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Review on the Current Status of Ethiopian Indigenous Goat Production

Siraj Sh. Mohamed Adam[1*], Ibrahim Mohammed[2]

1 Meta Agricultural Office, School of Animal and Range Sciences, Haramaya University, Haramaya, Ethiopia, P. O. Box 138, Dire Dawa, Ethiopia
Email: sirajmhd2021@gmail.com
2Goro Muti Agricultural Office, School of Animal and Range Sciences, Haramaya University, Haramaya, Ethiopia, P. O. Box 138, Dire Dawa, Ethiopia

Abstract: This review aims to generate basic information for beneficiaries and users about the indigenous breed of Ethiopian goats and their productive performance, social and economic significance of goat production, and major goat production programs in Ethiopia. Some of the constraints and opportunities for goat production are also discussed in this paper. Ethiopia has a large number of livestock; 65.35 million cattle, 39.89 million sheep, 50.50 million goats, 8.98 million donkeys, 2.11 million horses, 7.70 million camels, 0.38 million mules and 48, 96 million chickens. The country has the largest number of goats on the continent, which serves several functions for the communities. In Ethiopia, goat production represents 16.8% of the total meat and 16.7% of milk consumption. Indigenous Ethiopian goats are less productive than cold breeds. Goat production was largely affected by food shortages, diseases and parasites, market depressions, low genetic production and severe water shortages. There are ways to increase goat production, as various development partners are involved in higher education. Currently, research and development is underway on goat development. It is important to use modern production systems with advanced technology in urban and urban areas and to improve the traditional system in rural areas by adding food and better medical care.

Keywords: Goat Production, Performance, Challenges, Opportunities, Ethiopia.

1. Introduction

Ethiopia is home to large and diverse livestock and attractive production environments. Most of the rural population's livelihood depends on a particular on rising of livestock [1]. Ethiopia has a large number of livestock; 65.35 million cattle, 39.89 million sheep, 50.50 million goats, 8.98 million donkeys, 2.11 million horses, 7.70 million camels, 0.38 million mules, and 48. 96 chickens [2]. It should be noted that animal products and by-products made in the form of meat, milk, honey, eggs, cheese, and butter provide the necessary animal protein that helps to improve the nutritional status of humans [3]. Livestock also plays an important role in supplying exports such as live animals, hides, and skins to generate foreign exchange [2].

Smallholder farmers prefer small ruminants because they require less investment; they have shorter production cycles, faster growth rates, and greater adaptability to the environment compared to larger glowing animals [4] [5]. They offer a variety of products and services to their owners. They contribute to landless households, rural areas, peri-urban, and urban agriculture by providing food, income, fertilizer and clothing [6] [7]. According to these authors, they also make significant indirect contributions to homes with harvest products, integration with other farms, and social, cultural and religious aspects of daily life. In addition, there are no banking services in rural areas and the easiest way to save money for future needs is to buy smaller ruminants [8].

Goats are selective seeker and eater, which allows them to thrive in a few trees and shrubs. It is important to diversify agriculture and livestock, create jobs, improve family income, create income, contribute to human nutrition and reduce risks such as natural energy, in addition to the immeasurable effects of various products [10]. Goats are raised in a variety of agricultural areas, from dry to cold and above, in a variety of production systems. Small-scale farming plays an important social and economic role in many rural areas, where they are raised financially and in the beverage bank [11].

The number of Ethiopian goats is important in Africa and the world. According to the latest figures, the number of goats in the country is estimated at 50.50 million of these goats, 70.19 percent of which are female and about 29.81 percent of males [2]. In terms of

breeding, almost all traditional goats, representing 99.88%. In Ethiopia, goats are raised in various parts of the country for food, income, social and cultural benefits, and other essential non-food products used as raw materials for various household products made in the domestic home industry. Goats are raised in the lower parts of the country for milk and meat production, and in the highlands they are raised mainly for meat and income generation [12].

