 ha	6	7.2
	4-5 ha	3	3.6
	No Land	18	21.7
9.	<b>Livestock production system</b>		
	Intensive	34	41.0
	Subsistence	35	42.2
	Extensive	10	12.0
	Transitional	4	4.8
<b>Total</b>		<b>83</b>	<b>100.0</b>

Source: authors' result

The table 1 shows the socioeconomic status of dairy farmers in the study area. The majority of farmers (42.2%) fall in the age category of 25-34 years old. The results indicate that age of farmers plays a significant role in farm production and better management practices of the farming activities (Islam, *et al.*, 2016). According to marital status of the farmers, majority of them (56.6%) were married. Likewise a significant number of the farmers (27.7%) have primary level literacy. Education is significant for the farmers as it assists them in many facets such as developing latent views and flourish the mind to become conscious about the environment where belong to. Education also widens the mind and speeds up to cope with the changing condition of the world. The top most benefits of the education is that it makes human become rational. It also makes farmers more skillful to manage scarce resources proficiently so that they can earn higher income (Islam, *et al.*, 2016). In terms of occupation, majority of the farmers (68.7%) do have farming as their main occupation. Some of the other farmers were involved in several types of main occupations such as business and other services. The findings also reveal that 44.6% of the farmers have an experience between the ranges of 5-10 years. In this study farmers keeping dairy cattle (54.2%) were much more compared to those rearing dairy goat and camel (42.2% and 3.6% respectively). The results also show that majority of these farmers (85.6%) were having indigenous breeds in their farms for dairy production purposes. Moreover, 39.8% of farmers claimed that the land they allocated for fodder production was less than 0.5 ha while 21.7% of them had claimed that they have no land for fodder production. Finally the findings in the table reveal the most common type of animal production system was subsistence as it was claimed by 42.2% of the farmers. This study can be related with the findings of (Islam, *et al.*, 2016).

**Table 2. Common factors influencing the availability of fodder for dairy farmers.**

Rank	Factors	Scale of Agreement (%)
1	lack of technical knowledge	97.6
2	Unsuitable ways of preserving excess fodder for the lean winter period	96.4
3	The scarcity of fodder particularly during dry season	96.3
4	Poor quality of fodder especially during the dry season	94.0
5	Abundance of fodder during rainy seasons	93.9
6	Poor practice for fodder production	92.8
7	Adversities of seasonal variation in climate	92.7
8	Insufficient land for fodder production	92.7
9	Dependence on the crop production system	90.4
10	Shortage of capital	90.3
11	Lack of established fodder banks	84.3
12	High cost or lack of farm machinery / equipment for production and	56.6

preservation of fodder crops	
<b>Total</b>	<b>89.8</b>

**Source: authors' result**

The table above demonstrates the most common factors influencing fodder availability in the study area. It is clear from the results that the highest factor was 'lack of technical knowledge' with agreement level of 97.6%. It is quite understandable from the findings that most of smallholder dairy farmers in the study area don't get trainings for proper fodder production practices. The results also indicate that there is 96.4% of agreement level for the unsuitable ways of preserving excess fodder by smallholder dairy farmers. In addition, the scarcity of fodder particularly during the dry season is high with an agreement of 96.3%. Also the quality of fodder in the study area is very poor during the dry season with 94.0% of the farmers agreeing on it. However, 93.9% of the farmers have agreed that there is an abundance of fodder during rainy season. The results also show that there is poor practice for fodder production with an agreement level of 92.8%. Adversities of seasonal variation in climate were ranked as the seventh factor with agreement level of 92.7%. There is also insufficient land for fodder production as it was agreed by 92.7% of the smallholder dairy farmers in the city. The availability of fodder for dairy farmers is also affected by the crop production system used in the country that mainly focuses on the production of food crops with 90.4% of farmers agreeing to it. Large number of the farmers (90.3%) has also agreed that there is shortage of capital in terms of fodder availability. There are no established banks of fodder in the capital as it can be seen from result with 84.3% of the farmers accepting the need of such banks. Finally the farmers are low in equipment used for the production and preservation of fodder crops. This study is in line with findings of (Azad *et al.*, 2016).

#### IV. CONCLUSION

The availability of feed and fodder is hugely significant for small dairy farmers as it influences the production of their livestock. This study has evaluated the factors influencing fodder availability for smallholder dairy farmers in Mogadishu. It can be concluded from the result that these factors are negatively impacting the availability of fodder. It is recommended that agricultural inputs should be introduced in order to improve forage production and conservation in study area. It is also advisable that agricultural facilities should be provided for smallholder dairy farmers.

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