

Review of Sesame Value Chain in Ethiopia

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Abstract

This current topic has analyzed the sesame value chain particularly the case of Ethiopia. Sesame is a major cash crop, which is mainly produced as an export crop. A long value chain characterizes sesame value chain in Ethiopia, which includes producers, village traders or collectors, brokers/wholesalers, oil millers, exporters, retailers and local consumers. Smallholders in the Ethiopian sesame seeds value chain depend on intermediaries, due to the small quantities to be sold and lack of efficient market information system. Price discovery is not based on forces of demand, supply, and do not reflect current international market prices. The major sesame producing regions in Ethiopia are Tigray, Amhara, Oromia and Benishangul Gumuz, which contribute more than 90% of total sesame output. Amhara, Tigray and Oromia contribute 48.5%, 28.5% and 15% of the total production in the year 2007/08 respectively. However, sesame production and marketing in Ethiopia is faced with various challenges that need to be addressed. These include low productivity and quality, poor market infrastructure, long and traditional marketing channels among others.

Keywords: Value chain analysis, sesame and actors.

ABBREVIATIONS AND ACRONYMS

ADLI	Agricultural Development Led Industrialization
BoARD	Bureau of Agriculture and Rural Development
CSA	Central statistical Authority
ECEA	Ethiopia Commodity Exchange Authority
ECX	Ethiopian Commodity Exchange
DA	Development Agent
FAO	Food and Agriculture Organization of the UN
FDRE	Federal Democratic Republic of Ethiopia
GDP	Gross Domestic Product
GMM	Gross Market Margin
GTP	Growth and Transformation Plan
MoARD	Ministry of Agriculture and Rural Development
IIA	Independent Irrelevant Alternative
NBE	National Bank of Ethiopia
NGO	Non Governmental Organization
NMM	Net Marketing Margin
OLS	Ordinary Least Square
OoARD	Office of Agriculture and Rural Development
USAID	United States Agency for International Development
VAT	Value Added Tax

1. INTRODUCTION

1.1. Background of the Study

Smallholder and family farming agriculture remain to be the key and leading sector in overall economic development of many developing countries in the world (Quan, 2011). According to (Quan, 2011), in addition to producing staple crops for domestic markets; smallholder farmers produce large shares of traditional exports in these countries. This shows how the economy of many developing countries still reliant on smallholder-based agriculture. In East African countries like Kenya, Ethiopia, Uganda and Tanzania, for example, smallholder farming accounts for about 75 percent of agricultural production (Salami et al., 2010).

Particularly in Ethiopia, smallholder farmers cultivate approximate to 95 percent of the total area cultivated and produce more than 95 percent of the total agricultural output (Mahlet, 2007; S.Tafesse et al., 2007; MoARD, 2010). According to Ministry of Agriculture and Rural Development (2010), about 11.7 million smallholder households in the country approximate to represent 95 percent of the agricultural GDP (MoARD, 2010). It is this figure that accounts for 41 percent of the country's gross domestic product (GDP), and covers more than 90 percent of the county's foreign currency earnings (Ethiopian Investment Agency, 2012). This confirms the dominant contribution of smallholder farmers to the overall agricultural growth in the country. In short, as the overall economy of Ethiopia depends on agriculture sector development, the entire movement of the agriculture sector depends on what is happening in smallholder sub-sector.

Under the Ethiopian context, the type of production system (small scale, large scale), location of production, and the nature of the product determines the marketing systems of agricultural commodities. Accordingly, the crop and livestock sector has different systems. Among the crops, one can distinguish cereal, oil crops, pulses, vegetable, and fruits marketing systems. One can also further distinguish within the different groups of crops different marketing systems. Among oil crops, there is a distinct marketing system for nueg, sesame and groundnuts. Sesame, which is the focus of this study, has unique marketing system because the production is concentrated in selected areas of the country.

Different reports indicate that Ethiopia is among the top-five sesame producing countries in the world, ranked at fourth place in 2011/2012 (FAOSTAT, 2012). And it is the third world exporter of sesame seed after India and Sudan (Alemu and W.Meijerink, 2010). Accordingly, sesame is the major oilseeds crop in the country in terms of exports next to coffee, accounting for over 90 percent of the value of oilseeds exports (Mheen_Sluijer and F.Cecchi, 2011). In addition, different reports indicate that there is still potential arable land in different areas of the country to grow the crop and there is a considerable demand for Ethiopian sesame seed at international markets (Sorsa, 2009). This indicates that, growth and improvement of the sesame sector can substantially contribute to the economic development at national, regional and family levels.

Kaplinsky and Morris (2000) outlined three main reasons why value chain analysis is important in this era of rapid globalization. First, with the growing division of labor and the global dispersion of the production of components, systemic competitiveness has become increasingly important. Second, efficiency in production is only a necessary condition for a successful penetration of global markets. Third, entry into global market and making the best use of globalization requires an understanding of dynamic factors that are inherent in the whole value chain.

A long value chain characterizes sesame value chain in Ethiopia, which includes producers, village traders or collectors, brokers/wholesalers, oil millers, exporters, retailers and local consumers. Smallholders in the Ethiopian sesame seeds value chain depend on intermediaries, due to the small quantities to be sold and lack of efficient market information system. Price discovery is not based on forces of demand, supply, and do not reflect current international market prices (Abera, 2009).

