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## **Socio-economic Profile of Sheep and Goat Rearers in Tahtay Adyabo District, Tigray, Ethiopia**

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### **Author's contribution**

*The sole author designed, analysed, interpreted and prepared the manuscript.*

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### **ABSTRACT**

The present study was conducted to assess the socio-economic profile of sheep and goat rearers in Tahtay Adyabo District, Tigray, Ethiopia. For this study 138 sample households were selected randomly. Of the total sample respondents, 26.1% of them owned sheep, 35.5% of them owned goats and 38.4% of them owned both sheep and goats. Of the 138 interviewed sheep and goat producing households, 81.2% were male headed and the rest 18.8% were female headed households. The average ages of the sampled respondents were 44 year. The average family size of the total sample respondents was found to be 6 persons. The average years of experience related to sheep and goat production was 10.7 years. The survey result with respect to land holding of the respondents reveals that an average size of land holding per household was 2.3 hectare. Sheep and goats are kept for income generation from sell of live sheep and goat, manure, meat and milk, saving insurance and for the sale of sheep and goat product purposes in the study area. Of the total sampled households 77(55.8%) of the respondents housed their sheep and goat in both open ended during dry season and hdmo (constructed shelter from stone or wood walls with soil roof during rainy season) at night, 34(24.6%) respondents used only constructed shelter made from stone with wood walls with soil roof, 22(16%) used shelter made of mud or wood walls with leaf roof and 5(3.6%) used fenced area without roof. Therefore provision of input technologies and modern practices, increasing the dimension of access to formal financial systems,

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provision of timely and adequate veterinary services and provision of timely and accurate market information are important for benefits of producers and for production and productivities of sheep and goats.

**Keywords:** *Socio-economics; goat; sheep; rearers; tahtay adyabo; Ethiopia.*

## 1. INTRODUCTION

Sheep and goats in Ethiopia are produced under two major production systems—the sedentary mixed crop–livestock production system and the agro pastoral production system. The former is based on limited communal and/or private grazing areas, industrial by-products, crop residues, cultivated forage and naturally grown bushes and shrubs. The pastoral production system is based on extensive communal grazing, while agro pastoralists are characterized by combination of pastoral and mixed crop–livestock systems [1]. Sheep and goats have lower feed requirements compared to cattle because of their small body size. This allows easy integration of small ruminant into different farming systems. The increased domestic and international demand for Ethiopian sheep and goats has established them as important sources of revenue as well as foreign currency. This increased demand also creates an opportunity to substantially improve food security of the population and alleviate poverty [2].

Sheep and goats are mainly kept for income generation in many parts of Ethiopia to obtain cash income for household expenses, such as buying grains for household consumption, buying agricultural inputs such as fertilizer and seed and paying the medical and school expenses of household members [3,4,5,6]. However, traditional sheep and goat production technologies and practices render the production and productivity as well as benefits to producer falls below expectations. This is due to health constraints, inadequate feed, low genetic potential and various management problems. Infectious diseases pose major constraints to sheep and goat production in the country [7,8]. Tahtay Adyabo district is one of the potential areas for sheep and goat production. Moreover, begait breeds of sheep and goats which are utilized both for meat and milk production belongs to this district. To use the potential of the resource optimally, it is important to assess the socio– economic profile of the sheep and goat rearers in the study area. Therefore the study

aims to assess the socio–economic profile of sheep and goat rearers in Tahtay Adyabo district.

## 2. METHODOLOGY

### 2.1 Study Area

The study was conducted in Tahtay Adyabo District of the North Western Zone of Tigray Region, Ethiopia. The district has 253,655 hectare of land coverage. There are three major agro-ecological zones (hot to warm semi-arid low lands (70%), hot to warm sub-moist low lands (11.25%), and tepid to cool moist mid highlands (18.75%)). The altitude of the district ranges from 800-1500 meter above sea level [9]. Tahtay Adyabo District has 158,418 goat and 32,433 sheep population [10].

### 2.2 Sampling Procedure

The study selected randomly 138 sample households based on [11] formula.

$$n = \frac{z^2 p(1-p)}{e^2}$$

Where,

$n$  is the sample size

$p$  is the estimated proportion of sheep and

goat producers from the total population

$$Z = 1.96 \text{ and } e = 0.05$$

$$n = \frac{1.96^2 \times 0.9(0.1)}{0.05^2} = 138$$

### 2.3 Data Collection

The study used primary and secondary data. Primary data were collected using informal and formal surveys. The formal survey was undertaken through formal interviews with randomly selected farmers using a pre-tested semi-structured questionnaire the informal

survey used key informants interview and visual observations. Specific checklists were used to guide key informants interviews. The secondary data were collected from central statistical authority, office of agriculture and rural development of the district, and other sources.

