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Analysis of Sesame Marketing Chain in Case of Gimbi Districts, Ethiopia

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Abstract
This study was aimed at marketing chain of sesames in Gimbi Woredas of Oromia Region with specific objectives of identifying marketing channels and factors affecting outlet choice decisions of farm households. The data were collected from both primary and secondary sources. The primary data for this study were collected from 127 farmers, 17 traders and 22 consumers through application of appropriate statistical procedures. The study result showed that sesame producers are faced with lack of improved seed variety and high diseases and pests. On marketing side, limited access to market, low price of product, lack of storage, lack of transport and low quality of product are the major problems. The multinomial logit model results indicated that the probability to choose the collector outlet was significantly affected by Land, Market price of sesame, Membership to any Cooperatives, Credit Access, and Owning Transport Facility compared to wholesale outlet. Similarly, the probability of choosing cooperatives marketing outlet was affected by land and Quantity of sesame produced compared to wholesale outlet. Therefore, policy aiming at increasing farmers' access to modern inputs, developing and improving infrastructure, gender consideration, cooperative development and improving extension system are recommended to accelerate the chain's development.
Keywords: Gimbi, Marketing Channel, Outlet, Sesame

1. INTRODUCTION

More than 85% of the Ethiopian population, residing in the rural area, is engaged in agricultural production as a major means of livelihood. Agriculture, which accounts for about 47% of GDP, 80% of export earnings and 85% of employment is the backbone of the economy (MoARD, 2010).The industrial sector which comprises of textiles, food processing, cement manufacturing, construction and hydroelectric power generation, among others accounted for only 12% of GDP in 2004 (Emana, 2010).

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 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_et al., 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.

In this regard, the empirical record suggests that export potential cash crops can provide higher returns to land and labor than food grains and thus present major opportunities to promote smallholders income growth, food security, and national foreign exchange generation (Poulton et al., 2001, Lukanu et al., 2004; Poulton et al., 2006, Schneider and Gugerty, 2010). According to Chauvin (2012), cash crops are a major source of export revenue for a large number of sub-Saharan African countries and the livelihood basis for millions of rural households who grow those crops (Chauvin, 2012). It is currently among the major Ethiopian export crops and is one among the agricultural crops in which Ethiopia is known in international markets (Sorsa, 2009).

The major sesame growing areas in Ethiopia are located in 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). From these zones my study will be mainly focused on the sesame value chain analysis in Gimbi Woreda, Western Wollega zone in the Oromia national regional state. Among the available marketing study approaches, commodity approach will be employed due to its combination nature of both functional and institutional approaches.

It is among the major cash crops by which Ethiopia is known at international markets. Sesame is currently the country's principal export oilseed and is mainly raised by small scale farmers. Thus, as a smallholder farmer's crop and an export potential crop, it is an opportunity for smallholder farmers to produce sesame and improve their livelihood (Sorsa, 2009).

Different reports indicate that sesame production and marketing in Ethiopia (Kindie, 2007; Amare, 2009; Sorsa, 2009, Wijnands et al., 2007 and 2009; Alemu and Meijerink, 2010; Thomas, 2011; and Mheen,

2011). However, the majority of these studies mainly focused on production aspect of the crop and some have considered the common sesame production related problems, ignoring factors affecting sesame market outlet choice decisions at individual household level. The main efforts made by these authors were on general production and trade arrangement problems. This allowed them to examine factors which are mainly external to individual farm households and common to all farmers in the area. However, identifying household specific factors, which are responsible for limiting some households from sesame market outlet choice decisions, is essential. This were analyzed by considering specific sesame marketing channels by connecting between all the actors in a particular chain of production to final consumer in which producers will sell their products to either of the market.

A review of literature in agro-industry value chain in Ethiopia indicates that the sector faces many challenges due to limited market outlets, limited efforts in market linkage activities and poor market information among actors (Dereje, 2007; Kaleb, 2008; Dendena *et al*., 2009). Correspondingly, Mamo (2009) argued that small scale, dispersed and unorganized producers are unlikely to exploit market opportunities as they cannot attain the necessary economies of scale and lack bargaining power in negotiating prices.

According to Kindie (2007), Farmers in Gimbi Woreda (part of Western Wellega), in general are affected by, poor quality of agricultural produce, lack of market facilities, weak extension services which ignored marketing development, poor linkage of research and extension, absence of marketing information and intelligent services, excessive price and supply fluctuations, limited access to credit, inefficient handling including, storage, packaging and transportation problems. Therefore, it is important that this range will be examined how sesame marketing system is organized and functioning in terms of market structure, conduct and performance of the product in the specific location. Cognizant of these facts, this study were undertaken to seek possible answers to the following problems by conducting sesame value chain analysis in the Gimbi Woreda. The study tries to answer the following questions:

- ✓ What does sesame marketing channel look like and who are the major agents in Gimbi Woreda?
- ✓ What are the key factors affecting farmers sesame market outlet choice decision?
- ✓ What are the major opportunities and constraints in the sesame marketing?

The general objective of the study is to identify potential interventions that will make analyze of sesame marketing channel. The specific objectives of the study are:

- ✓ examine the structure, conduct and performance of agents in the marketing chain;
- ✓ To identify factors affecting outlet choice decisions of sesame producers; and
- ✓ To identify the major constraints and opportunities in sesame marketing in the study areas;

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 Ethiopian 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 Ethiopian Commodity Exchange (USAID-Ethiopia Agribusiness and Trade Expansion Programme, 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).

Determinants of market channel choices

Different researchers are used multinomial logit and probit for categorical marketing system for different agricultural commodities in order to determining factors affecting channel choices of the households.

A multinomial logit model was applied to reveal on the determinants influencing these choices among various supply channels. According to the study by Ferto and Szabo (2002) identified variables influencing producers' decision for channel choices. Multinomial logit model estimates, Farmer's decisions with respects to supply channels were influenced differently by transaction costs, and producers sell to wholesale market were strongly and negatively affected by the farmer's age, information costs, and negatively by the bargaining power and monitoring costs. The probability that farmers sell their product to marketing cooperative is influenced by the age and information costs positively, whereas by the asset specificity and bargaining power negatively.

