

Beef Cattle Production Systems, Challenges and Opportunities in Ethiopia



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Abstract

This review highlights the production systems, challenges and opportunities of beef cattle in Ethiopia. There are three beef cattle production systems practiced in Ethiopia. These are traditional, by-product and Hararge region production systems. In all of these three types, the output of the farmers from beef cattle per head is low. So this system must provide the behavioral and adaptability of the farmers change through teaching and seeing new technology from the neighbor area and foreign countries. Governmental organizations should doing on challenge constraints (based on beef cattle production and marketing systems) like feed resource, personal challenge, marketing structure, health care and adequate housing system for beef cattle.

The main challenges for beef cattle production and marketing are unofficial cross border trade dominated by influential personalities and illegal exporters. Limited access to production and market related information such as production systems, prices, competitors, consumer preferences and lack of capital investment in assets, equipment and input that would improve quality are the major challenges faced by marketing. High demand of animals by the local abattoirs, increasing official exports and increasing domestic meat consumption are the opportunities that will enhance this production and marketing system. As a result of population growth, urbanization and others, the demand for animal product have substantially increased in Ethiopia. Therefore, it is very critical to effectively exploit the opportunities in the sector and overcoming limitations in the meat, milk and live animal marketing is to bring sustainable economic development.

Keywords: Beef Cattle; Challenges; Opportunities; illegal exporters; Marketing System

Introduction

Livestock sector in Ethiopia has been contributing an important role to the economy of the country, and still promising to rally round the economic development of the country. Like most of the sub-Saharan countries agricultural system in Ethiopia is obviously a traditional way that means livestock production system in Ethiopia is mixed production types. Ethiopia has the leading livestock population in Africa and animal population census with an estimation of 59.5 million cattle, 30.70 million sheep, and 30.20 million goat population and 56.53 million Poultry [1]. Beef cattle are those breeds of cattle that have been primarily used to produce meat. Dual purpose breed are breeds selected for both beef and dairy production. The beef industry in Ethiopia has got the chance that there is an example that can be used for beef production and there is a large population of cattle and there are local animals like Hero and Borana breed that have been proved for their best beef performance. The economic contribution of the livestock sub sector in Ethiopia is also about

12% of the total and 33% of agricultural gross domestic product (GDP) and provides livelihood for 65% of the population [2].

Many Ethiopian people, like other developing countries, do not consume adequate amount of meat. The few that do, however, maintain a meat diet of beef, sheep, goat and poultry. In 2001, 51% beef, 19% sheep, 14% goat and 15% poultry were contributed to a meat diet composition. Most Ethiopians do not consume pork, in addition to many types of fishes, due to religious factor [3]. Formally, Ethiopia had been exporting approximately 200,000 livestock annually [4]. This is significantly higher than the recent annual official exports of cattle (12,934 head), sheep (13,554 head) and goats (1,247 head) between 1998 and 2003 [5]. In Ethiopia, recent studies estimated that annual illegal flow of livestock through boundaries reaches high. These become an obstacle to understand and analyses the full range of activities required to bring a product (live animals, meat) to final consumers passing through the different phases of production, marketing, processing

and delivery to the consumers. It creates barriers to identify a market-focused collaboration among different stakeholders who produce and market value-added products [6].

Our country has been earning foreign currency by exporting meat and live animals namely cattle, sheep, camels and goats [7]. Crop and livestock interactions occur directly in mixed farming systems from which the majority of global livestock production is obtained. Recent estimates suggest that 65% of all beef, 69% of all mutton and 92% of cows' milk is produced from mixed farms. Mid and high lands of Ethiopia are characterized by crop-livestock farming systems, they inhabit nearly 90% of the human population and 70% of the livestock population of the country [8]. Livestock have various uses aside from income generation, including cash storage for those beyond the reach of the banking system, draught and pack services, milk and meat for household consumption, and manure for fuel and fertilizer [9].