Despite the wide distribution and large size of Ethiopia's goat population, productivity per animal unit and the contribution of this sector to the national economy are relatively low. This may be due to several factors, such as poor diet, the prevalence of disease, lack of adequate breeding strategies, and lack understanding of the production system as a whole [13]. There are also differences in the performance of different breeds of goats in Ethiopia. The lack of up-to-date and site-specific information on production performance, challenges, and opportunities is often a major constraint in efforts to improve goat productivity and production in Ethiopia [14]. It is necessary to understand the response/performance of goats under farmer management, production characteristics, identify constraints and opportunities, and develop viable production strategies to improve the success of farmers' herding. There are several challenges and obstacles (limitations) that limit the success and profitability of the goat production system in Ethiopia. Therefore, a comprehensive search of the literature on the current state of goat production in the country seems attractive. It is necessary to review the production system, restrictions, and capacities of goat production. It is important to condense the information on the constraints or opportunities aspects of goat production, including its socio-economic contributions to the beneficiaries. Therefore, the objective of this document focuses on the current status of goat production in Ethiopia with the following specific objectives;

- To review socio-economic importance of goat production
- To review goat production systems
- To review production performance of Ethiopian goats
- To review constraints and opportunities for goat production in Ethiopia

2. Materials and Methods

This paper included a detailed assessment of relevant information on socio-economic importance of goat production, production performance of Ethiopian goats, as well as the constraints and opportunities for goat production that presents in Ethiopia. More relevant papers were chosen based on information from different published papers. International journals, study reports, and reviews on goat production were included in the literature review. The data on number of livestock was taken from the Federal Democratic Republic of Ethiopia's "Central Statistical Agency" (CSA, 2019/20).

3. Literature Review

3.1. Number of Goats and Breeding in Ethiopia

The number of goats in Ethiopia is estimated at 50.50 million and the second largest population of goats in Africa. Almost all goats (99.88%) are traditional [2]. Goats are one of the most important breeds of livestock, bred by herdsmen and smallholder farmers, especially in the lowlands of the country. Goats are a good, well-suited in harsh environment. Goats represent 5.32% of all Ethiopian livestock, an average of 12-16.8% meat products, 10.5-16.7% of dairy products, and 6% of all animals exported [3]. They have a unique ability to adapt to the tropical climate and are more closely related to low-income families compared to other animals. They are also an important part of agricultural systems and therefore play a complementary role to other species [15]. Apart from the indiscriminate interaction between local species, and perhaps for a variety of reasons, it is believed that there is a gradual change of races; there are so many different breeds of goats and genetic diversity that, by carefully planning the selection and breeding strategies for each natural habitat, it can be used to breed goat production in Ethiopia [16].

Because of genetic variation and genetic variation in DNA levels, four families and 12 species of goats have been identified in Ethiopia [17]. These were Arsi-Bale, Nubia Gumez, Kaffa, WoytoGuji, Abergalle, Afar, Central Highland, Western Highland, Hararghe Highland, shortened the Somali goats and the cold Somali snow. These indigenous goat breeds are widespread and are found in all parts of the country [18]. Families and races are

named based on their location, the ethnic communities they support, or certain physical features (Table 1). Some species are known by different local names in different places [19].

Table 1. Goat breeds of Ethiopia and their geographical distribution.

Family Name	Breed Name	Local Name	Area Distribution
Nubian	Nubia	Barka, Begayit	West Tigray
	Afar	Adal, Danakil	Afar region, Northern and Western Hararghe
Rift Valley family	Abergelle		Along Tekeze river Tigray region, Wag Himra, East Gondar
	Arsi bale	Gishe, Sidama	Arsi, Bale and Western Hararghe
	Woito guji	Woyto, Guji, Konso	South Omo, Southern Sidama, and Wolayita
Somali Family	Hararghe Highland		Hararghe
	Short-eared Somali	Denghier	Northern and Eastern Ogaden
	Long-earned Somali	Degheir, Digodi,Melebo	Ogaden, Lowland of Bale and Borena
Small East African Family	Central Highland	Brown goat	Central highlands, West of the rift valley Wollo, Gondar, and Shoa
	Western Highland		Highland of South Gondar, Gojam, Wollega, and West Shoa
	Western Lowland	Gumuz	Along the area bordering Sudan
	Kaffa		Highlands and Lowlands of Keffa and South Shoa Zone and South Shoa Zone