Geremew (2012) also identified Factors Determining the Extent of Sesame Production Participation in Diga district. He analyzed the problem employed using the probit regression and second stage of the double-hurdle model, to analyze the problem. He also identified ten explanatory variables (seven continuous and three discrete), were hypothesized to influence the probability of participation decisions and included in the analysis. However, he analyzed to running the final regression analysis, both the continuous and discrete explanatory variables need to be checked for the existence of multicollinearity using Variance Inflating Factor (VIF) and the contingency coefficient (CC) methods, respectively.

Jari and Fraser (2009) identified that market information, expertise on grades and standards, contractual agreements, social capital, market infrastructure, group participation and tradition significantly influence household marketing behavior. The study uses multinomial regression model to investigate the factors that influence marketing choices among smallholder and emerging farmers.

METHODOLOGY

Gimbi Woreda in which the study was conducted is located about 441 km West of Addis-Ababa and 2km West of Gimbi town, the capital of Western Wollega Zone of Oromia region. It has an estimated area of 1,183.44 square km; bordering in south by Haru, on the southwest by Yubdo, in the west by Lalo Asabi, and in the north by the Benishangul-Gumuz Region, on the east by the East Wollega Zone, and on the southeast by an exclave of the Benishangul-Gumuz Region. The woreda has a total of 32 Kebles, of which 30 are rural based peasant administration areas. The Woreda total population and households are estimated to be **74,623** and **18,301** respectively. Of the total households 97% are rural residents making their livelihood from agriculture (CSA, 2007).

Lowland and midland agro-ecological zones characterize the woreda's climate. The woreda minimum annual temperature 14^{o}c and the maximum temperature reached as high as 26 ^{o}c and the mean annual rain fall ranges from 800 to 2000 mm. The main rainy season in the woreda is from March to end of May and from June to end of half of September. The economy of the Woreda is dominated by traditional cash and other crops such as maize farming mixed with livestock husbandry. The major crops produced in the Woreda include sesame, maize and sorghum. (GWOoARD, 2013).

Gimbi Woreda is known for its high potential for sesame, coffee and maize production. Besides, it is rich in small ruminant animals, incense and gum resources. Except for the very small areas under vegetables and fruits, crops in all farms (commercial and smallholders) are grown under rain fed condition. In the area, sesame, coffee, and maize are the most important marketable commodities, and accounted for 90% of the Woreda cultivated area. Both the primary and secondary data were used to collect data. Primary data sources were smallholder farmers and wholesalers from three purposely selected kebeles, collectors, Commission, retailers, processors, and Exporters.

Secondary data sources were Gimbi Woreda Trade and Market Development office and its associated Primary cooperatives, Woreda and Regional Bureaus of agriculture, Woreda office of small scale trade and industry, Custom agency, ECX, CSA and NBE and their different publications, and Ministry of agriculture and rural development. Secondary data was collected also from sources were different and relevant published and unpublished reports, bulletins, and websites were consulted to generate relevant secondary data on sesame seeds supply chain.

For this study, in order to select a representative sample a Two-stage random sampling techniques were implemented. In the first stage, with the consultation of Woreda agricultural experts and development agents, out of 12 kebeles potential sesame producer of Gimbi Woreda 3 sesame producer kebeles were purposively selected based on the level of production. In the second stage, using the list of households in the sampled kebeles, **127** sample farmers were selected randomly at **95**% confidence interval based on the total numbers sesame producer selected from three kebeles using the following formulas.

$$n = \frac{N}{1+N(e)^2} \quad \text{…….. (Yemane, 1967)}$$

$$n = \frac{N}{1+N(e)^2} = \frac{187}{1+187(0.05)^2} = 127 \quad \text{.....1}$$

Where n is the sample size, N is the population size, and e is the level of precision.

In general, using the above sample size and the total number of sesame producers from selected Keble's, the proportion and the number of sample households from three Kebles can be summarized according to the following tables respectively. For this study, data from **17** traders and **22** consumers were also collected. The sites for the trader surveys were market towns in which a good sample of sesame traders existed. The lists of traders including Assemblers, collectors, Commission Agents, Processors, Wholesalers, Retailers and Exporters will be obtained from the respective Woreda Office of Trade and Market Development (OoTMD) can be summarized according to the following tables. Before data collection, the questionnaire was pre-tested on five farmers and three traders to evaluate the appropriateness of the design, clarity and interpretation of the questions, relevance of the questions and time taken for an interview. Hence, appropriate modifications and corrections were made based on the feedback from the pretest on the questionnaire. Data were collected under continuous supervision of the researcher. Purposive sampling was used to select **127** households for interview from three kebeles. Then, both qualitative and quantitative data were collected and used for the study analysis. The questionnaire was cover different topics in order to capture relevant information related to the study objectives. And it was prepared as simple as possible, which was later translated to **Afan Oromo**[1] in order to channel answers by the respondents. Rather the questionnaires were made as comprehensive as possible and correction was made along the way considering its relevance to local conditions from everyday lesson learns while interviewing the farmers.

Descriptive statistics and econometric analysis were used to analyze the data collected from sesame producers, traders and consumers. These methods of data analysis were refer to the use of percentages, means, standard deviations, t-test, $\chi 2$-test, and maps in the process of examining and describing marketing functions, facilities, services, and household characteristics.

Analysis of sesame marketing performance

Marketing margin

Computing the total gross marketing margin (TGMM) is always related to the final price paid by the end buyer and is expressed as percentage (Mendoza, 1995).

$$\text{TGMM} = \frac{\text{Consumer Price} - \text{Producer Price}}{\text{Consumer Price}} \times 100 \quad \text{.....2}$$

Where, TGMM = Total gross marketing margin

It is useful to introduce the idea of 'farmer's portion', or 'producer's gross margin' (GMMp) which is the share of the price paid by the consumer that goes to the producer. The producer's margin is calculated as:

$$\text{GMM}_p = \frac{\text{Consumer Price} - \text{Marketing Gross Margin}}{\text{Consumer Price}} \times 100 \quad \text{.....3}$$

Where, GMMp = the producer's share in consumer price

The net marketing margin (NMM) is the percentage of the final price earned by the intermediaries as their net income after their marketing costs are deducted.

The percentages of net income that can be classified as profit (i.e. return on capital), depends on the extension to such factors as the intermediaries' own (working capital) costs.

$$\text{NMN} = \frac{\text{Gross Margin} - \text{Marketing Costs}}{\text{End Buyer Price}} \times 100 \quad \text{.....4}$$

Where, NMM = Net marketing margin

To find the benefit share of each actor the same concept will be applied with some adjustments. In analyzing margins, first the Total Gross Marketing Margin (TGMM) will be calculated. This is the difference between producer's (farmer's) price and consumer's price (price paid by final consumer) i.e.