The export of oilseeds of Ethiopia in general and sesame in particular is expanding and the country's total exports are performing better in the growing world market. Ethiopia's share of 1.5% in export volume and 1.9% in value in 1997 had grown to 8.9% and 8.3% in 2004 respectively. In the stated years, Ethiopia ranks 4th in export quantity and revenue following Sudan, India and China. Since sesame contributes, more than 80% of the export earning of oil seeds it has become the 2nd foreign currency-earning crop after coffee. Ethiopian sesame seed market covers quiet a wide range of countries all over the world. The growing demand in the world market and the available capacity to expand sesame production could contribute to the economic growth of Ethiopia. However, sesame production and marketing in Ethiopia is faced with various challenges that need to be addressed. These include low productivity and quality, poor market infrastructure, long and traditional marketing channels among others. Market infrastructures are poorly developed in the major producing areas. The absence of adequate road network, market information and warehouse facilities has lowered the quality of sesame seeds and competitiveness of exports.

1.2. Objectives of the Study

1. To review sesame value chain and identify the performance of actors along the chain;
2. To identify sesame production and Marketing in Ethiopia
3. To review the major constraints and opportunities in sesame production and marketing in Ethiopia.

2. LITERATURE REVIEW

2.1. Sesame Value chain in Ethiopia

Smallholder farmers in the Ethiopian sesame value chain are generally in a weak bargaining position. They only have very small volumes to sale; they lack market information and are fully dependent on middlemen (traders). Mostly they sell their output immediately after harvesting, which is when the supply is abundant and consequently the prices are relatively low (Abera, 2009). According to him Ethiopian sesame seed value chain are generally high due to the large number of producers, brokers and buyers. Producers (farmers) sell to a local collector, this collector in general sells to another larger broker and this process is repeated a few times mostly without adding value. Problems in finding information on quantities supplied and prices and poor negotiating capacity of producers on contractual agreements (price, purity, quantity, delivery time and terms of payment).

ECEA (2010) examined value chain for sesame is generally short in Humera distinct. According to these institutions relatively longer chain involves producers/farmers/ selling to exporters through brokers. Alternatively, farmers may sell to cooperatives, which in turn sell to unions and then to exporters. The other alternative is farmers selling directly to exporters through their branches in Humera. The fact that the value chain of sesame is short shows the fact that the export chain is efficient. Logically the transaction costs are more likely to be low compared

with the transaction costs of commodities with longer value chains. This implies that enhancing efficiency is not a plausible intervention on the sesame value chain. However, short chains and hence efficiency does not necessarily mean there is fair relationship between the marketing agents of the commodity. There could be relationship among farmers and exporters that is not equal, as the case is in the value chain of sesame.

Investment in reorganizing the value chain in an efficient way is inevitable to enhance competitiveness and gain higher prices for the sesame seeds. Almost all buyers of the high-income countries demand tracking and tracing systems. Some stakeholders are developing a certified chain in organic sesame seed. These demands a system to guarantee the organic production method and to promote that Ethiopian sesame seeds are exclusively organic (Abera, 2009).

Kindie (2007) identified the chain connecting both producers and exporters found long and complex Metema distinct. According to his study sesame market is operated freely. Government institutions except check point fees did not exercise any authority and control. It has been free of any interventions. This helped the involvement of too much actors during harvest and discouraged licensed traders. The basic and important sesame marketing channels identified during the study are diverse and a little bit different from the chains of other commodities. The initial links for sesame marketing channels are producers and the final destinations in country are exporters. In between lots of intermediaries existed which play significant roles for the movement of the product to its final destination.

2.2.1. The Major Actors in Sesame Value Chain

There are various actors in sesame value chain. These include producers, small traders (collecting middle men), Wholesalers/brokers, oil millers, retailers, local consumers and exporters (ECEA 2009, Winands and Biersteker, 2007, Kindie, 2007, Bezabih, 2010).

Producers

Producers include the small holders and commercial farmers who sell their produces to small village trader or collectors. In some cases producers sell directly to oil millers and brokers/wholesalers without the use of collectors. They also sell their products in small quantity to oil millers, retailers, local consumers and exporters. Commercial farms do have better bargaining power than small producers and hence, they directly or through brokers sell to exporters.

Village traders or collectors

These are small trading individuals who collect the product in small quantity directly from producers and resell to brokers/wholesalers, oil millers and exporters in a more marketable quantity. They act as middle men who do not add value but merely snatch the benefit which could have accrued to the producers. Farmer's co-operatives and unions are also involved in the collection of sesame.

Wholesalers/brokers

Brokers/Wholesalers are the third layer of actors in the supply chain of sesame trading. They are larger suppliers who have better capacities in terms of finance and other facilities. They resell the seeds to retailers, oil millers and exporters.

Oil milers

There are private and public owned oil milers especially in the major towns which produce edible oil exclusively for local market. Improvement in the production quality could enable the larger oil refining plants to produce for export market.

Retailers

Retailers are those firms that purchase both sesame seed and sesame oil from wholesalers and oil milers for resale to local consumers.