Having an introduction in this way, the objectives of this review are:

- a. To assess beef cattle production system in Ethiopia.
- b. To List and discuss the challenges and Opportunities of beef cattle production in Ethiopia.

Beef Cattle Production Systems in Ethiopia

Cattle production in Ethiopia is an integral part of the mixed farming, agro-pastoral and pastoral production systems. In both rural and urban areas, smallholder cattle fattening is emerging as an important source of income. In rural area of the country cattle fattening is based on locally available feed resources. Beef cattle production system in Ethiopia: According to MOA [10]. Cattle fattening practices in Ethiopia is categorized in to three major fattening systems: those are traditional system, by product-based system and Hararghe fattening system. In traditional system, farmers usually sell oxen after the plowing season when they are in poor body condition and too old for the draught purposes. By-product fattening system is mainly based on agro-industrial by-product such as molasses, cereal milling by-product and oilseed meals and others. Intensive feeding of the available feed supply to young oxen used for draught power could best describe the Hararghe fattening practice. The Hararghe fattening system is characterized by the use of the available feed resources to young oxen through cut-and-carry feeding system of individual tethered animals [10].

Traditional Fattening System

Traditional Fattening system, oxen are usually sold after the ploughing season while they in poor body conditions. Meat yields are very low, the beef is of poor quality and returns to farmers are after in adequate even to buy a replacement ox cattle in the lowlands are rarely fattened and are solid in poor body condition and at low prices [11].

The primary purpose is for draft power, milk and manure production and is usually only sold when they are too old for these purposes, or drought or cash shortages force people to sell. In the lowland, where pastoralists do not use cattle for draft and sometimes fattened on natural pasture in good seasons, however much body weight is lost during long distance trekking to Addis Ababa and the animals may reach market in little better condition than culled highland stock. In average or poor seasons, lowland cattle are rarely fattened and often have to be sold in poor condition at low prices. These traditional systems are very inefficient because they do not use the proven opportunity to add weight and condition to cull animals before slaughter [12].

By-Product-Based Fattening System

Is a type in which agro industrial by-products such as molasses, cereal milling by-product and oilseed meals are the main sources of feed for fattening. Ministry of Agriculture (MOA) began to help peasant farmers in Debre Zeit area to fatten purchased oxen using molasses and milling by-products. This has produced profitable results for the individuals involved and the number of animals fattened has increased every year to about 2,000 per annum. This fattening system is not recommended for other parts of Ethiopia, except places where oilseed cake is abundant and cheap [12].

Hararege Fattening System

Other type of fattening system is the hararghe fattening system when the farmers by young oxen from the adjacent lowlands pastoral areas use them for ploughing purpose for 2-3 years and then fatten and sell them before they become old and emaciated. The system is largely based on cut and carry feeding of individually tethered animals, sometimes they use grazing. Fattening enterprise in western region of the country typically take in mature feeder animals and being them to market weight for sale to a slaughter, cattle in these enterprises normally enter the fed lot at cell under one year old and are fattened for six months [2].

Intensive feeding of the available feed supply to young oxen they are using for draught power could best describe this fattening practice.

The feed types used for this purpose are entirely obtained from crop production especially from maize and sorghum. Pagot [13] describes that in Ethiopia the farmers fatten young bullocks at the edge of the fields with lower leaves taken from the stems of sorghum. Among the most common feed types used for fattening, thinning, leaf strip and part of maize and sorghum plants are major feeds offered to fattening animal during the main and early dry seasons. During short rainy season, they allow their oxen to graze at the edge of farm plots or roadsides for up to three hours every morning before sunrise. In the cases where the farmer has more than one ox, he transfers the second one to his relative or person in the same village to feed for him after using for traction [3].

Fattening enterprises in western parts of the country typically take immature animals and bring them to market weight for sale or slaughter. Fattening activity in the Amhara Region, however, differs substantially from the above-mentioned enterprises. Smallholder farmers commonly fatten mature and therefore much older animals (5 to 7 years old) for short durations (usually three months). On the other hand, some farmer's purchase oxen specifically to fatten and sell them so as to get higher price per weight margins on each fattened animal. In such cases, animals are purchased based on their large skeletal frames and body conformation. In any case, whether purchased or own animals are used for fattening purposes, they have already reached their full skeletal size [12].