TGMM = Consumer's Price – Farmer's Price.....5

Then, marketing margin at a given stage 'i' (GMMi) will be computed as:

$$\text{GMM}_i = \frac{\text{SP}_{i-\text{PP}_i}}{\text{TGMM}} \times 100 \quad \text{.....6}$$

Where, SPi is selling price at ith link and PPi is purchase price at ith link.

Total gross profit margin also will be computed as:

$$\text{TGPM} = \text{TGMM} - \text{TOE} \quad \text{.....7}$$

Where, TGPM is total gross profit margin, TGMM is total gross marketing margin and TOE is total operating expense.

Similar concept of profit margin that deducts operating expense from marketing margin was done by

[1] Local language of Oromo peoples located in Ethiopia. Fhe first largest ethnic society in Ethiopia. Owner of Gada System for the world.

Dawit (2010) and Marshal (2011).
Then profit margin at stage "i" is given as:

$$GPM_i = \frac{GMM_{i-OE_i}}{TG} \times 100 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad 8$$

Where, GPMi =Gross profit margin at ith link
GMMi =Gross marketing margin at ith link
OEi =Operating expense at ith link
TGPM=Total gross profit margin

Market outlet choice model

A multinomial logit (MNL) model was applied to explain inter household variation in the choice of a specific marketing outlet. This study assumes that farmer's decision is generated based on its utility maximization. This implies that each alternative marketing outlet choice entails different private costs and benefits, and hence different utility, to a household decision maker. The analytical model is constructed as follows. Suppose that the utility to a household of alternative *j* is Uij, where j = 0, 1, 2…. From the decision maker's perspective, the best alternative is simply the one that maximizes net private benefit at the margin. In other words, household *i* were choose marketing oulet *j* if and only if Uij > Uik. It is important to note that household's utility cannot be observed in practice. What a researcher observe are the factors influencing the household's utility such as household and personal characteristics and attributes of the choice set experienced by the household. Based on McFadden (1978), a household's utility function from using alternative j can then be expressed as follows:

$$U(\text{Choice of j for household i}) = U_{ij} = V_{ij} + \varepsilon_{ij} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad 10$$

Where,
U_{ij} is the overall utility,
V_{ij} is an indirect utility function and
ε_{ij} is a random error term.
The probability that household i select alternative j was specified as:

$$P_{ij} = \Pr(V_{ij} + \varepsilon_{ij} > V_{ik} + \varepsilon_{ik}) \ldots\ldots \quad 11$$

$$P_{ij} = \Pr(\varepsilon_{ik} < \varepsilon_{ij} + V_{ij} - V_{ik}, \forall \neq j) \ldots\ldots \quad 12$$

Assuming that the error terms are identically and independently distributed with type i extreme value distribution, the probability that a household chooses alternative j were explained by a multinomial logit model (Greene, 2000) as follow:

$$Pu = \frac{\exp(\beta jXtj)}{\sum_{j=0}^{j} \exp(\beta jXtj)} \ldots\ldots\ldots\ldots\ldots\ldots \quad 13$$

Where,
X_j is a vector of household of the ith respondent facing alternative j
β_j is a vector of regression parameter estimates associated with alternative j.

Following equation above, we can adapt the MNL model fitting to this study as follow:

$$P(CHOICE_{ij} = j) = \frac{Exp(\beta_j X_i)}{\sum_{J=1}^{J} Exp(\beta_j X_i)} \ldots\ldots \quad 14$$

Where
i represents i^{th} farm household, and i=1, 2, 3……..127 .
j represents different marketing outlets, j=0 for sale to sale to wholesalers, j=1 for sale to cooperative and j=2 for sale to collectors. P represents the probability of sesame marketing outlet j to be chosen by farm household i; CHOICEij = j means that sesame marketing outlet j is chosen by farm household i;
Xi is independent variables.

The coefficients of explanatory variables on the omitted or base category are assumed to be zero. The probability that a base category were chosen can be calculated as follows:

$$P_{ij} = \frac{1}{1+\sum_{j-1}^{J-1} Exp(\beta jXij)} \ldots\ldots \quad 15$$

The marginal effects of the attributes on probability of choice are determined by differentiating equation

$$\delta_j = \frac{\partial P_j}{\partial X_j} = P_j = P_j\left[\beta_j - \sum_{J=0}^{J} (P_j)(\beta_j)\right] \quad \text{for } J = 1,2,3,\ldots\ldots\ldots.J \ldots\ldots \quad 16$$

Where,
Pj is the probability that farmers choose market outlet j. βj is a vector of regression parameter estimates

associated with alternative j .

In the case of this study, farmers have three market outlets to sell most of their sesame produce, $J = 3$, and the alternatives $j = 1, 2, 3$, represent sale outlets to wholesalers, to cooperatives and to collectors, respectively. The dependent variables (the marketing outlet (CHOICE) chosen) in the analysis are measured by the probability of selling sesames to either of these markets. According to the survey result, three main different marketing outlets were identified. These include sales to wholesalers (3=Wholesaler); sales to collectors (1=Collectors) and sales to retailer (2=cooperatives).

The model predicts the relative probability that a producer would choose one of the three categories based on the nature of the explanatory variables. For this analysis, the market outlet Wholesaler was used as comparison base because this outlet was chosen by the majority of sesame selling farmers in trading their sesames. Econometric analysis of the data was done with Sata 11 software.

It is important to check Multicollinearity problems before running the model. Multicollinearity problem arises due to a linear relationship among explanatory variables; and becomes difficult to identify the separate effect of independent variables on the dependent variable because there exists strong relationship among them (Gujarati, 2003). Variance inflation factors (VIF) technique was employed to detect Multicollinearity in explanatory variable. According to Gujarati (2003) VIF (Xj) can be defined as:

$$\text{VIF}(X_i) = \frac{1}{1-R_{j2}} \quad \text{.....17}$$

Where, Rj is the multiple correlation coefficients between Xj and other explanatory variables. If the value of VIF is 10 and above, the variables are said to be collinear.