## 2.4 Data Analysis

The study used descriptive statistical method of data analysis to describe the household characteristics.

## 3. RESULTS AND DISCUSSION

Tables 1 and 2 present the result of socioeconomic characteristics of the sample respondents.

Of the total sample respondents, 81.2% were male-headed households and 18.8% were female-headed. With regards to educational status of sampled respondents, 60.9% of the total sampled households were literate. Regarding their marital status, 2.2% of the total sample households were single, 88.4% were married, 7.2% were divorced and 2.2% were widows. In addition to the farming activities, 64.5% of the total sampled households have also engaged in off/non-farm activities like in petty trading activities and daily labor.

The average age of sampled respondents was 44 years. The average family size of the total sampled respondents was found to be 6 persons. The average years of experience related to sheep and goat production was 10.7 years. The survey result with respect to land holding of the respondents reveals that an average size of land holding per household was 2.3 hectares.

## 3.1 Production of Sheep and Goat

Of the total sample respondents, 26.1% of them owned sheep, 35.5% of them owned goats and 38.4% of them owned both sheep and goats.

## 3.2 Income Source

The main source of cash income for the majority of the respondents in the study area was sesame production. Sheep and goat and other livestock production are also considered as the second and third sources of income of the respondents in the study area.

## 3.3 Purposes of Sheep and Goat Keeping

Sheep and goats are kept for different purposes in the study area. Sampled respondents sell live sheep and goats to obtain cash income for household expenses, such as buying grains for household consumption, buying agricultural inputs such as fertilizer and seed and paying the medical and school expenses of household members. [12] reported that about 53.3% of the small ruminant keepers keep them mainly for income generation purpose. Similar report was also reported by [13] in the study conducted in misha woreda, hadiya zone, southern Ethiopia where 75% of the respondents keep sheep and goat for cash income. The second main reason for keeping sheep and goat was for manure. Although its amount is small, most sampled households prefer sheep and goat manure to cattle manure. Keeping sheep and goat for household consumption as meat and milk were the third and fourth important reasons. Other important reasons include for saving and insurance and sale of animal products such as hide and skin.

**Table 1. Socioeconomic characteristics of samples (Categorical variables)**

Variables	Items	Total sample (N =138)	
		N	%
Sex	Male	112	81.2
	Female	26	18.8
Education	Literate	84	60.9
	Illiterate	54	39.1
Marital Status	Single	3	2.2
	Married	122	88.4
	Divorce	10	7.2
	Widowed	3	2.2
Off/non farm income	Involved	89	64.5
	Not involved	49	35.5

