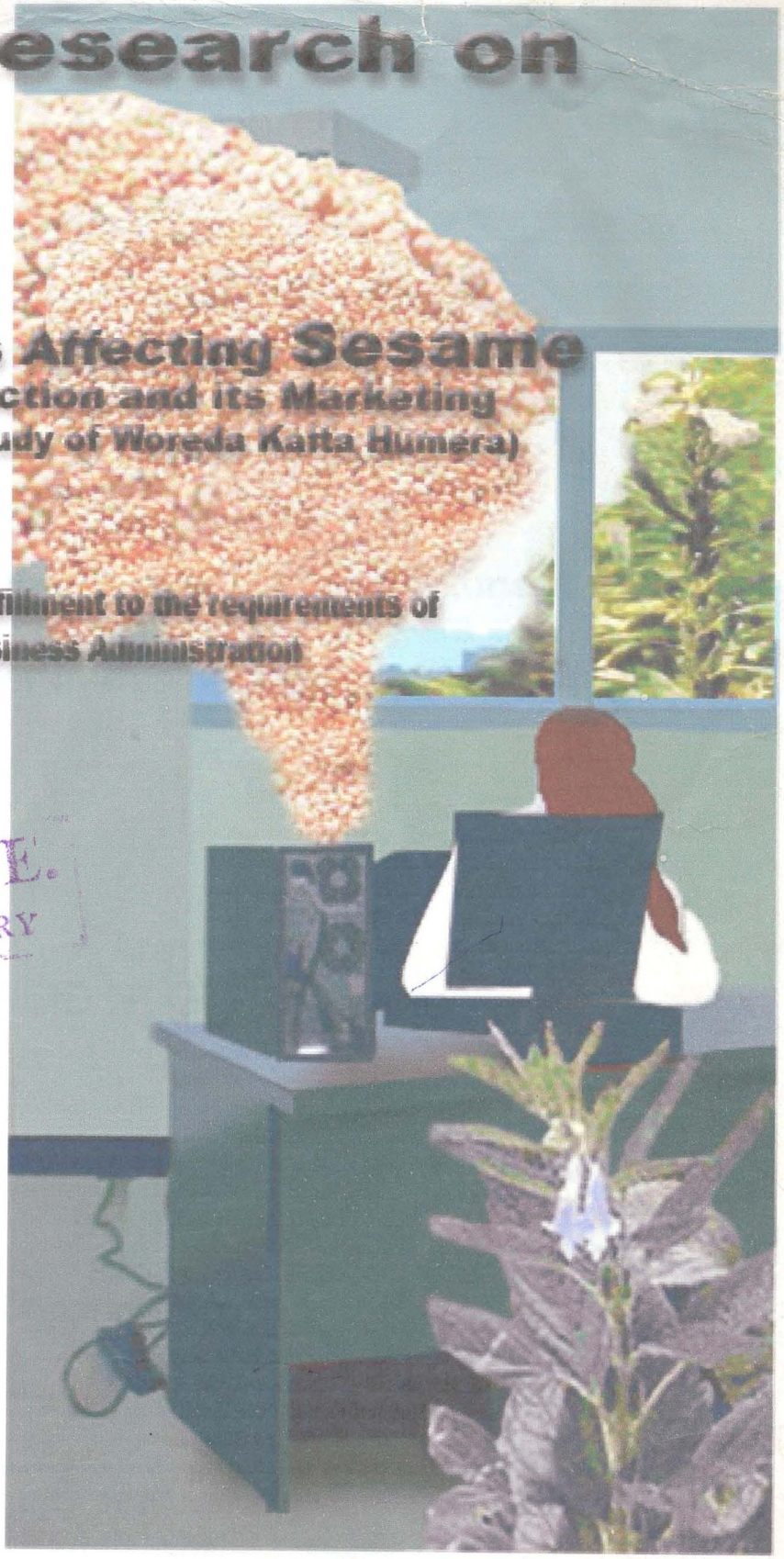
A Research on



Factors Affecting Sesame Production and its Marketing

(Case study of Woreda Kafta Humera)

Submitted in partial fulfillment to the requirements of
Master in Business Administration

By
Araya Ghidey
I.D. No: GSR/7557/97

Supervisor
Dr Rakesh Belwal
Assistant Professor,
Department of Management

Faculty of Business &Economics Addis Ababa University
March 2007

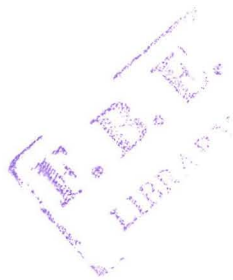
A Research on

Factors Affecting Sesame Production and its Marketing:

Case study of Woreda Kafta Humera

A Project submitted in partial fulfillment to the requirements of Master in Business Administration