MNL model were applicable only if the conditions of Independent Irrelevant Alternative assumption is fulfilled (Green, 2003). IIA implies that the decision between two alternatives is independent from the existence of more alternatives. The validity of IIA assumption was tested using Haussmann's specification test. Following (Green, 2003) the statistics is given as:

$$X^2 = (\hat{\beta}_s - \hat{\beta}_f)'\left[\hat{V}_s - \hat{V}_f\right]^{-1}(\hat{\beta}_s - \hat{\beta}_f) \quad \text{.....18}$$

Where, s indicates estimators based on the restricted (constrained) subsets, f indicates estimators based on the full set of choices (Unconstrained). Therefore, B_s and B_f are the respective coefficients, and V_s and V_f are the respective estimated covariance matrices. If it the out let is greater than two, it will be analyzed according to the assumption 10 described above.

Hypothesis, Variable Selection and Definition

In this study factors influencing sesame supply to the market and market channel choice decisions, the main task is exploring which factors potentially influence and how (the direction of the relationship) these factors are related with the dependent variables.

Dependent variables

Marketing Outlet (MktO): In the analysis it is measured by the probability of selling sesame to either of the markets. The outlet choices might be along farmer's decision involving greater than two alternative markets. It is represented in the model as Y_1 for household who choose to sell sesames mainly to wholesalers, Y_2 for producers that mainly sell their sesame to cooperatives and Y_2 for producers who mainly sell sesame for collectors.

RESULTS AND DISCUSSIONS

This chapter presents the major findings of the study. The first section deals with descriptive and inferential statistics of the sample households. The second section presents marketing channel and performance analysis which includes marketing channels, marketing costs and margins, and benefit shares of agents. The third section presents results of econometric analysis determinants of outlet choice of sesame producers by using MNL model. The fifth section deals with the constraints and opportunities of sesame marketing in the study area. Totally, 127 household heads were considered in this study. Out of these interviewed farmers, 12 (9.4%) of them were female headed and the remaining 115 (90.6%) were male headed households. The overall mean age of the sampled household head is about 43.95 years. Educational status of the household head is also an important element in smallholder economic activities. The survey result revealed that 22.8 percent of the sampled farmers never attended any schooling, while 77.2 percent were literate at different levels of schooling.

Table 2. Demographic and socioeconomic characteristics of samples (categorical variables)

Variables	Items	Frequency	Percent (%)
Sex	Male	115	90.6
	Female	12	9.4
Education	Literate	98	77.2
	Illiterate	29	22.8
Cooperatives	Yes	83	65.4
	No	44	34.6
Credit (Loan)	Yes	64	50.4
	No	63	49.6
Non/off farm income	Yes	90	70.9
	No	37	29.1

Source: Survey result, 2015

The survey data revealed that the major source of income for the sampled farmers is on-farm activities (from both crop and livestock production). Only 29.1% of the respondents reported that, they have access to non-farm activities in the study area and generates some additional income. However, all of these farmers (who have access to non-farm income) reported that, it is not their main source of income.

Majority of sampled farmers (70.9%) reported that crop production is the major and only source of their income. And they reported that sesame, sorghum and maize produce are their main source of income. The average income farmers generated from sale of sesame in 2013/2014 year was about **3260.75** birr. In 2014/2015 production season, the average income from sale of sesame is about **3625.50** birr, with a minimum of **750**birr and a maximum of **6500** birr **(**Appendix table 4**)**. The other possible source of cash for rural household is credit. Accordingly we asked the farmers if they have access to credit from any rural institution. Half the respondents (50.4%) replied that they have access to credit. The remaining 49.6% answered they have no access to any credit. According to this survey result about 83 (65.4%) of the sampled farmers are the members of cooperatives, while 44 (34.6%) of the respondents have not been a member of any cooperatives. The average years of farming experience related to sesame production was 9.95 years in Gimbi Woreda. The average family size of the sample farmers during the survey period was 6.5 persons, with maximum and minimum family size of 11 and 2 persons, respectively.

Table 3. Demographic and socioeconomic characteristics of samples (continuous variables)

	N=127	
Variables	**Mean**	**Standard Deviations**
Age	**43.95**	**9.95**
Family Size	**6.5**	**1.79**
Experience	**9.95**	**1.79**

Source: Own computation from survey result, 2015

Land ownership status of sampled farmers

Survey result indicates that about 90.5% of respondents own land. That means, only 9.5% of sampled farmers did not posses their own land. The farm size of sampled farmers varies from 1 to 10 hectares and the average farm size for these sampled farmers is found to be 3.61 hectare.

Table 4: Land ownership of the respondents

Land status	Mean	Standard Deviations	Minimum	Maximum
Land holding size (ha)	3.61	1.76	1	10
Land allocated for sesame (ha)	2.45	1.33	0.5	8
Cultivated area (ha)	1.54	1.01	0.25	8

Source: survey result, 2015

As indicated in Table 4, 95.5% of farmers who have participated in the production of sesame in 2014/2015 production season cultivated on their own land while the remaining 4.5% of them used rented land in this survey year. The minimum land allocated for sesame and cultivated land under sesame is found to be 0.5 and 0.25 hectare respectively while the maximum is 8 hectare for both land allocated and cultivated area. And the average cultivated land under sesame in this survey year is about 1.54 hectare.

Sesame productivity

The average sesame yield is estimated to be **7.07** qt/ha with significant variability among the different PKA in the Woreda **(Table 5)**. The yield result obtained from the study is high as compared to Kindie (2007) and CSA

(2005) but it is low according to the findings of different surveys for North Gondar 7.39 qt/ha by Demelash, 2004).

Table 5. Table 14 Average yield of sesame, 2015

Variable	Mean	Standard Deviations	Minimum	Maximum
Yield	7.07	5.14	1.00	32.00

Source: Own survey, 2015, Figures in parenthesis is standard deviations.

All sesame producers in Gimbi Woreda derived the biggest share of their income from sesame production. Of the sampled farmers, 97.5%, 73%, and 72% were engaged in sesame, sorghum and maize production respectively (Appendix table 4**)**. The average annual income of households was generated 3625.50; 1525 and 1380 Birr/household, from sesame, sorghum and sesame in that order.

Producer's characteristics by the level of market supply

Sesame producers sell different amount of sesame in the market depending on different demographic and socioeconomic characteristics of the household. In average sesame producers market supply was 6.64 quintals of sesame in 2014/15 production season. Here, producers were divided into two according to their level of market supply by using the average market supply as reference. The study shows that majority of the sesame producers' market supply were below the average supply of the sample households' i.e. **87** households supply below the average from 127 sesame producers.