Challenges of Beef Cattle Production in Ethiopia

Challenges of livestock Marketing

The major animal sources for the export abattoirs are smallholder farmers in the lowlands part of the country, the production systems of which have not been properly characterized. However, measurable stride towards that end has not been made. Constraints to and sustainability of the meat export marketing system and potential expansions in relation to sustainable resource utilization and degree of competition with domestic demand have not been investigated [14]. According to Daniel [14] enhancing the ability of poor smallholder farmers and pastoralists to reach markets, and actively engaging them is one of the most pressing development challenges. This, in turn, reduces incentives to participate in economic transactions and results in subsistence rather than market-oriented production systems. Sparsely populated rural areas, remoteness from towns and high transport costs are physical barriers in accessing markets [15]. For market development, dynamic relationship between demand and supply is a prerequisite, but the smallholder farmers and pastoral livestock production is not market oriented.

Ayele et al. [16] reported that current knowledge on livestock market structure, performance and price is poor and inadequate for designing policies and institutions to overcome perceived problems in the marketing system of Ethiopia. Knowledge on how marketing routes and systems could contribute to the spread of diseases and the implications of these for national and international trade in livestock is also highly inadequate to design any policy or institutional innovation to improve marketing for the benefit of the poor. African pastoral systems are currently characterized by instability, food insecurity, decreasing income, increasing poverty, and environmental degradation, loss of key grazing lands to cultivation, annexation by government and private interest, drought, inappropriate development policies, and population growth [17]. The annual outflow of beef cattle from Ethiopia through illegal market is huge. The immediate destinations of this illicit export are Djibouti, Somalia, Sudan and Kenya which are further re-exported to the Middle East countries after meeting domestic demands [18]. The legal export

of both live animal and processed meat is thus constrained due to shortage created by the illicit export. Recent studies estimate annual illegal flow of livestock through boundaries to be as high as 320,000 cattle [6].

Genetic Resources

As compared to breeds originated from temperate areas, cattle breeds of the tropics generally have a limited genetic potential for milk production and remain mediocre producers (500 to 1500 kg per lactation) even when the best possible husbandry conditions are available to them [13]. In a general way, the genetic improvement of local breeds for meat production has essentially been obtained by crossing with beef breeds in temperate region. However, the tropical African indigenous breeds have special adaptive traits, like disease resistance, heat tolerance and ability to utilize poor quality feed [19]. The livestock genetic resources of Ethiopia have involved largely as a result of natural selection influenced by environmental factors. This has made the stock better conditioned to withstand feed and water shortages, diseases challenges and harsh climates. Nevertheless, the capacity for the high level of production has remained low [20]

Shortage of feed Resources

The Availability, quality and quantity of feeds vary among various production systems. Cattle largely depend on rangeland grazing or crop residues which have poor nutritive value. Feed is not uniformly supplied, and the quality is also poor. Natural pasture, browses and bushes account to the major food sources of livestock owned by pastoralists. There is a seasonal fluctuation in the availability and quality of feed has been a common phenomenon, inflicting serious changes in livestock production. Dry season feed supply is the paramount problem. The feed shortages and nutrient deficiencies are more acute in dry seasons [17]. In contrast, under normal circumstances, in lowlands, when there is sufficient feed for cows, milk tends to be adequate for home consumption as well as for market [21].

Shortage of water

Since rainfall rather than livestock density determines net primary production and vegetation cover, its variability is the most important climatic factors determining the state of the natural resources base. Hence, rainfall variability and the correspondingly productivity of the vegetation determines livestock production [22]. Ruminates as any other animal require water to maintain the water content of the body, and water availability affects voluntary feed intake; less water leads to inadequate intake of dry matter. For animals kept under pastoral production system, the frequency of watering is very important. During the dry season, water is available only from wells and some lakes and streams [23]. This leads to over grazing around watering points. Water intake increases as watering frequency is decreased and feed conversion efficiency becomes lower as watering interval increase [22]. Poor quality of water leads to pathogens and helminthes infestation

among the animals there by resulting in disease outbreaks, higher morbidity and mortality, and lower productivity [24].