Local consumers

Local consumers are the end users of both sesame seed and edible sesame oil. The following Figure indicates the various stages in sesame seeds value chain. This long supply chain will naturally reduce the benefit to be obtained by the producer; this in turn kills the incentive to produce more.

Processors/Exporters

These are public and private firms, which buy the seed from collectors and wholesalers to sell in the export market after processing and packing.

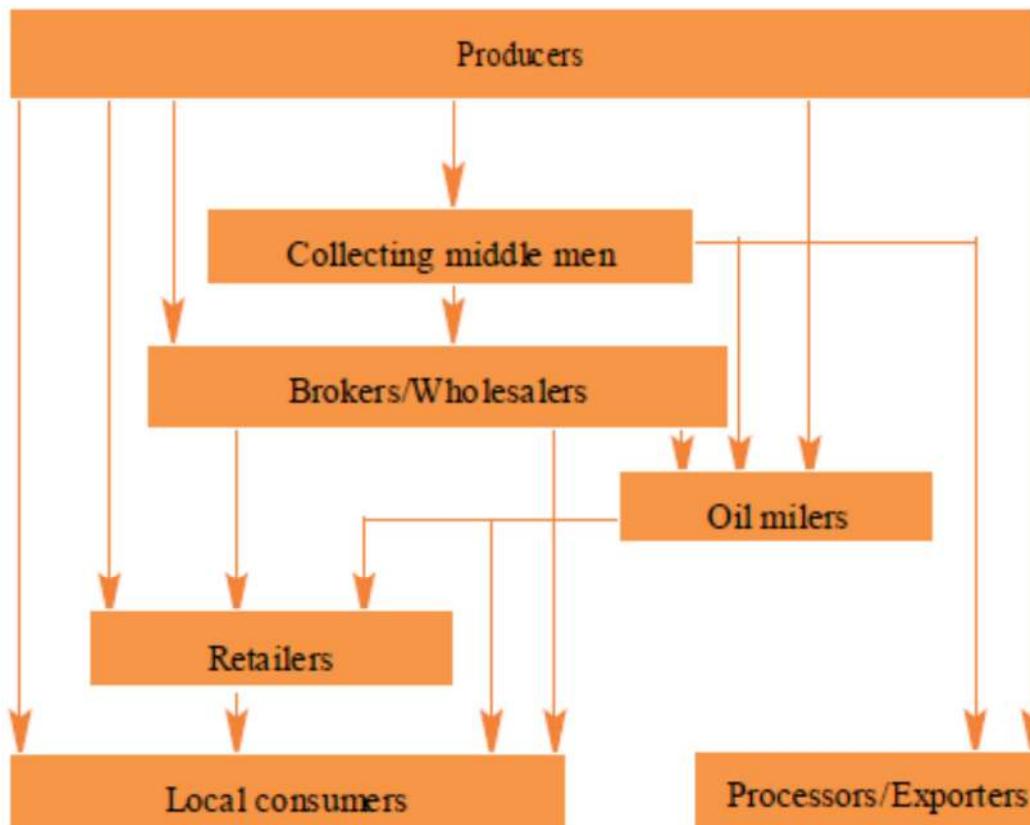


Figure: 1 Sesame Value Chain Map in Ethiopia
Source: Adopted from ECEA 2009, and Winands and Biersteker, 2007

Table 1: Summary of roles of oilseeds value chain actors

Actor	Functions/Activities
Producers	<ul style="list-style-type: none"> ▪ Manage farm level production process ▪ Determines quality of oilseeds during seed selection and production process especially threshing ▪ Pack and store oil seeds (sesame is often not stored) ▪ Deliver it either to local collector or local wholesalers ▪ Commercial farmers deliver it to central market in Addis Ababa or export
Collector/Local traders	<ul style="list-style-type: none"> ▪ Collect, measure and pack the oil seeds ▪ Pay cash on delivery ▪ Store grain ▪ Deliver to local wholesalers ▪ Sell oilseeds to local consumers
Local/Regional wholesalers	<ul style="list-style-type: none"> ▪ Provide loan to be paid when oilseeds are harvested: The products are sold to the wholesaler at the harvest time price and the rest of the product will be sold to the wholesaler at the prevailing price when the farmer wants to sell. ▪ Pay cash on delivery to the collectors or farmers who sell oilseeds to them ▪ Deliver the product to central markets in Addis Ababa or sell it to processors in the regional market
Commission agents	<ul style="list-style-type: none"> ▪ Receive oilseeds transferred to it by the local/regional wholesaler. Such a transfer is arranged by telephone whereby the driver name, the plate number of the truck, type of product and quantity is informed to the commission agent; ▪ Facilitate the selling of the oilseeds; ▪ Negotiates the price and effects the selling ▪ Deduct unloading cost and own services from sales value; ▪ Transfer the balance to the local/regional wholesaler
Wholesalers in Addis Ababa	<ul style="list-style-type: none"> ▪ Negotiate with the commission agents. ▪ Pay cash to the commission agents on delivery of the product ▪ Export or sell to processors or retailers
Exporter	<ul style="list-style-type: none"> ▪ Maintain the quality of the product and pack it ▪ Deal with export clearance ▪ Pay necessary fees for export ▪ Export the product and remit the income
Processors	<ul style="list-style-type: none"> ▪ Buy the oilseeds ▪ Process the seeds (extract oil/roast, etc) ▪ Sell the processed product to retailers/super markets, consumers
Consumers	<ul style="list-style-type: none"> ▪ These are the ultimate users of the product