Source: [19] [1]

3.2. Socio-Economic Importance of Goat Production

Goats are important in low-income communities because they offer tangible benefits, such as income from the sale of animals, meat used, manure, hides and fiber [20]. They are also a source of tangible benefits, e.g. Savings, insurance, and social and cultural goals [21]. Small ruminants are very economically important for smallholder farmers, including women-headed households. The share of small ruminants of income often varies in contrast to the size of their assets, suggesting that small ruminants are very important for landless people, especially rural women [6]. Goats are socially and economically important in developing countries, ensuring food and fiber and providing income for small families [9]. Goats play an important role for pastoralists and agricultural farmers as a source of food and income for the whole year. This includes saving public safety payments, ceremonial

display ceremonies, and wool for domestic use and sale [22]. In some cultural contexts, women often do not have the right to land. For example, rural African women (such as Nigeria, Kenya, and Tanzania) have limited access to their families and receive limited land use rights from their husbands [23].

In Ethiopia, whole herds, especially goats, play a vital role in family life. They play a very important role in the country's agricultural society. The sale of goat and goat products (meat, leather, and milk) by farming communities is a major source of income for clothing, grain, and other basic household items [24] [25]. In addition, goats are kept largely in intensive farming areas to protect them from poor harvest and undesirable prices. Also, goats are raised by smallholder farmers for profit, labor, and wages followed by the purchase of food crops, the purchase of goods, school fees, and tax money as such.

3.3. Major Goat Production Systems in Ethiopia

The small ruminants of tropical Africa are kept in extensive traditional systems. In arid and semi-arid areas, cattle are raised with sheep and / or goats. In humid environments, animals usually feed freely, with access to household and kitchen waste if available [26]. To understand the farming objectives of farmers, it is important to understand the existing agricultural and socio-economic conditions, as well as production constraints, as they play an important role in the overall success of improving production system [27]. Goat production in Ethiopia is described as a low-income production system and used by smallholder farmers. The main purpose of producing goats is to produce milk, meat and money [28]. Production plans are identified based on the contribution of the livestock unit to the total family income. In a review of Solomon et al. [12], the level of integration of agricultural production, contribution to subsistence, value of inputs, production intensity, agricultural environment, duration of growth, and relationships with land and the type of product to be produced, the Ethiopian goat production system is divided into three categories.

3.3.1. Pastoral and agro-pastoral production system

In general, pastoral systems are associated with extremely arid agricultural areas to support agricultural production. In the case of Ethiopia, pastoral production systems can be found at low altitudes less than 1500 m above sea level, where annual rainfall is less than 500 mm. In this program, livestock is a major occupation and 50% of household income comes from livestock or more than 20% of household food energy comes directly from livestock-related or livestock-related activities. Grasslands is the world's most important resource. In recent years, pastoralists have shown increased interest in raising large numbers of sheep and goats. There are more goats than sheep in this system. Milk and meat are two stores. In the dry years, goats gain value as home milk suppliers. Pastoralists are dependent on their livestock not only for their income but also for their survival [20].

The agro-pastoral system is characterized by a lower level of integration and crop production compared to mixed crop-livestock production systems. The producers under this system are permanent residents and their freedom of movement is limited to time and place. The system is characterized by a high level of dependence on milk and meat production. Some cultivated crops are grown around a permanent farm. The system is usually used less than 1,500 m above sea level, but with higher rainfall to support crops in a shorter period of time compared to the grazing system [29]. Ethiopian farm selection by farmers / herds depends on production area (availability of resources, especially land, water, and climate), long-term culture of agricultural production in the community, social and economic conditions (awareness and skills, access to resources, markets) and government funding (inputs and services) based on agricultural policy [1].