*N is number of respondents. Source: Field survey, 2015*

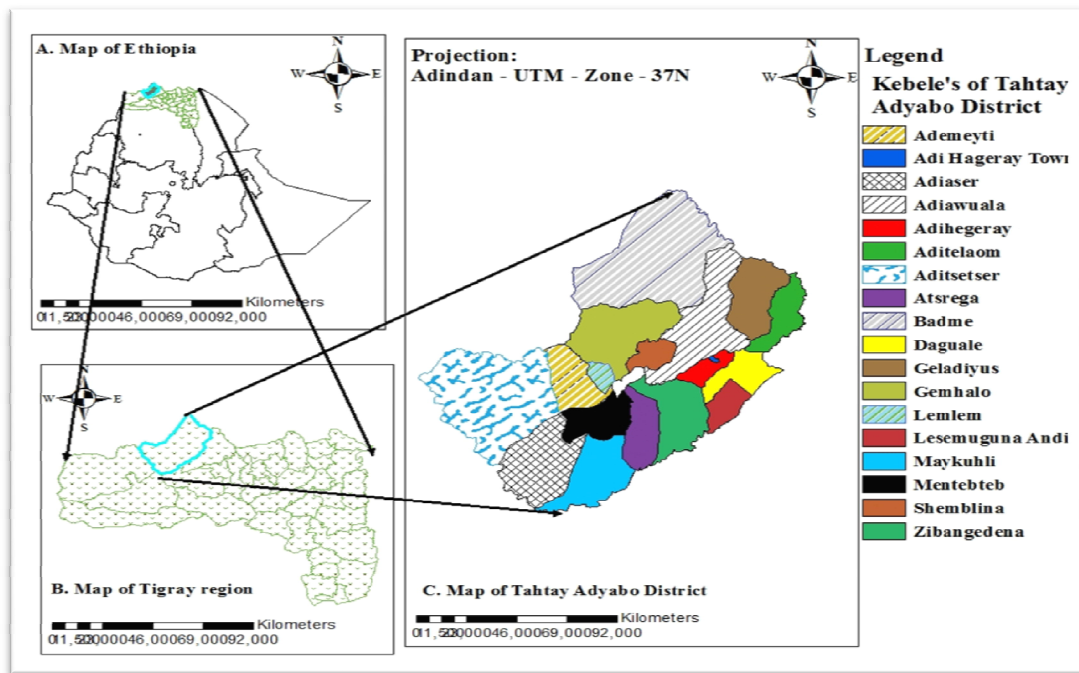


Fig. 1. Map of Tahtay Adyabo district (Arc GIS)

Table 2. Socioeconomic characteristics of sample households (Continuous variables)

Variables	Total sample (N = 138)	
	Mean	SD
Age	44.18	10.39
Family size	5.84	2.08
Experience	10.72	8.56
Land size	2.3	2.16

*N* is number of respondents. *SD* is standard deviation.  
Source: Field survey, 2015

Table 3. Types of sheep and goat owned by sample households

Types of small ruminant owned	Total sample (N = 138)	
	N	%
Sheep	36	26.1
Goat	49	35.5
Sheep and goat	53	38.4

*N* is number of respondents. Source: Field survey, 2015

### 3.4 Types of Shelter

In the study area all of the sampled respondents confine sheep and goat in separate house. Of the total sampled households 77(55.8%) of the respondents used open ended without roof during dry season at night, constructed from stone or wood walls with soil roof which is locally

called *hdmo* during rainy season at night for confined space for sheep and goat. [14] reported that 79% and 96% of the respondents in Jijiga and Shinile zone, respectively housed their sheep and goats in the open kraal at night. Similarly, 34(24.6%) respondents used only constructed shelter from stone with wood walls with soil roof, 22(16%) used shelter made of mud or wood walls with leaf roof and 5(3.6%) used fenced area without roof.

### 3.5 Breeding Stock

Farmers are both producers and buyers of sheep and goat in the study area. They buy young female sheep and goat mainly for breeding purpose when they need to increase their herd size. Their preferred sources of sheep and goats are farmers from known locations since they want to make sure whether those sheep and goats will adapt to the area situation. Regarding the time of purchases, farmers usually buy animals after crop harvesting from the end of October to December. Because they get cash by selling cash crops and other grains and availability of grazing pasture and crop residues.

Sheep and goat producers are also participated for supplying breeding stock to other farmers or neighbors in the study area.

Of the total sampled respondents, 33.3% obtained breeds of sheep and goats. With regard to source of breed, 28.2% sampled respondents obtained breed from other farmers/neighbors and 5.1% sampled respondents from NGO (Save the Children) (Table 7). In the study area there are high performance of local breeds (begait breeds) of sheep and goat.

### 3.6 Supportive Institutions

Supportive institutions are those who provide supportive services including training and extension, market information, veterinary services, financial and research services. Office of agriculture and rural development, dedebit credit and saving institution, non governmental organization (Save the Children) and shire-maitsebri agricultural research center are main supporting institutions who play a central role in the provision of such services in the study area.

### 3.7 Veterinary Services

The survey result showed that 58.7 percent of the sampled respondents received veterinary services (Table 8). Unlike the households nearer to towns, who can sometimes get veterinary service from private veterinary pharmacies and specialists, majority of the households get veterinary service from office of agriculture and rural development of the district. Out of 81 sampled farmers who have got

veterinary services, 47.1% farmers got veterinary services from office of agriculture and rural development of the district and 11.6% farmers from private veterinary specialists and pharmacies (Table 9).

The drugs and veterinary services provided by office of agriculture and rural development of the district to small ruminants, such as treating illness, and vaccinations are not enough as compared with demand and high population of small ruminant. This inadequate veterinary services and drug supply were what caused high mortality of small ruminants, there by low productivity. The major diseases and parasites of sheep and goats in the study area are sheep and goat pox, anthrax pasteurellosis, peste des petits ruminants, brucella and mange mites/skin diseases.