Source: Bezabih, 2010

2.2. Sesame Production and Marketing in Ethiopia

2.2.1. Sesame Production in Ethiopia

The world of sesame seed market is a billion dollar industry that supports the livelihoods of millions of farmers throughout the world (USAID, 2010). World production of sesame seeds is estimated at 3 million tones, and is steadily growing. Currently, Ethiopia is among the top five producers of sesame seed in the world, ranked at fourth place by covering about 8.18 percent of the total world production (FAOSTAT, 2012).

In the North West and South Western lowland areas of the country, sesame is currently cultivated on fertile lands and there seems to be less need for fertilizers. During the year 2007/08, there were about 527,819 sesame growers with an average acreage of 0.3 ha are involved in sesame seed production who produced 18,677.3 tones most of which are small holder farmers. Besides small holders, there are a limited number of investors or

large commercial farmers (having more than 100 ha). The share of the latter is less than 2% (Winands and Biersteker 2007). Due to the low input levels, sesame production in Ethiopia meets organic standards. This is the case for most small holders and large commercial farms.

Next to coffee, sesame seed is the second largest agricultural export earner for Ethiopia, involving a number of small-holder farmers in its production throughout the nation (CSA, 2011). In 2010/2011 production year, about 763, 893 smallholder farmers participate in sesame production; while in year 2011/2012 the number of participants has increased to about 893, 883 private peasants (CSA, 2011). This indicates as sesame sector has potential to involve more smallholders under its production, hence one way of linking them to domestic and international markets.

Besides, in Ethiopia produces large variety of sesame seed can be produced, among which the Humera, Gondor and Wollega type are well known in the world markets. On one hand, the Humera and Metema sesame seeds are suitable for bakery and confectionary purposes due to their white color, sweet taste and aroma. On the other hand, the high oil content of the Wollega sesame gives it a major competitive advantage for edible oil production (USAID, 2010).

According to different reports, sesame seed is an important export crop in Ethiopia and the country has a substantial role in the global sesame trade. It is the third world exporter of the commodity after India and Sudan (Alemu and W. Meijerink, 2010). In this regard, in the last few years, sesame production and marketing has confirmed highly significant growth. In 1997, the total area under sesame production was about 64,000 ha (Aysheshm, 2007).

In 2010/2011 cropping season, the total area under sesame production reaches 384,682 hectare and about 327,740.92 ton of sesame seed has produced in the country (CSA, 2011). Despite, these trends in 2011/2012 production year sesame production and area under its cultivation has declined by about 25.31% and 12.26% respectively, compared to the preceding year.

Table 2. Oilseeds production for the year 2008 and 2013 in Ethiopia.

Oil crops	Total area in 1000ha		Total prodn in 1000ton		Productivity(t/ha)	
	2008	2013	2008	2013	2008	2013
Noug	285.236	285.303	159.820	220.211	0.56	0.772
Sesame	185.912	299.724	186.773	220.216	1.01	0.735
Linseed	152.129	95.582	169.856	87.946	1.12	0.920
Groundnut	40.198	79.947	44.685	112.089	1.11	1.402

Source: CSA, (2008 and 2013)

Accordingly, only 337,505.41 hectare of land has cultivated under its production and only about 2,447,833.59 quintal of output was produced, (CSA, 2012). This indicates that not only the size of land allocated to sesame and its production volume was decreased, but also the crop yield too decreased from 8.52 quintal/hectare in 2010/2011 to 7.25 quintal/hectare in 2011/2012, by about 14.9% (CSA, 2012).

Table 3: Number of sesame producers, land under cultivation, total production and productivity in 2005-06 by region.

Main Production Regions	No. Farmers	Area in ha.	Total Production	Yield /ha.	Land Holding /Producer	Production Contribution (%)
East Wellega	207,901	55,679	323,724	5.81	0.27	22%
Amhara	235,323	61,347	561,143	9.15	0.26	38%
Humera	122,602	71,150	481,412	6.77	0.58	8%
Benishangul-	70,739	21,693	125,584	5.79	0.31	8%
Other	16,040	1,443	2,004	1.39	0.09	0%
Total	652,605	211,311	1,493,867	7.07	0.32	100%

Source: The FDRE- CSA, Agricultural sample survey 2006-07, volume I, July 2007.

2.2.1.1. Types and Characteristics of Ethiopian sesame seeds

According to ECEA (2009), a large number of sesame seed varieties exist in Ethiopia. However, in the international trade, three varieties are well known as trade names: Humera, Gondar and Wollega. The three main export varieties have their own characteristics such as color, oil content, and taste.

The Humera variety is appreciated worldwide for its aroma and sweet taste. It has good uniform white seeds, which are quite large. This makes it very suitable for bakery products. The Gondar type is also suitable for the bakery market. For this market a high level of seed purity is demanded, which has sometimes proven to be problematic for Ethiopia.

