

# Review on Avocado Value Chain in Ethiopia

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## Abstract

This paper is aimed in reviewing Avocado value chain and major constraints along the chain in Ethiopia. It is known that Tropical and sub-tropical fruit can make a significant direct contribution to the subsistence of small-scale farmers by providing locally generate nutritious food that is often available when other agricultural crops have not yet been harvested. Avocado (*Persea americana*) is a native of Central America; avocado belongs to the family Lauraceae. Avocados contain many vitamins as well as folic acid and iron, no cholesterol. Ethiopia is agro-ecologically diverse and has a total area of 1.13 million km<sup>2</sup>. Avocado was first introduced to Ethiopia in 1938 by private orchardists in Hirna and Wondo-genet and production gradually spread into the countryside. The total cultivated area for Avocado in Ethiopia is 8938.24 hectares and production 256331.64 quintals. More area coverage is expected in the south-western and other parts of the country due to more conducive climatic and edaphic factors. Sources of avocado planting materials. Despite relatively early establishment, the avocado sub sectors in Ethiopia is in its infancy and has not yet utilized the potential of this crop. Most of the time Ethiopian farmers did not give attention to good plant management. And improved seed varieties. Fruit harvesting usually commences at fruit drop which is fruit for both fresh and processed. There is a huge domestic market in Ethiopia. Major constraints for Avocado marketing Ethiopia:- Low price for product, low bargaining power of growers and perishability nature of the product.

**Keywords:** Avocado, value chain, production constraints

## 1. INTRODUCTION

### 1.1 Background

Tropical and sub-tropical fruit can make a significant direct contribution to the subsistence of small-scale farmers by providing locally generate nutritious food that is often available when other agricultural crops have not yet been harvested. Fruit are a versatile product that, depending on need, can be consumed within the household or sold. Marketing fresh and processed fruit products generates income which can act as an economic buffer and seasonal safety net for poor farm households. Diversification into fruit production can generate employment and enable small-scale farmers to embark on a range of production, processing and marketing activities to complement existing income-generating activities (Clarke, et.al, 2011).

The avocado (*Persea Americana*) is a native of Central America and the West Indies. Accounts of the fruit date back to the early 1500s when the Spanish conquistadors overran the Aztec and Inca empires and found the avocado being extensively cultivated. It was introduced into Florida, California and Hawaii in the early 1800s and is now found worldwide where growing conditions are suitable. The avocado belongs to the family *Lauraceae*. Camphor, sassafras, cinnamon and laurels are related species. The tree is evergreen, though heavy leaf fall may occur during profuse blossoming and when the tree is affected by root rot. The growth habit varies from tall and upright to well-shaped and spreading. Fruit of the cultivated species vary greatly in size, shape, color, texture and flavor. The edible part of the fruit-the flesh between the seed and the skin varies in color from cream to yellowish-green. When ripe the flesh should have the consistency of soft butter. The fruit has one seed. The fruit is unique in that it will not ripen until harvested and may be left on the tree for some time (depending on variety) after reaching maturity. Avocados contain from 5 to 40% oil, the percentage varying with the variety, growing area and seasonal conditions. Only ripe olives have a higher oil content. The therapeutic value of avocado oil is related to its fatty acid composition. Avocados contain many vitamins, particularly the B complex and vitamins A and E, as well as folic acid and iron. They contain no cholesterol (Agfact H6.1.1 2003).

Avocado's global production has now reached more than 3.8 million metric tons (FAOSTAT, 2010). Ethiopia is agro-ecologically diverse and has a total area of 1.13 million km<sup>2</sup>. Many parts of the country are suitable for growing temperate, sub-tropical or tropical fruits. For instant, substantial areas in the southern and south-western parts of the country receive sufficient rainfall to support fruits adapted to the respective climatic conditions. In addition, there are also many rivers and streams which could be used to grow various fruits.