Tables 5 and 6 present demographic and socio-economic characteristics of sample respondents across the level of market supply. In addition, the level of sesame production and access to market information has significance difference among those sesame suppliers below the average and above the average at less than 1% significant level. This implies that households who produce large quantity of sesame sell large quantity than households who produce low quantity. Therefore, improving production and productivity of farmers is crucial to achieve the objective of commercialization.

Table 6. Statistical test of continuous variables by the level of market supply

Variables	Total Households(127)				t-test
	Below mean (N=88)		**Above Mean (N=39)**		
	Mean	**SD**	**Mean**	**SD**	
Age	43.66	10.60	44.56	8.57	-.465*
Family	6.08	1.87	6.21	1.61	-0.36
Land size	2.96	0.78	5.08	2.37	-7.53***
DMarket	22.21	10.08	27.38	10.54	-2.62***
QProdn	4.64	1.59	12.56	6.08	-11.35***
SFExpriance	6.49	2.12	6.12	2.05	0.90*

Note: *** and * are statistically significant at 1% and 10% probability level, respectively
Source: Own computation from survey result, 2015

Table 7. Statistical test of dummy variables by the level market supply

Variables	Items	**Total Household (127)**			
		Below mean (N= 88)		**Above Mean (N= 39)**	
		N	**% (Percent)**	**N**	**% (Percent)**
Sex	Male	79	89.77	36	92.31
	Female	9	10.23	3	7.69
HEducation	Literate	67	76.14	31	79.49
	Illiterate	21	23.86	8	20.51
Credit	Yes	51	57.95	13	33.33
	No	37	42.05	26	66.67
MInformation	Yes	69	78.41	37	94.87
	No	19	21.59	2	5.13
AExtentions	Yes	48	54.55	22	56.41
	No	40	45.45	17	43.59

Source: Own computation from survey result, 2015

Producers' characteristics by marketing outlets

In this study, three major sesame market outlets were identified as alternatives to farmers to sell majority of their sesame products. These were wholesalers which accounts for 34.64% of total sells followed by, Cooperatives

(33.86%) and collectors (31.50%). Although the role of agricultural cooperatives in smallholder farmers marketing is recognized as vital, no single household reported cooperatives as alternative market outlet in their sesame marketing. This should be seen as serious policy concern for the government and other relevant stakeholders in this sector. Tables 7 and 8 present demographic characteristics of sample respondents across marketing outlets. The study indicated that the majority farmers in Gimbi Woreda sales their sesame to wholesalers while majority of illiterate households are sell their products to the collectors around the villages specially in Abba Sena kebles.

Table 8. Producers by demographic characteristics across marketing outlets

Variables	Wholesaler (N=44)		Cooperative (N= 43)		Collector (N= 40)		
	Mean	SD	Mean	SD	Mean	SD	F-test
Age	44.38	10.78	46.21	10.59	41.05	7.51	0.093*
Land	3.01	1.49	2.31	1.33	2.00	0.86	0.038
DMkt	23.25	11.22	25.74	10.62	22.12	9.26	0.803
Price	31.93	4.89	30.53	4.67	27.80	4.61	0.053

Note: * are statistically significant at 10% probability level.
Source: Own computation from survey result, 2015

Table 9. Percentage of producers by demographic characteristics across marketing outlets

Variables	Items	Wholesaler (N= 44)		Cooperative (N= 43)		Collector (N= 40)		Total (N= 127)	
		N	%	N	%	N	%	N	%
Sex	Male	42	36.52	41	35.65	32	27.83	115	90.55
	Female	2	16.67	2	16.67	8	66.67	12	9.45
HEduc	Literate	35	35.71	35	35.71	28	28.57	98	77.17
	Illiterate	9	31.03	8	27.59	12	41.38	29	22.83
OTran	Yes	38	43.69	34	39.08	15	17.24	87	68.50
	No	6	15	9	22.5	25	62.5	40	31.50
MCoop	Yes	26	31.32	31	37.35	15	18.07	83	65.35
	No	18	40.90	12	27.27	25	56.82	44	34.65

Source: Own computation from survey result, 2015

Marketing Channels and Performance Analysis

Marketing channels

A marketing channel is a business structure of interdependent organizations that reach 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 the goods and services from their origin (producer) to the final destination (consumer).

The chain connecting both producers and exporters found long and complex. 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. The magnitude of these channel participants measured based on 2014/15 business transaction. During the 2015 production season the total sesame production in the Woreda was estimated to be 12520 quintals. As per the findings of the study, the marketed surplus of sesame which would flow to the market through channel members was estimated 10521 quintals. Hence, the total Woreda marketed surplus of sesame seeds flow at each channel member was estimated by multiplying whole marketed surplus by their respective share in the channel. The shares are quantified based on the reports from the survey participants.