The major competitive advantage of the Wollega type is its high oil content. Type and quality are very important factors in the world sesame market. According to CSA data, all sesame seed varieties are produced during the main or meher crop season (ECEA, 2009).

Sesame is used in wide range of applications (Wijnands *et al.*, 2007). The most important ones are:

1. Edible oil: The oil is odourless with distinctive nutty sweet flavour. Roasted sesame seed resists rancidity due to the antioxidants formed during seed roasting. Sesame oil is especially important in the Far Eastern cuisine, mainly Japan and China.
2. Confectionery, biscuit and bakery industry: Hulled clear white sesame is required for bakery products.
3. Tahini industry: Tahini, a traditional Middle Eastern paste, is made from hulled sesame seed and is rich in protein.
4. Halva industry: Halva is a sweet made of 50% Tahini, boiled sugar and some other ingredients.
5. Sesame flour and sesame seed sprouts.
6. Pharmaceutical ingredients.

2.2.1.2. Product quality of sesame seed

The Ethiopian Quality and Standards Authority performed sesame quality grading until the recent inclusion of sesame in the Ethiopia Commodity Exchange (ECX) system. Export sesame seed types have to fulfill the standards set by the authority as well as the minimum agreed international standards. Ethiopian sesame is mostly identified and graded as Humera, Gondar, and Wollega and to some extent mixed types and its oil content is 43-56%. The minimum international standard of oil content is 52%, 48%, and 45% for first, second and third grades respectively. On the other hand, the minimum acceptable moisture content is 6-8% for all grades (Wijnands and Biersteker 2007).

Before reaching at export processing and storage level, sesame production in Ethiopia has to pass through a series of long chains. MoARD (2006/07) disclosed that sesame exporters are facing problems of impurities such as dirt, branches, stones etc. The percentage of these foreign bodies is estimated to be 7 - 9% where as the internationally agreed standard is 2% for first grade, 4% for second, and 6% for third grade sesame. Cleaning this low quality sesame to make it exportable would obviously require high costs of labor and machinery that in turn reduces competitiveness in the global market.

One of the most challenging tasks in sesame marketing in Ethiopia is therefore, reducing the market chain of the product. In line with the goals and objectives of the Ethiopia Commodity Exchange (ECX), relentless efforts have to be made to reduce market chain and discover sesame prices based on the level of quality. To this end, the role of cooperatives in this sub sector has to be enhanced with a view to benefit smallholder producers through offering better farm gate prices.

2.2.2. Sesame Marketing in Ethiopia

Sesame marketing is highly linked with the international market and highly volatile following changes in the supply and demand at international markets. The major actors in the Ethiopian sesame market are exporters, wholesalers, brokers/agents, local traders (Assemblers), primary cooperatives and their unions, commercial farms and small-scale farmers (Alemu, 2009). Understanding of the scattered and small-scale nature of the Ethiopian production system, the role of aggregation in improving the agricultural marketing system is given due emphasis in the national agricultural marketing strategy and this is sought to be achieved through cooperatives and their respective unions (*ibid*).

Alemu (2009) indicates that following the above strategies, the Council of Ministers Regulation No.178/2010 (the "Regulation") passed on 22 May 2010, mandates that sesame seed trading in Ethiopia shall be conducted only at primary transaction centers and the Ethiopia Commodity Exchange (ECX). According to Alemu, article 18 (2) of the Regulation reserves the right for any producer to export sesame seed directly, individually or through a cooperative in which he/she is a member (Alemu, 2009). However, as a result of the enforcement of the mandatory trading provisions of the Regulation, nearly all of the country's sesame will be traded through Ethiopia Commodity Exchange (USAID-Ethiopia Agribusiness and Trade Expansion Programmed, 2010).

Sesame in Ethiopia is grown mainly for the export market (Aysheshm, 2007; Alemu and W.Meijerink, 2010). According to Aysheshm (2007), only about 5% is believed to be consumed locally.

Ethiopia is a major sesame seed exporter in the world market. For example, in 2005/06 Ethiopia exported 237, 565 tons of sesame seed, accounting for roughly 94% of the total export earnings from oilseeds and 19% of total national export earnings (EXC, 2010). In addition, reports suggest that there is a considerable international market demand for Ethiopian sesame seed, and it is expected to continue increasing in the future (Sorsa, 2009).

According to the same author, this increasing international market demand for the crop is not only evident in the rise of export volume but also in new buyers coming to the market (*ibid*). Currently, China is the largest import market for Ethiopia's sesame followed by Israel, Turkey and Jordan in 2011, respectively (Ethiopia Revenue and Custom Authority, 2012).

2.2.3. Sesame Market Infrastructure

Abera (2009) identified market infrastructure in the case of sesame includes modern storage facilities (warehouses), seed cleaning facilities, and sesame seed crushing and refining plants, road infrastructure, availability of means of transport, and market information networks among others in Ethiopia.

Sesame Warehouse facilities:- MoARD (2006/7), disclosed that in the case of Tigray and Amhara regions,

modern storage facilities are established recently in and around Humera, Metema, Gondar, and Shehdi towns. Private exporters, wholesalers, commercial farms, cooperatives and unions, as well as public enterprises own these warehouses. On the other hand, in the sesame producing areas of Oromia and Beshangul Gumuz where 20-25% of total annual sesame production originates, there are no modern warehouses and seed cleaning plants.