Ethiopia has a potential irrigable area of 3.5 million ha with net irrigation area of about 1.61 million ha, of which currently only 4.6 % is utilized (Amer, 2002). Fruits have significant importance with a potential for domestic and export markets and industrial processing in Ethiopia. The main fruits produced and exported are banana, citrus fruits, mango, avocado, papaya and grape fruits (Zeberga, 2010). According to Mauro (2006), Ethiopia's international involvement in horticultural trade and production is growing at rate of 7 percent per year by creating better opportunity to compete on lucrative export market. Owing to these realities, with its shortest introduction to Ethiopia, These days the crop is produced in several countries where Ethiopia stands the 10<sup>th</sup>

leading producer and 6<sup>th</sup> most important consumer in the world (FAOSTAT, 2010). Avocado was first introduced to Ethiopia in 1938 by private orchardists in Hirna and Wondo-genet and production gradually spread into the countryside where the crop was adapted to different agro-ecologies (Edossa, 1997; Woyessa and Berhanu, 2010; and Zekarias, 2010). Avocados are second in total volume of production, next to banana, in Ethiopia (Joosten, 2007).

Annual avocado production in Ethiopia is 25633.16 tons. The crop is now produced by 1,149,074.00 farmers countrywide who collectively farm more than 8938.24 ha of land (CSA, 2012/13).

absence of improved varieties, avocado and mango production is exclusively based on distribution of mixed materials; consequently the local seed system has come out as best-bet arena and is now a common route for seedling dissemination (Ayelech, 2011).

According to Mulat (2000) the largest constraints in Ethiopian agricultural markets are the limited amount of traders that have a scarce amount of capital together with a large amount of farmers, which leaves the farmers with a weak bargaining power. Furthermore, limited information systems, poor transportation, high handling costs and an underdeveloped sector are other limitations on the market.

According to W.Garedew (2010) even though avocado has economically and socially play a significant role its production is confronted by a number of constraints; - this are Degeneration of fruits, Disease problem and absence of agronomic practices.

According to Susanna and Amanda, 2014 In Ethiopia No value adding activities of avocado take place at the farmer, broker or wholesaler level in the supply chains and the products are sold unprocessed. The value of the fruits increases when the products move closer to markets with high demand.

## **1.2 Objectives of Review**

### **1.2.1 General Objectives**

To review Avocado value chain in Ethiopia

### **1.2.2 Specific Objectives**

To Review Avocado Production, Management Practices and its Constraints in Ethiopia.

To Review Avocado Marketing and its Constraints in Ethiopia

To Review Avocado Value Chain Actors Function and Value Addition

## **2.2 Avocado Production in Ethiopia**

Despite relatively early establishment, the avocado industry in Ethiopia is in its infancy and has not yet utilized the immense potential of this crop. In the context of increasing the high value production of agricultural commodities, fruit tree and perennial crops play an important role. This commodity group includes tropical nuts, fruit trees, grapes, bananas, mango, pineapple, papaya, passion fruits, apples and others. Except table banana, tropical fruit trees like mango, avocado and the like were not well known and considered as diet by most Ethiopians (Yilma, 2009). However, Yilma (2009) indicated that the expansion of state farms in the past command economy and the prevailing expansion of private investors in different regions of the country have contributed a lot on the introduction of fruits as business. Avocado is a fruit from a tree that has a variable growth and development, reaching a height of 10 to 12 meters in its natural habitat Avocado trees may grow at different altitudes. Such habitat is classified as subtropical-tropical. The tree has a ligneous trunk that can reach up to 80 cm to 1 m in diameter in trees that are 25 to 30 years old (raceme), that can be axillaries or terminal. Avocado trees can be seeded or grafted. The seeded trees produce fruit after approximately 8 years and grafted trees, being the most common propagation method, produce fruit after only 2 years. Besides the longer juvenile period the seeded trees also have a larger risk of losses in yield and quality. The avocado trees could need irrigation during dry periods but not during rain seasons. Root rot is the most common failure in avocado production and too much irrigation is one of the causes of this.

According to CSA (2012/2013) the total cultivated area for Avocado in Ethiopia is 8938.24 hectares and production 256331.64 quintals more area coverage is expected in the south-western and other parts of the country due to more conducive climatic and edaphic factors.