### 3.8 Credit Services

In the study area, dedebit credit and saving institution, cooperatives and credit and saving groups have been identified as source for credit on a cash basis. The survey result showed that 45.7 percent of the sampled respondents take credit for small ruminant production (Table 8). Out of the sampled farmers who took credit, 39.1% farmers took credit from dedebit credit and saving institution, 3.6% farmers from cooperatives and 2.9% from credit and saving groups (Table 10).

**Table 4. Income source in Tahtay Adyabo district**

Income source	Rank as					Total
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
Sesame production	35	10	6	4	2	57
Sheep and goat production	11	25	2	1	0	39
Other livestock production	4	5	9	2	2	22
Petty trading activities	2	1	3	7	1	14
Grain production	0	1	0	2	3	6
Total sample households	52	42	20	16	8	138

Source: Field survey, 2015

**Table 5. Purposes of sheep and goat keeping**

Purpose	Rank as					Total
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
Sell of live sheep and goats (income generation)	53	10	4	3	1	71
Manure	9	16	7	4	3	39
Household consumption (meat and milk)	3	2	8	1	0	14
Saving and insurance	0	0	2	5	2	9
Sale of sheep and goat products	0	0	0	1	4	5
Total sample households	65	28	21	14	10	138

Source: Field survey, 2015

**Table 6. Types of shelter used for sheep and goat**

Type of shelter	Total sample (138)	
	N	%
Both open ended and <i>hdmo</i>	77	55.8
Made of stone with wood and soil roof ( <i>hdmo</i> )	34	24.6
Made of mud/wood walls with leaf roof	22	16
Only fenced area without roof	5	3.6

Source: Field survey, 2015

**Table 7. Source of breeds by sample households**

Sources	Total sample (N = 46)	
	N	%
Farmers/neighbors	39	28.2
NGO	7	5.1

Source: Field survey, 2015

market information from other farmers who are neighbors, friends and farmers through personal observation (Table 8).

Development agents, Tahtay Adyabo district office of agricultural and rural development experts, shire- maitsebri agricultural research center and non governmental organizations were the main sources of small ruminant extension service in the study area. Tahtay Adyabo district office of agricultural and rural development through its development agents is the major actor who provides information and advisory service on small ruminant production. The type of extension service with regard to small ruminant was technical advice and training applied to small ruminant production and marketing.

### 3.9 Market Information

Before selling their animals, producers search for information about market conditions through self-assessment by going to the markets and asking their neighbors. The source of the information was information from the previous week's market. The survey result showed that 67.4 percent of sampled respondents got

**Table 8. Access to services by sample respondents**

Variables	Items	Total sample (N = 138)	
		N	%
Credit	Have access	63	45.7
	Don't have access	75	54.3
Veterinary	Have access	81	58.7
	Don't have access	57	41.3
Market information	Have access	93	67.4
	Don't have access	45	32.6

Source: Field survey, 2015

**Table 9. Sources of veterinary services by sample farm households**

Sources	Total sample (N = 81)	
	N	%
Office of agriculture and rural development	65	47.1
Privet veterinary specialists and pharmacies.	16	11.6

Source: Field survey, 2015

**Table 10. Source of credit by sample farm households**

Sources	Total sample (N = 63)	
	N	%
Dedebit credit and saving institution	54	39.1
Cooperatives	5	3.6
Credit and saving group	4	2.9

Source: Field survey, 2015

## 4. CONCLUSIONS

Sheep and goats are kept to obtain cash income, manure, meat and milk, saving insurance and sale of animal product purposes in the study area. All of the sampled respondents confine sheep and goat in separate house. Most of the respondents used open ended without roof during dry season at night and constructed shelter from stone or wood walls with soil roof during rainy season at night for confined space for sheep and goats. The major diseases and parasites of sheep and goats in the study area are sheep and goat pox, anthrax pasteurellosis, peste des petits ruminants, brucella and mange mites/skin diseases. Therefore provision of input technologies and modern practices, increasing the dimension of access to formal financial systems, provision of timely and adequate veterinary services and provision of timely and accurate market information are important for benefits of producers and for production and productivities of sheep and goats.

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## COMPETING INTERESTS

Author has declared that no competing interests exist.

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