Road access and transport facilities:-Ethiopia has a good main road infrastructure, although with 21 to 31 km/100,000 ha the road density is quite low considering the African average of 50 km/100,000 hectare (Winands and Biersteker (2007)). In recent years, however, road network, telecommunication and information technologies have dramatically improved. Large investments are made to improve further the road, rail and ICT infrastructures. The bulk (98%) of international trade is handled by Djibouti. Transport of sesame from the producing regions to the port of export, to Port Sudan and Djibouti, is mainly done by truck. The distance between the producing regions and Djibouti is about 1000-1500 kms. Transport costs to Djibouti port are indicated as USD 35 per tone/km, but in many areas very high transport costs are incurred (Winands and Biersteker (2007)).

Market Information Networks: - The major sesame producing areas of the country are located around North Western and South Western low lands where communication networks are not yet expanded to the required level. This has resulted in low bargaining position of farmers due to lack of adequate market information. Sesame being an export commodity requires the dissemination of market information on regular bases.

Seed cleaning and processing-Seed cleaning and information on origin are of great importance for sesame seed marketing. Farmers and traders blend different seed types, such as Humera, Gondar, and Wollega, with particular qualities. This decreases the overall value of the seeds: tracking the origin of the product and matching the particular qualities of the seeds with the specific requirements of the end users are hampered. Cleaners remove impurities such as straw, dead seeds, soil and pods, resulting in up to 99% or 99.5% purity. Up-to-date cleaning machines capable of 99.5% purity are available in some companies such as Ambasel, but the total capacity is limited and does not meet export quality standard. Machines with lower cleaning results, below 99.0% purity, are often locally made (Winands and Biersteker, 2007).

Sesame seed Crushing and oil Refining:-Most of the oilseeds crushed locally are without any refining. In rural areas, crude oil is preferred for cooking purposes. Winands and Biersteker (2007) estimated that the production of refined oil in Ethiopia is very limited (about 20,000 tons). The domestic market for oil crops is partly developed and backed-up by an oil extracting industry. According to a recent study carried out by Winands and Biersteker, there are approximately 130 registered oil extraction companies of which the majority is registered micro-companies. The number of big oil extraction companies operating in a large scale is not significant (Winands and Biersteker, 2007).

2.2.4. Sesame processing in Ethiopia

Although the processing of oilseeds in Ethiopia is most often confined to cleaning, if at all, a few examples of more advanced processing in the country exist.

The most prominent example is Selet Hulling PLC, a Joint Venture between the Ethiopian Kaleb Service Farmers House and the Dutch Tradin Organic Agriculture B.V., made possible through the Private Sector Investment (PSI) Program of the Dutch government and established in December 2007.

Selet Hulling PLC has 2 major production units; a production farm and a processing factory. The production farm is located in the Humera District in the utmost North-West of Ethiopia. Sesame is produced there on Selet Hullings' own 300 ha farm and on the farms of families which are connected to two outgrower cooperatives that Selet Hulling works with; Fana Limat cooperative (1000 farming families) and Shewit cooperative (500 farming families). These farmers also receive training and go through a certification trajectory.

The factory of Selet Hulling is located 20 kilometers outside Addis Ababa and consists of a raw material warehouse, a sesame cleaning line, a sesame dry-hulling line and a finished product warehouse. These facilities have been built according to international food standards and are organic and ISO 22.000:2005 certified, with equipment for the cleaning line from Denmark and for the hulling line from Spain, USA, the Netherlands and China.

Selet Hulling makes use of the dry-hulling method, which has advantages over wet hulling methods because of lower water consumption and consequent less impact on the environment. Furthermore, rainwater is collected in the factory for the hulling process, which is consequently filtered in multiple steps and UV-treated before entering the machine line. The type of sesame seed that is hulled in this factory is known as the Humera-type. This sesame is popular on the world market due to:

1. White and comparatively large, uniform seeds
2. A sweet and nutty taste
3. A sweet aroma

Selet Hulling follows an integrated Internal Control System and works according to international quality systems like HACCP. According to the factory's website, Selet Hulling's mission is *"to be the world food and bakery industry's premier supplier of top quality, competitively priced, certified organic hulled sesame seeds for a healthier living"*. Unfortunately Selet Hulling was not available to verify to what extent they can currently

adhere to that mission, but it is clear that they can be considered as the major sesame processor in Ethiopia.
(Source: www.selethulling.com)

3. Major challenges in sesame production and marketing

Kindie (2007), ECEA (2009), Bezabih (2010), Geremew (2012) identified the following the major challenges in sesame production and marketing in Ethiopia.

3.1. Problems related to sesame production

3.1.1. Erratic and inadequate rainfall and Incidence of crop pests and diseases

As motioned earlier, the productivity of the crop is highly dependent on the amount and distribution of rainfall. Problems related to rainfall intensity and incidence of crop pests and diseases are affecting production and productivity.

3.1.2. Lack of input supply and extension services

Though efforts were made to improve sesame seed varieties through agricultural research, inability to provide market demanded improved and appropriate varieties is still an outstanding problem. Sesame productivity is low due to low level of extension service. Harvesting requires a high demand of labor force. In the major producing areas, there is a shortage of daily labourers during peak periods due to different health hazards. Illegal trading of farm oxen has also resulted in shortage of plough animals.