According to FAO, (2010) description of some varieties introduced in Ethiopia and presently available

Hass: high yielding, Resistant to main pests and diseases. Not presenting a marked biennial fruiting behavior. Fruit size variable; oil % in the fruit: medium, month to ripen: 9, seed size: small; cold tolerance: medium

Pinkerton: high yielding; fruit size; medium; oil % in the fruit: high; month to ripen: 6-8; seed size: big; cold tolerance: medium

Fuerte: a Mexican Guatemalan cross; medium yielding, fruit size, small to medium; oil % high; month to ripen 5-6; seed size: tolerant to frost. Bacon: high yielding; medium size fruit; oil % high; tolerant to cold -5oC  
Ettinger: A Mexican Guatemalan cross, resistant to Nabal: Guatemalan type, big size fruit; suitable for warm climate.

In general, fruit production is still backward, the business is underdeveloped and the private sector is not

much attracted. in connection with this lack of access to improved varieties, production is exclusively based on distribution of mixed materials; consequently the local seed system has come out as best-bet arena and is now a common route for seedling dissemination ( Ayelech , 2011 ). CSA (2013) indicated Avocado as one of the second potential fruit crop produced in Ethiopia.

Table 1 Summary of major fruit crops produced in Ethiopia in 2012/2013 cropping season

Crop	Area in Ha	Production in Quintal	Yield (Qt/Ha)
Fruits	61,972.60	4,793,360.64	77.35
Avocados	8,938.24	256,331.64	28.68
Bananas	36,012.19	3,025,022.32	84.00
Guavas	1,492.32	11,730.03	7.86
Lemons	754.23	55,167.50	73.14
Mangoes	8,808.64	697,507.30	79.18
Oranges	2,999.21	357,458.39	119.18
Papayas	2,752.08	386,943.15	140.60
Pineapples	215.69	*	*

Source: CSA, 2012/2013, Agricultural Sample Survey Result

According to World Bank Group (2006), lack of concerted public support, scanty information, and lack of systematically documented knowledge that is readily accessible are the main constraints hampering the development of this sector. However, avocado is grown in many parts, especially in the western and southwestern parts of the country. The national research system has developed a number of varieties but is not widely spread. Experiences from other countries in growing this crop will therefore contribute to the success and widespread of this fruit.

### 2.2.1 Avocado Production and Management practices in Ethiopia

The selection of a suitable site is of the utmost importance Avocados are extremely susceptible to the root rot fungus no avocado rootstock is completely resistant to this disease and Trees of most avocado varieties grow quite large if the canopy is not managed. If sufficient land is available a wider spacing is preferred. Planting distances is a much debated subject. A higher planting density gives higher returns in the early years of the planting, but it can also give more canopy management problems in later years. (Dirou,2003) Most of the time Ethiopian farmers did not give attention to spacing. Orchards growth are not well spaced, some orchards are nearer to each other and the others are very far from one orchard to the others, according to the oldness of the trees age most of the farmers had no knowledge about spacing. Space plays significant role for all activities, absence of proper spacing create difficulties for production (Seid and Zeru, 2013). Zekarias (2010) indicated in his research that difference in spacing associated with difference in size and expansion nature of varieties used. in relation to this management practice starting from seed multiplication up to harvesting are done by farmers indigenous practice. According to Orwa et al.(2009) planting distances depend on soil type and fertility, current technology, and economic factors. In commercial groves, trees are planted from 5-7 m in rows and 7-9 m between rows. Pruning during the first 2 years encourages lateral growth and multiple framework branching.

Ayelech (2011) indicated that Farm Yard Manure principally transported from homestead to the field mostly during the dry season and spread in the bottom of each tree in circular form. The chemical inputs entirely evaded neither for fertilization nor for pest treatment. Thus, its Farm Yard Manure rate of application is minimal to improve soil fertility but with positive impact on environment, i.e., reduction of soil pollution and water pollution. The same study indicated that smallholder farmers in the area intercrop Avocado with maize, taro, ginger, chat, cabbage and banana at early stage. Another study conducted by Gilliard and Godfroy (1995) intercropping of avocado with short cycled crops; which is very common in sub-Saharan Africa and most utilizes the empty space during the first few years.