Climatic factors

Tissue and cellular metabolism and the underlying biochemical reactions that sustain life and productive functions need body temperature to be maintained within very narrow limits. Relatively small increases in body temperature, for example, one degree Celsius or less result in detectable and deleterious effects on metabolism and tissue integrity, in particular, the breakdown of body protein and a significant depression in production [25].

Opportunities of Beef Cattle Production in Ethiopia

High demand of animals by the local abattoirs

The export abattoirs are required to ensure a consistent and continuous supply of meat in order to meet the demand of the customers in the importing countries. Thus, there is an urgent need for export abattoirs to devise alternative strategies to ensure adequate market supply of quality live animals to meet their processing needs in order to improve their efficiency and competitiveness. ACIDI/VOCA [26] stated that there were seven abattoirs in Ethiopia which processed canned meat products mainly for the army, domestic market and some exports.

Official exports

According to Belachew and Jemberu [27] there are few legal exporters engaged in the export of live animals and meat in the country. These exporters secure livestock from pastoral areas by themselves or through agents for export in live or meat form (chilled mutton, goat meat and beef). The exports of meat and live animals have dramatically increased in 2010-2011 Ethiopian fiscal. Ethiopia exported 16,877 tons of meat and 472,041 head of live animals, recording a 69 % increment from last year's export revenue. Ethiopian revenue and customs authority reported that live animal export in 2010 contributed 70% of the earnings while 30% was obtained from meat export [28]. The same bulletin also revealed that chilled sheep and goat carcass accounted for 80%, beef 9% and offal 11% of the exported meat. Of the number of exported live animals, cattle accounted for 46%, sheep 35%, camels 13% and goats 6%. In terms of revenue, cattle contributed 67%, camels 25% and sheep and goats 8% to the revenue generated. There is also the possibility of expansion to Asian markets such as Malaysia, which require halls-slaughtered, frozen, skin-off carcasses with less stringent hygienic regulations [29].

Domestic Consumption

The domestic meat demand is believed to increase with increasing literacy and family income. Meat consumption is often an indicator of the economic status of a country or an individual. People with a higher social or economic status demand a greater amount of high-quality meat products. The per capita consumption of meat in developed/industrialized countries is much higher than

in developing countries. Countries whose population consumes the least amount of meat are located in Africa and Asia. Developed countries consumed a consistent level of 77 kg of meat per capita annually, while developing countries struggled to maintain a diet with only 25 kg of meat per capita annually. Ethiopians remained slightly below the meat intake of all low-income countries and consuming 9 kg per capita annually [3].

Conclusion

Agricultural sectors play an important role in the overall development of Ethiopia's economy. In other words, the sectors plan has a major role in the national economy, and it is the source of income, food and employment for the rural and urban populations. Most sub-Saharan African countries heavily dependent on agriculture and Ethiopia as obviously practicing traditional way of agricultural systems i.e. integral or mixed production types. Essential management system requires for beef cattle production. Feeding, watering, housing, health care and breeding are not well developed near to owners. The production of beef cattle will remain low unless supported by intensive production system. There is little evidence of strategic production of livestock for marketing except some sales targeted to traditional Ethiopian festivals. Sales of live animals are taken as a last resort and large ruminants are generally sold when they are old, culled, or barren. Markets are dispersed with remote markets lacking price information. The annual outflow of beef cattle from Ethiopia through illicit (informal) markets is huge, up to 320,000 cattle. Therefore, there should be formulation of appropriate pricing and marketing policies. Similarly, adaptation and introduction of improved feeds and feeding systems should also be implemented. Building strong market linkage with different market chain sectors and improving animal feeds by various treatment technologies ought to be introduced.

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