Sesame marketing channel in Gimbi Woreda

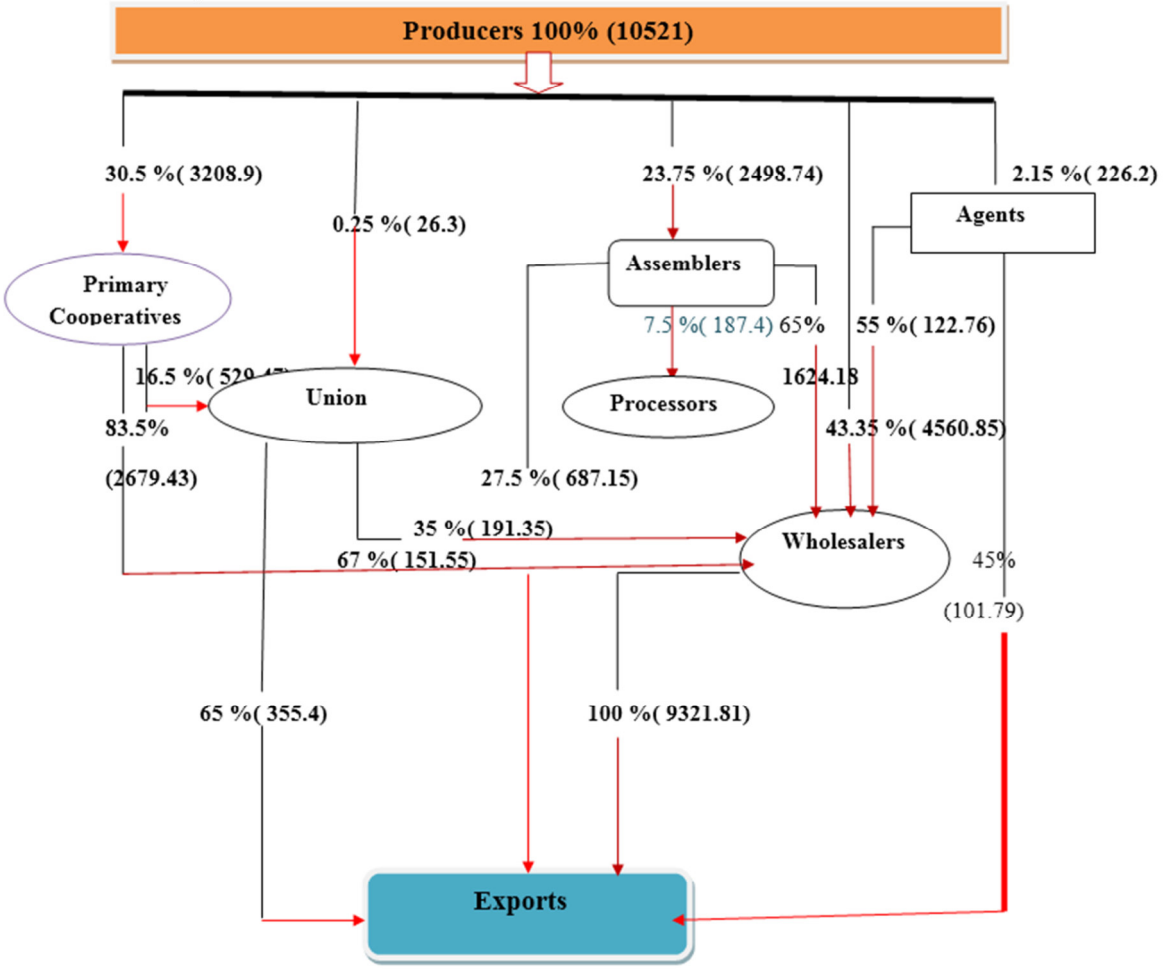

Figure: 3 Sesame Market Channels, 2015

Source: Survey result, 2015

The identified market channels depicted in above figure 3 are:

1. Producer → Primary Cooperatives → Cooperative Union → Wholesaler → Exporter
2. Producer → Primary Cooperative → Wholesaler → Exporter
3. Producer → Union → wholesaler → Exporter
4. Producer → Union → Exporter
5. Producer → Assembler → Processor
6. Producer → Assembler → Wholesaler → Exporter
7. Producer → Assembler → Exporter
8. **Producer → Wholesaler → Exporter**
9. Producers → Agents → Wholesalers → Exporters
10. Producers → Agents → Exporter

The most important channels in the sesame marketing chain are those that move from farmers to assemblers, wholesalers and through primary cooperatives.

Performance of sesame market

The performance of sesame market was evaluated by considering associated costs, returns and marketing margins. The methods employed for analysis of performance were channel comparison and marketing margin. The analysis of marketing channels was intended to provide a systematic knowledge of the flow of goods and

services from its origin of production to final destination (ultimate consumers). The estimated volume of production of sesame was about 12520 quintals, from which about 10521 qts of sesame were sold.

The distribution of costs and gross income at different levels is important in the business of sesame. The marketing cost of the sesame mainly involves the cost of pre-harvest and post-harvest activities incurred before reaching the consumer. This includes cost of Land clearing and preparation, Plowing, Inputs/seed, chemicals, fertilizer/, Seeding, Weeding, Harvesting, Threshing, Transport from farm to home, Packing materials, loading and Unloading and tax costs. Generally, these components constitute a large share in the total margin between the final retailer price and the cost of production. The margin calculation is done to show the distribution throughout the various actors as sesame move from production to collectors, wholesalers, retail markets, and finally to consumers.

Marketing margin can be used to measure the share of the final selling price that is captured by a particular agent in the value chain. The relative size of various market participants' gross margins can indicate where in the marketing chain value is added and/or profits are made. In order to calculate the marketing margin of an agent, the average price of sesame for that particular agent was taken. For instance, the buying price of consumers was obtained by taking the average purchasing price of final price. In order to measure the market share of each agent, the marketing channel where all agents have participated was selected. Marketing margins, associated costs and benefit share of value chain actors and marketing margins through different main channels was presented bellow.

Marketing margins

Based on the reported prices by the different market participants, summarized in **(Table 14**), the different indicators of marketing margins for sesame is calculated and the estimates are:

TGMM (complete distribution channel) =7.14%
GMM (wholesalers) = 13.69%
GMM (exporters) = 17.41%
GMMp (producers participation) = 100% - 7.14% = 92.85%,

Table 14.Price of sesame at different market level, 2005

Marketing Channel Participant	Selling Price(birr/qt	% share	Net Marketing Margin in%
Producer	3100	92.85	66.72
Wholesaler	3205	3.14	0.38
Exporter	3338.55	4.01	0.18

Source: Survey Result, 2015

Determinants of Sesame market outlet choices

The MNL model with 3 choices was tested for the independence of irrelevant alternatives (IIA) assumption based on Houseman test (Appendix Table 3). The possible Multicollinearity problems are also corrected. There is no Multicollinearity problem because the result of VIF is less than 10 for all variables (Appendix Table 2).

The coefficients from multinomial logit regression on the existing alternative marketing outlets in the sample and the marginal effects (Table 16). The result showed that some of the variables were significant at both market outlets while some others were significant in one marketing outlet but not in the other outlet. Compared to the base category (wholesalers) access to land, Family size, Members of cooperative, Credit and Price determined the selection of collector as market options while the variables land and Quantity produced affected the choice of cooperative outlet.

The alternative "wholesaler" was used as a base category (bench mark alternative). This implies that the discussion of the results focuses on the impact of the explanatory variables on a use of collectors and exporter category relative to use of wholesalers (the base category).