3.3.2. Mixed crop-livestock farming system

This program is usually carried out in more cultivated areas in the highlands and lowland, with peaks between 1,500 and 3,000 m above sea level. The area receives a lot of rain and has moderate temperatures. In a mixed livestock production system found in humid, low-lying areas, and in mountainous agricultural areas, goats are raised by small farmers and graze on sheep and / or other farm animals such as cattle. The combination and value of small ruminants (goats) in the system varies by location. The goat plays an important role in the arid plains of the northern region, where crop production is unreliable

[30]. It occurs mainly in the agricultural and ecological areas of the highlands, where climatic conditions favor agriculture and livestock [31]. These mixed herds often graze freely on public pastures and occasionally in uncultivated lands without additional support and receive little medical attention. However, due to increased human pressure in areas with this production system, free pastures have been restricted and goats have now been incorporated, indicating the challenge of getting enough food for this program [19]. In addition, in the highland agro-ecology, as in central Ethiopia, population growth has led to a reduction in farm sizes and a gradual change from large to small domestic animals, especially goats and sheep [32].

3.3.3. Urban and peri-urban (landless) goat production system

This system includes goat production in and outside of the cities. Feed household waste, market waste, millstones, road side grazing [33]. In many cases, the species of goats found in this program are for local use, as they are well-processed fatty foods demanded by the local Ethiopian market [34].

3.4. Production Performance of Ethiopian Goat

3.4.1 Age at first kidding

The reported AFKs of most native Ethiopian goats is between 12 and 14 months old [35]. Arsi Bale goats give their first offspring around 12 months of age in the traditional management system [36]. The potential for Keffa and Adilo goats to have their first children at the age of 12.5 months was documented in a study conducted according to the traditional system in southern Ethiopia [37]. A 15-month AFK has been reported for local goats found in central Tigray [26]. AFK of approximately 20.1 months has been reported for local goats in pastoral and agro-pastoral areas of southern Ethiopia [38].

The AFK (28 months) reported for stationary Arsi Bale goats is exceptionally higher [39] compared to other indigenous goats in Ethiopia. This could be the result of controlled breeding practiced at the research station that could potentially delay AFK. This summary shows that most of the native goat breeds in Ethiopia tend to have their first children before the age of two. The oldest AFK was recorded in some traditional production systems.

3.4.2 Kidding interval

The KI for most native Ethiopian goats is among the estimates for small East African goats. A study by [25] has shown the possibility of indigenous Ethiopian goats having three children in two years. This has been demonstrated by Tatek et al. [36], who reported 8 months of AI for some native goat breeds in Ethiopia. In another study, relatively higher intervals (9-12 months) were reported in the traditional production system [38] [40]. Similarly, Dereje et al. [35] reported for 12 months under traditional or room management systems. For Abergelle and Begait goats, a confidence interval of approximately 11 and 14 months was estimated [41]. Overall, previous research reports showed differences in AI in native Ethiopian goats. Longer AI reported by some research stations is mainly due to the result of controlled breeding to achieve the best breeding season and best timing of hatchlings for research purposes. Some other research stations also report shorter AI where good management systems are in place and breeding males are available in the herd for most of the year.

3.4.3 Milk production

The ability to produce milk for traditional Ethiopian goats has not been adequately studied in the past and many studies were conducted at the station. Somali goats, for example, give 0.3-0.5 liters of milk per day in early lactation under feeding conditions [42]. On concentrated feed, Milk Yield daily Somali goats are said to increase by 15%. Mengistu [43] reported that the DMY of Somali goats when mixed with concentrate was in the range of 0.38 and 1 kg. Goats in the Central Rift Valley are reported to have low LL (35 days) and DMY (0.42 kg) under seasonal conditions [44]. Studies examining the milk production capacity of Abergelle and Bagait goats have shown that Begait goats can produce 0.55 kg of milk per day without supplementation, but 0.7 kg per supplementation [41]. Lemma et al. [45] it is estimated that the DMY of borena goats was 0.37 kg. The lowest DMY (0.29 kg) was calculated for Arsi Bale goats under the traditional management system in the Arsi Negelle region [36]. Mestawet et al. [42] approximately 1.13 kg of the same breed bred under improved management conditions, which is among the highest DMY levels recorded by native Ethiopian goats. The authors also reported 0.85 kg of DMY for Somali goats.