A high cost of fuel and machinery spare parts for commercial farms is said to be an obstacle especially in Humera, Abderafi and Delello areas. Credit facilities are lacking because of the absence of financial institutions in the high potential areas. Absence of modern warehouses in the nearby areas has resulted in mishandling of output. Producers are unable to build their own storage devices due to tenure insecurity. This in turn resulted in the absence of soil and water conservation measures and planting permanent crops.

Shortly summarized as follows:-

Production and productivity challenges

- Low level of improved input utilization;
- High postharvest loss;
- Highly dependent on rainfall;

Infrastructural challenges

- ✓ in sufficient or limited Rural feeder roads and transportation;
- ✓ Very limited modern warehouses and facilities; Limited modern marketing centers /primary, secondary and terminal markets/ specially for other oilseeds except sesame

Skill and knowledge challenges

- Insufficient post harvest technologies and knowhow;
- Lack of advanced value addition technologies
- Low level of modern packaging and processing skill
- Low level of information networking and processing

Competitiveness challenges

- ❖ Price fluctuation /Price volatility
- ❖ Construct default (both sides-exporter and buyer)
- ❖ Low Negotiation capacity of exporters
- ❖ High transaction cost for all oilseeds except Sesame seed

3.2. Major constraints in sesame marketing

From the nature of the value chain and the discussions held with the Ethiopian Pulses, Oil seeds, Spices Processors, and Exporters Association (EPOSPEA) it was learned that sesame market in Ethiopia has the following major challenges.

- The low productivity because of erratic rainfall has reduced the supply of sesame and quality of the seed.
- Inadequate market infrastructure such as warehouses and road net works raised transport costs and the competitive edge of the commodity.
- Extended supply (value) chain reduced the profit margin of producers and thereby hindered their incentive to produce more.
- Delay in the provision of credit for working capital has resulted in inability of cooperative unions to purchase sesame when prices are declining. Some of the interviewed members have also mentioned the shortage of capital as a major constraint to involve in the ECX market.
- Uninformed or misinformed decision on stock levels resulted a wrong speculation of price exposed farmers and wholesales to price risks. In a recent field trip assessment held in Amhara region, it was learned that cooperative unions and private traders of sesame purchased the product immediately after

the harvest season at a high price based on last year's price, but the price was reduced thereafter. This has resulted in holding back of the produce and their capital was tied up.

- Smallholder producers remained in a low bargaining position due to the absence of market information on the current status of local and international price of sesame. Oil crushing and filtration process needs efficient technology and quality of work at this point of activity seems unhealthy. There is no packing of the edible oil with standard packing materials except collecting with big metal tankers. There is no technology that helps to check standard and quality.
- At processors levels companies complain about high levels of competition with oil coming into the country through imports and food aid. Even the existing installed processing capacity is underutilized due to sustainable quality supply. At traders' levels, the seasonal purchasing capacity appears to be a major constraint due to the absence of credit facilities.

The Ethiopian Pulses, Oil Seed, and Spices Processors Exporters Association describe the present problems as follows:

- Low awareness level of producers and traders as well as lack of market network has restricted the level of participation of actors in the exchange market.
- Quality problem, market fluctuation and holding back of produce during the good market season, introduction of VAT, lack of trade ethics (adulteration) restrained sustainable supply.
- Price dictation by the brokers in sesame and holding back of produce by regional enterprises during peak season could not enable benefit from very good sesame price on international market (about 930 USD/tonne) in the year 2007.

With the increasing importance of sesame seed as a major contributor to foreign exchange earnings, it will be of vital importance to curb the aforementioned problems at all levels.

2.5.3.6. Opportunities of sesame production and marketing

As Mbwika (2003) noted, sesame is the most important oil seed export crop in Ethiopia and its contribution to foreign exchange earnings in the country has been increasing over the years.

Ethiopia has the advantage of having good local varieties, favorable growing conditions, vast suitable area for sesame growing and relatively cheap labor that are important manual harvest of sesame are few of the advantages we have at hand. The country's proximity to Middle East markets also gives it an advantage over some other countries such as Far and East countries (China and India). We can also take the advantage of the Israel market, which for political reasons cannot import from Arab countries such as Sudan.

Given that sesame is largely commercially grown in the country, its level of management is higher when compared to other African countries where production is predominantly by small scale producers. The organic nature of Ethiopian sesame is another preferred trait in the international market which can fetch higher price to the country. Besides, the yearly new ads of exporters into the export market are few of the opportunities that we could explore.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1. CONCLUSIONS

Agriculture in Ethiopia continues to be the leading sector, and in turn smallholder agriculture sub-sector continues to dominate this sector. As a result, commercialization of smallholder farms has been viewed by the government of Ethiopia as the major source of agricultural growth in the country.

A recorded literature suggests that one form of smallholder farmers' commercialization is through production of cash crops and cash crops are conceivable to be the major source of export revenue and contribute to livelihoods diversification and poverty alleviation by directly increasing the farm household's income earning potential. This is possible only if there is active participation of smallholder farmer's in production and marketing of such crops. Here, the key effort should focus on identifying those factors that explain and stand to determine farmers' decision to participate in the field.