Table 16.Coefficients of Multinomial Logit Model for the choice of marketing outlets

Variables	collectors			cooperatives		
	Coef.	Robust Std.Err	z	Coef.	Robust Std.Err	z
SEX	-0.528	1.415	-0.37	-0.198	(1.553)	-0.13
AGE	-0.724	0.497	-1.46	0.203	0.416	0.49
HEduc	-0.852	0.837	-1.02	-0.166	0.756	-0.22
MFamily	0.504**	0.212	2.38	0.121	0.173	0.70
Land	-3.368***	1.269	-2.65	-2.720***	1.041	-2.61
MCoop	1.784*	0.935	1.91	0.937	0.762	1.23
Credit	-1.756*	0.927	-1.89	-0.204	0.745	-0.27
NOFI	0.909	0.743	1.22	0.246	0.607	0.41
DMarket	0.0229	0.0330	0.69	0.0361	0.0273	1.32
QPron	-0.392	1.797	-0.22	-2.589**	1.041	-2.49
Price	-5.906**	2.330	-2.53	-3.215	1.983	-1.62
OTran	-1.297*	0.695	-1.87	0.017	0.832	0.02
MInformation	0.296	1.156	0.26	1.041	1.263	0.82
AExtention	-0.205	0.647	-0.32	0.0634	0.581	0.11
_cons	27.714	9.180	3.02	14.026	7.907	1.77

Wholesale outlet is base outcome. dy/dx is marginal effect. N=127, LR χ^2 (32) = 92.99***, Pseudo R^2=0. 336. Log likelihood = -91.76. ***, **and * are statistically significant at 1%, 5% and 10%, respectively.

Source: Own computation from survey result, 2015

Table 17 below presents the results of the estimated marginal effects are discussed in terms of the significance and signs on the parameters. The positive estimated coefficients of a variable indicates that the probability of the producers being in either supplying to collector market outlet or exporter market outlet relative to supplying to wholesaler market outlet increases as these explanatory variables increase. The implication is that the probability of the producers to be on these outcomes is greater than the probability of being wholesaler outlet (the base category). The negative and significant parameter indicates the probability of using wholesale outlet is higher than the probability of being in the two alternatives. Estimates not significantly different from zero indicate that the explanatory variable concerned does not affect the probability of the producers decision to use wholesaler outlet category than in the other two categories. The result of the MNL and marginal effects and their possible explanations are presented below.

Table 17.Marginal effects of Multinomial Logit Model for the choice of marketing outlets

Variables	collectors			cooperatives		
	dy/dx	Robust Std.Err	z	dy/dx	Robust Std.Err	z
SEX	0.590	0.835	-0.37	0.820	1.274	-0.13
AGE	0.485	0.241	-1.46	1.224	0.509	0.49
HEduc	0.426	0.357	-1.02	0.847	0.641	-0.22
MFamily	0.165**	0.350	2.38	1.128	0.195	0.70
Land	0.034***	0.044	-2.65	0.066***	0.068	-2.61
MCoop	5.953*	5.564	1.91	2.551	1.944	1.23
Credit	0.173	0.160	-1.89	0.815	0.608	-0.27
NOFI	2.483	1.845	1.22	1.279	0.776	0.41
DMarket	1.023	0.034	0.69	1.037	0.028	1.32
QPron	0.676	1.214	-0.22	0.075**	0.078	-2.49
Price	0.003**	0.006	-2.53	0.040	0.079	-1.62
OTran	-0.180*	0.894	-1.45	0.017	0.783	0.02
MInformation	1.344	1.554	0.26	2.833	3.579	0.82
AExtention	0.815	0.527	-0.32	1.065	0.619	0.11

Wholesale outlet is base outcome. dy/dx is marginal effect. N=127, LR χ^2 (32) = 92.99***, Pseudo R^2=0. 336. Log likelihood = -91.76. ***, **and * are statistically significant at 1%, 5% and 10%, respectively.

Source: Own computation from survey result, 2015

Land Size (Land): The variable was negatively and significantly associated with use of collector and cooperative outlets at less than 5% significance level. Other things being equal, the likelihood of using collector and cooperative outlet would be lower by 3.4% and 6.6%, respectively for households land holding relative to using wholesale outlet. Farmer's who had cultivated land size increases; the ability of farmers to produce more sesame produce is high.

Family Size (Family): Family size determines farm household's market outlet choice decision. As hypothesized the coefficients for this variable is positively and significantly related with collector outlets at **10%** significance level. This result indicated that those households who have high members of family size were the probability of choosing collector outlet increased by **16.5%** compared to base category. Farmers who have better family size chooses wholesaler market outlet relative to collector outlet.

Market price of sesame (MRKTPRICE): It was negatively and significant related with collector outlet choice at less than 5% significance level. The result also confirmed that, if the household head is earned income from sesame sale the probability of choice of retail outlet decreased by 0.3% relative to wholesaler outlet.

Membership to any Cooperatives (MCoop): Membership in any cooperative determines farm household's market outlet choice decision. As hypothesized the coefficients for this variable is positively and significantly related with collector outlets at 10% significance level. This result indicated that those households who were members of cooperatives the probability of choosing collector outlet increased by 93.7% compared to base category. This is mostly related to the reality that those multipurpose cooperatives passing down production and market information they accessed directly or indirectly to their members.

Credit Access (Credit): It was negatively and significant related with retail outlet choice at less than 10% significance level. The result also confirmed that, if the household head had access to credit the probability of choice of collector outlet decreased by 17.3% relative to wholesaler outlet. Credit is related with the wholesale market outlet because sesame requires high capital throughout its production processes; farmers who had more access to credit service produce market-oriented cash crops like sesame to increases and strengthen the linkage with wholesalers.

Owning Transport Facility (OTran): This variable determines farm household's market outlet choice decision. As hypothesized the coefficients for this variable is negatively and significantly related with collector outlets at 10% significance level. Ownership of transport facilities by farmers decreased the probability of choosing collectors outlet by 18% relative to wholesaler outlet. This might be due to the reason that, farmers who have transport facility could supply their product to local market center and sell to wholesalers directly by getting better price which might go to the collectors. This shows that the availability of transportation facilities helps reduce long market distance constraint, offering greater depth in marketing choices.

Quantity of sesame produced (QPron): It was negatively and significant related with cooperative outlet choice at less than 5% significance level. The result also confirmed that, if the household head is produced more quantity the probability of choice of cooperative outlet increased by 7.5% relative to wholesaler outlet. Quantity of sesame produced is related with the wholesale market outlet because as the quantity level increases farmers' ability to post harvests handling activities increases and strengthen the linkage with wholesalers.