Another study by Mestawet et al. [46] have shown that the milk of Ethiopian goats (especially Arsi Bale and Somali goats) has a higher casein content than abnormal goats. This shows the suitability of milk from this type of goat for making cheese.

3.4.4 Birth and growth weight

Similar to reproductive function, body weight and growth of hot goats are defined as lower compared to other cool breeds. Dereje T et al. [35] reported that the birth weight of traditional Ethiopian goats is between 2.2 and 2.9 kg. The Begait and Abergelle goats [41] and the Somali [47] goats weigh between 3 and 3.5 kg under improved housing conditions. Weaning weights (WW) of three-year-old Abergelle and Begait goats weigh 9 to 10 kg. In the traditional management system in Sokota district, the Abergelle and Begait goats were found to have a low body weight (2.3 kg) and a weaning weight (7.9 kg) with a daily growth rate (PWGR) before weaning 62.6 g / day [33] recorded.

According to Tesfaye et al. [44], the body weight of Borana and Somali children was 2.3 kg. The authors also reported that the male and female breeding weights were 2.28 and 2.36 kg for Somali Borana goats and 2.00 and 1.00 kg for Mid Rift Valley goat breeds, respectively. In the case of Arsi Bale goats kept in the channel management system, it means that between 7 and 8 kg was recorded [39] and the PWGR (76 g / day) of Begait goats was high [41].

3.4.5 Mortality rate

Death is listed as one of the factors contributing to the production of goats in tropical areas. In Ethiopia, up to 50% of child losses have been recorded, with significant losses occurring before weaning. The mortality rate (MI) of many Ethiopian indigenous goats is between 12% and 26% [35]. The mortality rate before weaning of Somali goats housed in rooms at Hwassa and Haramaya University is estimated at 12% [47]. On the other hand, a higher MI (45%) of borena goats were reported under the traditional management program [48]. In general, the figures are very close to some of the African goats [49].

3.4.6 Breeding of male goats

The production of goats in the tropics is affected not only by low breeding of goats but also by the breeding problem of male goats. However, many studies proposed in the past aimed to improve female fertility compared to men. Apart from a little research on the five types of goats and the breeding rate of male goats in Ethiopia, there is little information available [50]. The author reported that there are significant differences in these characteristics among the five indigenous breeds of goats in Ethiopia. According to the author, borena goats have the largest testicle size, while Afar goats have the longest testicles. This difference is due to differences in height or weight of goat breeds, as reported by Mekasha et al. described [50]. In terms of sperm characteristics, low male goats (Afar, Borena, and Woito Guji goat breeds) have been reported to have a higher percentage of abnormal sperm than mountain male goats (Arsi-Bale and Central Highland Goats).

As documented in the literature, the high rate of abnormal sperm seen in low-grade goats may be due to the high temperature of the areas, which may affect the skin temperature of goats [51], [52], [50]. In addition to reproductive effects, dietary effects on sensitive substances, as well as sperm filtration and mobility, have been documented in native Ethiopian goats [53].

3.4.7 Growth performance

Goal growth performance is influenced by feed quality, age, sex and reproduction. A study by Ameha et al [54] found a maximum of 37 g / day found in Somali, Central Highland, and Afar goat breeds supplemented with high and low concentrated feed levels. The effect of a mixture of 49% nougat seed cake and 50% wheat diet, supplemented by 2.5% body weight, was also investigated in trusted and complete Arsi Bale men [25]. According to the author, a daily dose of between 63 and 68 g / day is recorded without the significant benefit of pruning at puberty.

3.4.8 Carcass production

The carcass production capacity of traditional goats in tropical areas is about 12 kg with a maximum of 75% of the total diet [55]. Percentage weight loss of East African young

goats is reported to increase with the introduction of a concentrated feed [56]. The average Dress percentage of most indigenous goats in Ethiopia is between 42 and 45% by carcass weight and 53 and 55% by unweighted body weight. The highest number of wear (51.6%) was reported by the Sidama goat [57].