#### 2.2.1.1 Input Sources

Agricultural inputs are important elements for production and productivity. As a result the typical inputs utilized for production of the Avocado were seed/seedling, labor, land, and compost/manure. The major sources of inputs for Avocado production in Ethiopia are farmers by, own endeavors, agricultural offices and markets. In general the sources of inputs for Avocado production are agricultural development offices, markets, agricultural research institutes, own stocks, IPMS, and other farmers (Ayelech, 2011).

Woreda Agricultural offices, local planting materials purchased from unknown market sources. The Agricultural research center and self-production by farmers and sources of avocado planting materials Local seed production is the major source of seedlings for distribution (Berhanu, 2013). in addition Avocado production is characterized by low inputs with Farm Yard Manure (FYM) the major amendment made to soil to boost productivity and chemical inputs are not used for fertilization or pest treatment.

#### 2.2.2 Constraints of Avocado Production in Ethiopia

The fruit sector promises high potential, but yet it is characterized by low yields and income for farmers.

The fruit sector in Ethiopia has high value products as compared to other crops and promises high returns on relatively small investments (Timoteos and Tigist, 2012). According to Bezabih and Hadera (2007) horticulture production is based on tradition, which is poorly supported by scientific recommendations. Although one can associate this constraint to institutional factors, it is apparent that inadequate farmer skills and knowledge of production and product management affects the supply. Farmers attempt to select varieties and practice traditional crop management. Farmers' know-how of product sorting, grading, packing and transporting is traditional, which severely affects the quality of horticultural products supplied to the market. According to Birhanu (2013) Constraints hindering the development of avocados are found in all stages of the production chain. At the farm-level, lack of clean disease-free seedlings and grafted seedlings has compelled farmers to use inferior and low yielding varieties. Storage facilities are scarce all along the chain and absence of collective bargaining power has forced individual farmers to accept unfavorable deals.

According to Zekarias (2010) Major productions constraints are:-Vegetative growth: Most of the farmers reported that their avocado trees show only vegetative growth rather than giving yield at their fruit bearing stage Falling down of fruits before they are mature, Pest problem There are no improved agronomic practices Longevity: Farmers are very much disappointed by the longer time avocado takes to bear fruit and Inadequate extension activities undertaken on avocado. W.Garedew (2010) also indicated that even though avocado has economically and socially play a significant role its production is confronted by a number of constraints ; - this are Degeneration of fruits ,Disease problem and absence of good agronomic practices.

### **2.2.3 Harvesting of Avocado /Fruits Collection**

According to Birhanu (2013) Fruit harvesting usually commences at fruit drop which is the principal maturity index used by farmers and Fruit harvesting is largely executed by child laborers who use picking hooks, shaking of trees, and knocking down fruit. However, the later practice has the potential to cause physical injury.

Harvesting is largely executed by child labor by climbing on the tree. But use of picking hooks, shaking of trees and knocking down fruits with wooden sticks are also exercised. The later practices cause fruit droppings that may cause physical injury at any time (Ayelech, 2011).

Study conducted by FAO (2005) which showed cuts, punctures and bruises to avocados increased ethylene production and hastened fruit softening and ultimately decays. In order to decide when to harvest the avocado it is important to find the minimum maturity, in other words; how early the harvest can be conducted and still be sure that the fruit will ripen to an acceptable eating stage (Hofman et al., 2013).

#### **2.2.3.1 Post Harvest losses of Avocado**

Post-harvest losses can be measured both by quality and quantity losses. The losses can appear in any stage of the supply chain during activities such as harvesting, transportation, packing and at market places (Hodges et al., 2011; Kader, 2009). According to Humble and Reneby (2014) the largest losses of avocado in Ethiopia occur at:- **Harvest, mainly due to poor harvesting techniques Transport; mainly due to loading and unloading and Storage; mainly due to over ripening.**

### **2.3 Avocado Marketing in Ethiopia**

Marketing of agricultural products consists primarily of moving products from production sites to points of final consumption. In this regard, the market performs exchange functions as well as physical and facilitating functions. The exchange function involves buying, selling and pricing. Transportation, product transformation and storage are physical functions, while financing, risk bearing and marketing information facilitating marketing (Branson and Norvell, 1983).