Constraints and Opportunities in Sesame Marketing

Marketing constraints

Almost all sesame producer farmers responded that there were market problems in their area (Table 18). The major sesame marketing constraints are related with non-availability of market/limited access to market, low price of product, and lack of storage, lack of transport, low quality product demand and Lack of Packaging material.

Again all traders engage in sesame value chain confirmed that there is marketing problems in sesame value chain. The major sesame marketing constraints mentioned by traders are related with the limited power of price setting, the problem of supply shortage, lack of storage facility, problem in information flow, low product quality and lack of support from concerned bodies (Table 18).

Problems related to transport

Out of the major sesame producing areas, Gimbi Woreda is relatively good in terms of road condition, availability and transport rates. However, these factors are not evenly distributed to all PKAs and have their own problems. About **15 percent** of the assemblers reported that they lack transport for marketing sesame. Many are constrained with lack of all-weather access roads to and fro farming areas that made difficult transporting outputs soon after threshed. The rate of transportation was so high for localities away from the main road. This high transportation cost had implications on the price paid to producers. Beside, at local level there existed seasonal shortage of transport vehicles consequently created high transportation costs.

Table 18. Major marketing constraints of sesame producers

Major Problem	Total Household (127)	
	Number	Percent (%)
Low price of products	37	29.1
Lack of storage	26	20.5
Low quality of product	24	18.9
Lack of transport	19	15
Lack of Packaging material	31	24.4
Lack of finance	63	49.6
Lack of Extension service	57	44.9

Source: Own computation from survey result, 2015

Low selling price of sesame seed: sesame production is associated with high cost of production. However, sells price of seed sesame is reported as low. The survey result indicated that 29.1 percent of the producers mentioned low sells price of sesame as one of the major problems in sesame marketing.

Problems related to access to service

Though the study finding indicated that 50.4% of producers had access to credit at an interest rate of 25 percent and the major source of credit was Oromia Credit and saving (Micro finance). Majority of respondents cannot get maximum birr from micro finance because of interest rates. Credit facilities are lacking because of the absence of financial institutions in the high potential areas. Hence, shortage of finance was explained as the critical problem for both traders and producers. The high percentage share and the incredibly high interest rate of usurers in credit provision activities can be a simple justification of the existence of finance shortage and absence of strong development oriented financial institutions. Even though considerable proportion of sampled farmers (83.5%) had access to market information, the quality of market information and timeliness was so uncertain. The information was delivered untimely and was nor reliable. Besides, it was not accessed equally among the channel members.

Historically, extension services can contribute to increase production and productivity and thus increase marketed surplus. In this study we have learnt that only 55.1% of the respondents had access to extension services. The contacts they made with development agents were not regular and consistent. The study result indicated that 44.9% of the respondents reported untimely contact with extension agents, and many of the respondents also explained irregular visits of extension personnel. Besides, from the informal discussion with producers it is learnt that extension agents and sesame producers have equal knowledge about the existing farming practices.

The assignment of extension workers to other pressing duties (settlement etc,) and loose follow up by their respective supervisors have contributed for the weak performance of extension services in the Woreda. Hence; modern extension service that could bring a change must be in place.

Storage: About 20.5 percent of the farmers considered unavailability of storage facility as a problem, 36 percent indicated it is costly for them to rent storage and 15.5 percent of them reported loss of products at storage as problems. 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.

Packaging material: the availability, cost and quality of packaging materials were serious issues considered by farmers during the survey. About 24.4 percent of the farmers mentioned unavailability of packaging material (sisal sack), 56.5 percent of them reported high cost of packaging material (sisal sack), 19.1 percent of them mentioned poor quality of packaging materials (sisal as well as polythin sacks) as their major problems on packaging materials issue.

Marketing opportunities

1. Availability of vast potential area for Sesame production: Gimbi District is a potential area for sesame production. However, the potential has not yet been utilized due to production as well as marketing constraints.

2. Availability of labor: sesame production is labor-intensive and there is available labor force in the country. From this labor force, some are migrating to Gimbi District in search of job opportunity. Therefore, it is possible to use this labor as major input in the production of sesame. It is possible to make labor an affordable input by increasing the productivity of sesame.

3. Access to foreign markets: 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. Ethiopia has access to a number of countries to export sesame products. 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 (World Bank, 2002).

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.

The increasing world demand of sesame by 5% yearly (World bank, 2002) and special offer of free import tariffs by EU countries market made the Ethiopian sesame fortunate and opportunist.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary and Conclusion

This study was aimed at analyzing marketing chain of sesame in Gimbi Woreda of Oromia region. The specific objectives of the study include identifying challenges of sesame marketing, marketing channels and factors affecting outlet choice decisions of farm households. The data were generated from both primary and secondary sources. The primary data were collected from individual interview using pre-tested semi-structured questionnaire and checklist. The primary data for this study were collected from 127 randomly selected households from Gimbi Woreda, 17 traders and from 22 consumers. The analysis was made using descriptive statistics and econometric model using SPSS and STATA software. All the sampled households were sesame producers. Market outlet choice decision multinomial logit model (MNL) was applied to analyze factors affecting market outlet choice of farmers for selling sesame in the study areas. Constraints hindering the development of sesame marketing are found in all the stages of the chain. At the farm-level, sesame producers are faced with lack of improved input supply and high postharvest losses. On marketing side, limited access to market, low price of product, lack of storage, lack of transport, and low quality of product are the major problems.

Sesame producers in the study areas supply their produce through different market outlets. Farmers were classified into three categories according to their outlet choice decision: those who have supplied most of their produce to wholesalers (34.6%); those who have supplied most of their produce to collectors (31.5%); and those farmers who have supplied most of their produce to cooperatives (33.9%). The multinomial logit model was run to identify factors determining farmers' market outlet choice decision. The model results indicated that the probability to choose the collector outlet was significantly affected by Land, Market price of sesame, Membership to any Cooperatives, Credit Access, and Owning Transport Facility compared to wholesale outlet. Similarly, the probability of choosing cooperative marketing outlet was affected by land and Quantity of sesame produced compared to wholesale outlet. Therefore, availability of credit service can help to facilitate farmers to participate in its production and to produce a significant amount. Broadening and expanding sources of such institutional service is another possible recommendation from the present study, if active participation of smallholder farmers is required in sesame production and marketing in the study area.

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