3.4.9 Meat quality features

Regarding the quality indications of goat meat, there is little information in Ethiopia, other than the significant research work done by [54]. Research confirms the traditional Ethiopian goat's ability to produce meat with certain quality characteristics. According to the authors, Ethiopian indigenous goats have a total body fat of pH between 5.61 and 5.67. The total fat content of the carcass is reported to be low in medium goats, but with a very high pH. This is caused by malnutrition before slaughter. With the exception of the genotype type, the body pH value of domestic goats is between 5.49 and 5.86 and is considered normal [58] [54]. The moisture content (67%), protein (20.1%), and ash (1.2%) in the meat of indigenous Ethiopian goats is also appropriate and within the estimated range of other breeds of goats [54].

3.5. Challenges and opportunities for goat production in Ethiopia

3.5.1 Challenges

Feeding shortage: Feeding shortage is one of the challenges in goat production that can result from prolonged drought, resulting in low rainfall leading to food and water shortages [60] [61]. The richest vegetation is eaten quickly, and the rest of the waste is eaten by the animals. This condition leads to a decrease in the quality of the feed, which in turn reduces the absorption of nutrients by animals or decreases the level of its preservation [62].

Diseases Outbreaks: Appear to be intensified during infectious disease in goats, weakening the immune system and making them prone to disease. According to Legesse et al. [63], diseases commonly reported by veterinarians and animal health services are the ones that cause the greatest economic loss. The disease is often the result of a combination of factors, including malnutrition and poor management levels. As reported by Dhaba et al.

[10] reported that diseases and infections affect the development of microbes, which in turn lead to higher mortality rates in older and younger animals.

Institutional inefficiencies, management, and program support: The cost of development in the production and marketing of farmers depends largely on the level of implementation of high technology and assistive marketing and marketing strategies. As shown by Berhanu et al. [64], such high-performance distribution is strongly encouraged by guidelines made by authorities for example delivery, market, credit, and billing items. In addition, there is a deceptive exchange of words between the main activities of the study and the improvement of the inefficiency of the extension services [65].

Lack of enhanced genetic diversity: Production and production management are the most important factors that need attention in the animal kingdom [62]. Animal production is influenced by the complex relationships between the genetic potential of species, the breeding process, and the environment in which they are produced. According to Bayer et al. [66], the use of suitable and modified goat breeds is very important in any production system. Traditional breeds of goats are better suited to difficult conditions. They can thrive, live longer in both food and water shortages. However, these structures are acquired by natural selection and should be developed with the appropriate breeding program.

Lack of advanced technology and inputs: Access to high-quality skills and efforts are key to transforming the traditional method of animal production into market production efforts. Despite this, the lack of services, new best practices, and inputs for local farmers in many areas remained unattainable or inaccessible [67]. As reported by Fikru and Gebeyew [28], the technological advancement and the effective framework for implementing the program are critical to achieving the right level. In addition, the pace of breeding development and the construction of distribution centers to make hybrid prices available to farmers have been slow. Moreover, the current method of distribution of short, high-quality, and exotic animals, supported by supported AI services, cannot meet the needs of smallholder farmers [8].

Marketing Issues: Improving the commercial success of livestock owners provides incentives for technological interventions that improve animal production, which in turn

enhances commercial success. Availability in the local market is a key economic determinant of technological adoption and selection of manufacturing companies [67]. In almost every part of the country, there is no general market information on prices and property or legal properties and standards for sheep and goats and other farm animals [68]. As a result, at certain times of the year, there are too many animals to exceed the limit. The mobile phone trader increasingly has a better knowledge of market prices, which, in combination with the excess, puts the trader in a better position in price negotiations.

3.5.2 Opportunities for goat production

Institutional support for research and development: There are already institutes developing advanced veterinary technology, distributing advanced veterinary technology, and providing credit and medical care. According to Dessalegn [30], there are government agencies and non-governmental organizations (NGOs) that produce and distribute advanced veterinary technology, provide loans, and provide health services. In addition, universities and agricultural institutions become a catalyst for farmers to become future full-time farmers.