Market channel is a business structure of interdependent organizations from the point of product origin to the consumer with the purpose of moving products to their final consumption destination (Kotler and Armstrong, 2003). The analysis of marketing channels is intended to provide a systematic knowledge of the flow of goods and services from their origin (producer) to their final destination (consumer). This knowledge is acquired by studying the participants in the process, i.e. those who perform physical marketing functions in order to obtain economic benefits (Getachew, 2002).

A marketing chain is used to describe the numerous links that connect all actors and transactions involved in the movement of agricultural products from the farm to the consumer (Lunndy et al., 2004). It is the path one good follow from their source of original production to ultimate destination for final use.

Fruits for both fresh and processed have a huge domestic market in Ethiopia which is by far significant than that of the export volume. The major export markets for fruits for Ethiopia are the surrounding countries Djibouti, Sudan and Somalia and the main products exported to these countries is non-graded fresh fruits Whereas, higher valued fresh produce that includes graded and pre-packed are exported to the United Arab Emirates, United Kingdom and the Netherlands. about 85% of the fruits are exported to Djibouti and the second export market destination is the Emirates (EHDA, 2011). In general, the main products for export were citrus, bananas and mangoes (EHDA, 2011). Avocado is channeled from producers to local collectors, Cafeteria and whole sellers and finally to Addis Ababa market through these channel middle men buys all avocado fruits from the farmers at

a lower price and sells them in the market at higher price (Zekarias, 2010).

According to Birhanu (2013) the avocado industry operated under an unregulated environment. Prices were exclusively determined by traders negotiating with farmers at time of procurement. Over supply of fruit is the principal reason for price declines which affect farmers.

### **2.3.1 Marketing Constraints**

Marketing constraints are related to prices and demand for the products, market information, communication, storage and perish ability of the products. According to Mulat (2000) the largest constraints in Ethiopian agricultural markets are the limited amount of traders that have a scarce amount of capital together with a large amount of farmers, which leaves the farmers with a weak bargaining power. The horticulture products in Ethiopia are mainly produced by smallholder farms, and a small amount of state-owned farms (Emana & Gebremedhin, 2007). Lack of market to absorb the production; large number of middlemen in the marketing system; absence (weakness) of marketing institutions safeguarding farmers' interest and rights over their marketable produces (e.g. cooperatives); lack of coordination among producers to increase their bargaining power; imperfect pricing system of traders was a major problem to producers.

Traders charge low price at peak supply periods which is not based on the real demand and supply interaction. This implies, the middlemen decide on the price of fruit products. Producers cannot negotiate since they may be denied even a low price and their products could be liable to rotting, since it is perishable, and lack of semi-processing industries (yimer, 2015).

According to Ayelech, (2011) Absence of organized institution and system group marketing has made traders in a better position to dominate the pricing. Changing the attitudes of farmers is a crucial factor in improving the marketing performance of households. According to Zekarias (2010) major constraints for Avocado marketing Low price for product, low bargaining power to influence their due to poor economy and perish ability nature of the product.

## **2.4 Avocado Value Chain Actors Function and Value Addition**

According to Ayelech (2011) market participants along avocado value chain are producer, local collectors, wholesalers, retailers, processors and final consumers of the product. Producers are the primary or first link actors who cultivate and supply Avocado to the market. Local collectors are farmers or part time traders in assembly markets who collect Avocado from farmers in village markets for the purpose of reselling it to wholesalers, retailers and consumers. They use their financial resources and their local knowledge to bulk avocado from the surrounding area. Wholesalers are known for purchase of bulky products with better financial and information capacity. They are major actors in the channel and they purchase avocado either directly from farmer or local collectors. They procure and consign large amount of Avocado to the regional market and to terminal markets. Retailers are the ultimate actors in the market chain that purchase and deliver avocado to consumers.

Processors are those value actors like cafeteria, restaurants and juice houses which change Avocado fruit into processed goods like juice. Consumers are those households who bought and consume avocado.

The collectors are closely associated with brokers who work at grassroots level as well as with those coming from bigger marketing centers. In the markets where the producers sell their products, mainly during the peak supply period, the collectors fix the prices, which is often very low (Bezabih and Hadera, 2007).

According to Nega et al (2015) participants along avocado value chain are:-

**Producers:** They are the first actors in the marketing chain of avocado and all of them are smallholder farmers who produce the avocado and supply to the next agents.