A long value chain characterizes sesame value chain in Ethiopia, which includes producers, village traders or collectors, wholesalers/brokers, oil millers, exporters, retailers and local consumers. Unlike the commercial farmers who directly sell to exporters or oil millers, small holders output has to pass through the long market chain. The oilseeds chain starts with a very large number of smallholders, each producing a very limited quantity. Transaction costs are involved in each transaction, lowering the price for the farmers.

Sesame is the major cash crop for smallholders in Ethiopia. And there is a potential arable land for further production in the different areas of the country. Productivity (crop yield) in the national average was (7.25 quintal per hectare) in 2011/2012 production year. The production technique was still dominated by traditional means (more 95 percent of farmers use oxen and donkey for land preparation, the remaining use traditional equipments like hand hoe) which put farmers in sesame producing areas like Humera and Metema, at least in using modern technology for sesame production.

Lack of improved seed, lack of awareness about the importance of sesame in the area and lack of

knowledge and capacity to use fertilizer for sesame production are the other major factors resulting in low productivity of the crop in different areas.

In addition, access to rural credit service was found to be a significant factor, both in participation decision and the level of sesame production participation. This implies that credit availability is one of the key institutional factors that determine farmer's decision status in sesame production. This is because sesame production requires high working capital by easing the liquidity constraints of smallholder farmers.

The type of sesame collectors or traders who buys sesame from farmers also matters for variations in income earned from sesame sell. Cooperatives are found to be the major channel for farmers to secure better income from sesame produce in different areas. This is because cooperatives are believed to pay better price and provides other market related information; hence those farmers who have sold their produce to local cooperatives were found to generate better income than others. Access to market information was also found to be an important factor in securing better income from sesame sells for smallholders. This is because sesame is one of the international crops in which its price is linked to international markets; hence market information is necessary and significantly determines the level of income farmers derives.

The Sesame marketing has been constrained by diverse factors: shortage of modern inputs, shortage of capital, lack of timely and accurate market information, and poor quality of packing materials were few of the inherent problems. Besides, the lengthy export procedures, and corruption practices by some institutions are the main and challenging problems for the majority of traders.

4.2. RECOMMENDATIONS

Providing improved sesame variety that properly fit the agro-ecology of different sesame producing areas of the country.

Solving problems related to smallholder farmers on crop failures at different stages due to sesame diseases, rainfall related problems, soil acidity and cracks, and pest infestation problems which require research and development works in the country to sustainably solve these problems and in general, the following list of recommendation points should have to be taken into account.

1. Enhancing production and productivity through:

- Provision of appropriate improved varieties adaptable to the specific areas,
- Improving the extension service, farming practices and agricultural credits,

2. Provision of reliable and timely market information to the farmers, processors and exporters.

3. Strengthening the recently started sesame marketing in ECX market through:

- Provision of warehouses in the major producing areas,
- Establishing an efficient supply chain which can benefit most to producers,
- Promoting the ECX market stages to create public awareness through various media.

4. Expansion of road infrastructures to reduce transport costs, to attract private investment in the area and to facilitate the supply of labor as the production system is highly labor intensive.

5. Raising public awareness to producers, wholesalers, processors and exporters to enhance participation in the ECX market.

6. Promote investments in oil refining, seed cleaning and hulling to add value and gain better market price. Investments in quality, hygiene and food safety measures are needed to create more added values.

7. Improve Production and productivity

- Build the capacity of oilseed farmers
- Maximum utilization of oilseed cultivated land potential to increase its volume.
- Increasing production and productivity, by introducing better Variety of oilseeds and application of appropriate cultural practice of oilseed cultivation.
- Improving post harvest management system to reduce quantity and quality loss.

8. Improve the efficiency of marketing system

- strengthen primary transaction centers
- Improve market information system
- Strengthen and promote marketing system at grass root level
- Undertake regular monitoring and checking on quality of oilseed supply to be Competitive in domestic and in international market.

9. Increase Competitiveness of oilseed export in Global Market

- Preventing blending of different geographic origin products
- Special Focus should be given on value addition/ hulling, oil crashing, tahini production and bakery/ through attracting investment on technologies
- Focus on Product Quality, Timely Supply, Zero Contact Default

10. Increase Competitiveness of oilseed export in Global Market con---

- Strengthen export promotion to increase export share in existing destination new markets.
- Improve market intelligence: competitive power can be increased by knowing the markets: the buyers as well as the competitors
- Build the capacity of exporters
- Improve Reputable relationship with our trade partners

11. Improve the Efficient service delivery,

- ✓ Strengthen marketing system
- ✓ Improve the efficiency of transportation,
- ✓ Increase the efficiency of custom clearing, inspection and transit service,
- ✓ improve financial and credit access,
- ✓ Strengthen Regular Monitoring and Evaluation at various levels in value chain.
- ✓ develop consumer markets major investment in quality, hygiene and food safety measures

Generally, Ethiopia has highly potential for sesame production, the local varieties have got good taste and preferences by most of the importers, and their organic nature attracts the attentions of exporters. Hence, the country has to explore these opportunities.

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