Effective use of animal genetic resources: Ethiopia is a nation with a large and diverse population. The presence of genetic variants within and between animal populations creates a gap in genetic development [69]. Also, some breeds of sheep and goats have good traits in terms of income, especially in the Middle East, with fewer sheep and goats in high demand in the lowlands of the nation. Menz sheep, underground sheep, long fat sheep, and medium-sized goats, for example, produce high-quality meat, and their skins and skins are processed into skins. These various attributes can be used to increase efficiency in the domestic and international markets [30].

Creating diversified production systems: There is a wide range of opportunities and significant improvements due to the various production systems and production facilities available in the country [70]. In addition, the presence of large grazing areas in many agricultural areas encourages integrated agriculture on both plants and animals. Fikru and Gebeyew [28] explained that land resources in the veld are mainly devoted to animal production.

Technological Interventions: Advanced livestock technologies that can increase livestock production are widely used in research, development and education institutions. This includes improved breeds of goats, food crops, and management practices that are produced or adopted elsewhere. There are breeding grounds for livestock technology (species and fodder plants) [15]. These are great opportunities to support the development of farm animals.

Domestic market development: There is already a large goat market in the country. However, according to the capita diet in Ethiopia it is low, especially in rural areas where the majority of the population lives. Consumption of beef, lamb and goat meat is estimated to be 33, 0, 22.4, 9.1 kg / capita per year, respectively in the urban area, at the same time as those prices drop sharply to 6.6, 3.4, 3.0 kg / capita per year in rural areas [71]. The domestic market of sheep and goats is expected to improve with population growth, urbanization, lifestyle changes, and income. Asfaw and Jabbar [71] estimate a progressive approach to animal equality from 1, 3, 4.0 and 2.3 in 2001/02 to 1.5,5 and 2.6 million heads in 2005/06 cattle, sheep and goats respectively. . Such excessive and increasing prices of sheep and goats are expected to negatively affect exports until cattle production and production are improved.

Expanding emerging export market: There is an unparalleled demand for export markets for live animals and meat, especially sheep and goats, as well as a growing export market for hides [59]. This opportunity increases the market success of exporters, distributors, and slaughterhouses and increases foreign exchange earnings. Skin and leather exports are already one of the most important sources of foreign exchange for Ethiopia.

4. Conclusion and Recommendation

Goat production in Ethiopia is an important contributing factor to the country's export earnings and livelihoods of producers, especially poor rural families. Goats provide meat, milk, cash, skins, compost, and protection (insurance), as well as banking services and gifts. The number of goats in Ethiopia has increased by 30% over the past 12 years. Goats represent 5.32% of all Ethiopian livestock, an average of 12-16.8% meat products, 10.5-

16.7% of dairy products, and 6% of all animals exported. Although the social and economic value of goats is widely known, their significant contribution to poverty reduction and food security is limited by inefficiency at all levels of the production process. In Ethiopia, almost all goats are reared in mixed crops, as well as in pastoral and agro-pastoral systems. The behavior of indigenous goat breeds in Ethiopia is shown to be very different from what is in the literature. However, there is great potential for full reproduction in indigenous Ethiopian goats with advanced management systems. Low body size, extensive feeding, adaptability and a short reproductive cycle give goats a comparative advantage over other species to cope with the circumstances of owners of, particularly resource-poor animals. Goat production was largely affected by food shortages, diseases and parasites, market instability, high-quality animal species, low genetic production, severe water shortages. There are ways to increase goat production, such as various development partners participating in higher education, developing domestic market, expanding emerging export market and technical interventions. Based on the revised guidelines, the following recommendations are made to improve the productivity of goat production and to reduce the challenges of goat production.

- It is important to implement a modern production system with advanced technology in urban and suburban areas and to improve the traditional system in rural areas through the use of healthy food ingredients and better health care.
- The development of improved production systems should be required and consideration of technical interventions, especially the development of breeding strategies, is essential.
- Technological interventions to improve productivity should focus on agriculture and specific production processes because the issues (disease problems, food shortages) are specific to each situation.
- It is important to increase and implement a variety of methods to improve goat production.

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