**Local Collectors:** - These are important actors in the market chain and they collect avocado, from producers or farmers and they in turn sell it to retailers and consumers.

**Retailers:** These are also important actors in the avocado that deliver fruits to consumers. That is, they purchase fruits either directly from producers or local collectors and deliver to consumers.

**Consumers:** These are the last actors in the fruit value chain. They are individuals or households who buy various fruits from fruit producers, local collectors and retailers for their own consumption only. As last actors in the chain they can buy the fruits from various actors in the marketing chain. That is either directly from producers or other actors in the channel as local collectors and retailers.

### **2.4.1 Avocado Value Addition in Ethiopia**

Value is created in the chain by different actors at different stages and is related to costs, quality, innovativeness, delivery time and delivery flexibility etc. (Trienekens, 2011). Ruben et al. (2007, p. 34) define value added as “the difference between the selling price of output(s) and the purchase price of inputs, including the transformation and transaction costs involved in sourcing and selling”. How the value added is distributed within the chain depends on what comparative advantages each agent possess in the chain, including the bargaining conditions and the internal governance in the value chain have impact (Lazzarini et al., 2001).

Avocado fruit has a high nutritional value since it contains several important vitamins, minerals and a great amount of oil (Shaffer et al., 2013).

According to Humble and Reneby (2014) No value adding activities of avocado take place at the farmer, broker or wholesaler level in the supply chains and the products are sold unprocessed. The value of the fruits increases when the products move closer to markets with high demand.

#### 2.4.1 .1 Sorting, Grading and Packaging:

These functions are principally carried out at the farm gate and at primary procurement centers via the efforts of local collectors. Thus fruit is sorted according to consignment needs of collectors where under-grades (i.e., culls) such as: shrunken, smaller sizes, with splits and punctures are removed. But unsellable under-grades are not wasted as they are commonly consumed in farming households. There is a shortage of standardized packaging materials for avocado fruit, and synthetic fiber sacks “madaberiya” are a popular packaging material to transport fruits from farm gate to primary procurement centers (Birhanu, 2013).

Avocado packaging is an open sector for large private investment and introduction of modern technology and entry for investors. Wiersinga and Jager (2009) state that most available packing material in Ethiopia doesn't meet required standards for avocados.

Consequently, exporters in Ethiopia import packing materials from the Netherlands and Israel. Efforts were recently launched by several new companies to produce fruit packing material in Ethiopia.

#### 2.4.1 .2 Processing

In Ethiopia, the number of fruits and processing industries is limited. Currently, there are only few fruits processing plants in the country (Rolien and André,2009).

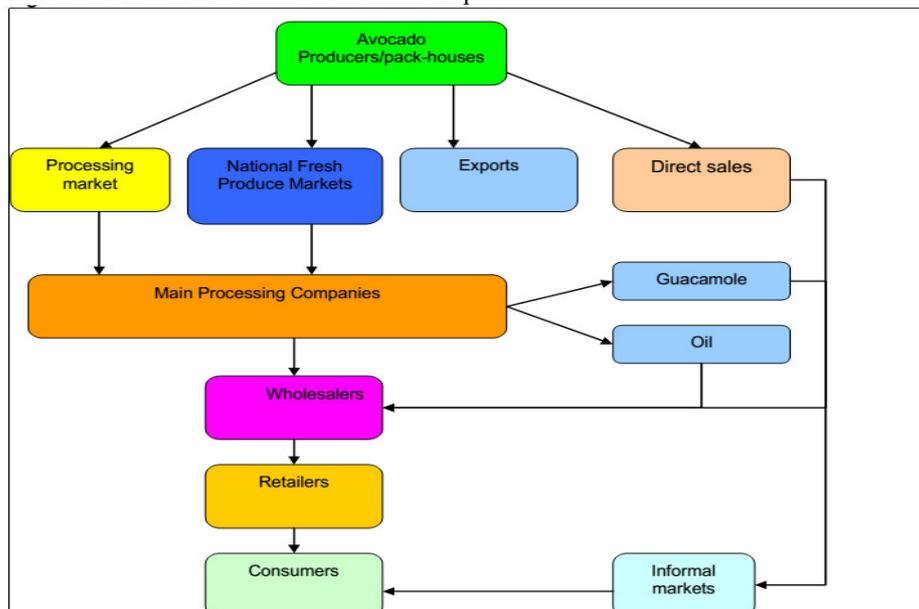
Avocado processing is apparently limited to juice making where cafés, restaurants and juice houses takes the leads in cuisine preparation.

Thus there is only few agro-processing plant that underpin on avocado, and it has already ceased its endeavor of blending avocado to produce pasta and macaroni. But some Cosmetic Industry has launched producing of hair pomade by using avocado as raw material (Ayelech, 2011).

#### 2.4.2 Consumption of Avocado in Ethiopia

Consumers are those purchasing the products for consumption Most of the fruits produced in Ethiopia are consumed locally and are produced by smallholder farmers. After harvest, they are transported to rural market centers for local consumers or are bought at the farm by neighbors. Others are transported to bigger market centers where many producers utilize the open-air markets that are patronized occasionally, once or twice a week. Limited post harvest improvement is done for locally consumed fruits and vegetables (Habte, 2001). However, Fruits like Banana, Orange, Lemon, pineapples and avocados exported to Europe and Middle East are graded and packaged appropriately.

Figure 1 Overview of Avocado value chain map



Source: Arcadia, 2012

### 3.0 Opportunities in Avocado Sub Sectors of Ethiopia

- ✓ *Potential for Expansion of Production*
- ✓ Favorable Growing Conditions
- ✓ Organic and sustainable products
- ✓ Export platform to wide international market

- ✓ Prospect for value addition and processing
- ✓ Availability of sector-specific government policy and institutional support

#### 4.0 Conclusion and Recommendation

##### 4.1 Conclusion

Ethiopia enjoys various growth conditions that support optimal cultivation of many fruit trees in general and avocado in particular however, a small proportion of this potential is used. Avocado cultivation in Ethiopia is characterized by insufficient number of trees per Ha and production practice is poorly supported by scientific agronomic practice.

Practice of cultivating unimproved seedlings, poor fruit quality, shelf life, taste, and devastation by pests and diseases is still a problem.

Simultaneously, marketing activity is poorly linked along value chain, edaphic suitability for production, cheap provision of labor are opportunities for future investment However, declining prices due to oversupply, poor market integration, inadequacy of improved post harvest technologies, and provision of extension services for growers are hindering production and marketing of avocados in Ethiopia.

Constraints hindering the development of avocados are found in all stages of the value chain. At the farm-level, lack of clean disease-free seedlings and grafted seedlings has compelled farmers to use inferior and low yielding varieties. Storage facilities are scarce all along the chain and absence of collective bargaining power has forced individual farmers to accept unfavorable deals. Low value adding activities of avocado take place at the farmer, broker or wholesaler level in the value chains and the products are sold unprocessed Moreover, Avocado fruit crop has significant importance with a potential for domestic and export markets and industrial processing. However, the production, marketing and consumption of avocado fruits are restricted due to improper post harvest handling. Absence of organized institution and system group marketing has made traders in a better position to dominate pricing. Therefore, intervention strategy needs to be undertaken in order to promote the development of avocado value chain. This particularly includes, capacity building, post harvest technology, improved extension, organized plant protection and plant breeding activities. Infrastructural development is also a key to support the sub-sector.

##### 4.2 Recommendation

Based on review undertaken the following recommendations are made:-

A number of actions need to be undertaken in order to promote the development of avocados. This includes, capacity building, post harvest technology, improved extension and, plant breeding and protection activities. Implementing improved varieties that are grafted, New harvesting tools and growers should establish their own marketing cooperative for better bargaining power in determining their price for avocado.

Government and non government Organization should Promote;-

Standardized packaging and Introduction of cold chain management, Establishment of local processing industry for better benefits of growers ,Investments on avocado production and processing and Post Harvest reduction of Avocado.

The Ethiopian Commodity Exchange should develop marketing services for avocados, if so, avocado prices will be stabilized and maintained at better condition.

Research institute should work towards generating improved variety and agronomic practices.

Plant Protection Organization should work on avocado disease and pest control.

Agricultural office should work on accessibility of improved avocado varieties.

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