By
Araya Ghidey
ID Nº GSR/7557/97



Supervisor
Dr. Rakesh Belwal
Assistant Professor,
Department of Management

Faculty of Business & Economics
Addis Ababa University
March 2007

ADDIS ABABA UNIVERSITY
RESEARCH AND GRADUATE PROGRAMS OFFICE
FACULTY OF BUSINESS AND ECONOMICS
FBE

Factors Affecting Sesame Production and its Marketing
The Case of Wereda Kafta Humera

By Araya Ghidey

Approved by Board of Examiners
Signature

---------- ----------

---------- ----------

---------- ----------

---------- ----------

Dr. Rakesh Belwal
Assistant Professor,
Faculty of Business & Economics
Addis Ababa University

CERTIFICATE

This is to certify that Mr. **ARAYA GHIDEY** has worked on project entitled "**Factors Affecting Sesame Production and its Marketing**" Case of Wereda Kafta Humera, under my supervision. To my belief, the work undertaken by Mr. Ghidey is original in nature and is suitable for submission in partial fulfillment of the requirements for the Degree of **Master of Business Administration.**

Dr. Rakesh Belwal _____ **Date:** 22.03.07

DECLARATION

I, **ARAYA GHIDEY**, declare that the study entitled **"Factors Affecting Sesame Production and its Marketing" Case of Wereda Kafta Humera**, undertaken by me in partial fulfillment of the requirements for the Degree of Master of Business Administration, is my original work. The study has not been submitted for gaining any Degree or Diploma in any college or university.

Araya Ghidey _____ **Date: March 22, 2007**

Acknowledgement

I would like to thank and express my gratitude to all who gave me the possibility to complete this project. I want to thank the Organizations (Cooperatives of Kebelle, Union of the cooperatives, Investors Association (growers), exporters) as well as government offices in the Wereda Kafta Humera to do the necessary survey for the project work and to use the areas data.

I have further more to thank for those who review my work and for their comments and for large number of excellent suggestions during collection of data, focused group discussions and in the process of writing of the project, grammar correcting both and offering valuable hints and suggestions for improvement.

I am deeply indebted to my advisor/ supervisor Assistant Professor Dr. Rakesh Belwal from Addis Ababa University whose help, stimulating suggestions and encouragement helped me in all the time of research for and writing of this project.

I want to thank my friends who encouraged me to go ahead with my project to finish on time for their stimulating support. Especially, I would like to give my special thanks to my wife Almaz whose patient love enabled me to complete this work.

CONTENTS PAGES

List of tables

Pages

List of Figures

Pages

List of Annexes

Pages

List of Acronyms

ADD – Agriculture Development Department

ARDO of WKH - Agriculture and Rural Development Office of Wereda Kafta Humera

ASP – Agricultual Statistics of Pakistan

BoPED – Bureau of Planning and Economic Development

CBE – Commercial Bank of Ethiopia

CSA – Central Statistic Authority

EC – Ethiopian Calendar

EEPA – Ethiopian Export Promotion Authority

EEPA PD & MRD– Ethiopian Export Promotion Agency Product Development and Marketing Research Directorate

EFY – Ethiopian Fiscal Year

EPA – Ethiopian Privatization Agency

FAOSTAT - Food and Agriculture Organization Statistics

FDRE – Federal Democratic Republic of Ethiopia

HAM Plc – Hiwet Agricultural Mechanization Plc

NBE – National Bank of Ethiopia

NFIU – National Fertilizer Input Unit

MoARD – Ministry of Agriculture and Rural Development

SMEs - Small and Medium-sized Enterprises

UNSD – United Nations Statistics Division

U.S – United States

USDA – United State Department of Agriculture

WARC –Werer Agricultural Research Center

WB – World Bank

WKH – Wereda Kafta Humera

Abstract

The general objective of this study is to show the extent of the factors affecting sesame production and its marketing. Sesame is a broadleaf plant that grows about 5 to 6 feet tall and is a long season crop, taking about 90 to 150 days from planting to maturity. Sesame seed quality is measured in terms of its color, cleanness, and moisture and free fatty acid content.

The Ethiopian whitish Humera type is known for its taste (sweet) in the world market. It is a major commodity in Ethiopia. Currently, the small scale and commercial production systems exist in Ethiopia. Ethiopia is a net sesame exporting nation although in its raw form.

Effective marketing and distribution systems are essential for agricultural growth. The knowledge of marketing of Sesame is limited in Ethiopia and thus the government has established a web site for the exporters of pulses and oil seeds, trade fairs were repeatedly organized and trade delegates have made tours. Exporters have developed informal mechanisms that allow them to link farmers to their businesses in order to ensure permanent supply.

As far as credit is concerned the credit that was used to be given by the Ethiopian commercial bank and others were low. The government of Ethiopia has put in place a number of export incentives to an enable environment for exporters. The plan to maintaining and make the roads standard can be mentioned as an example. However, the empirical results support the proposed that sesame production and its marketing are still significantly affected by different inputs. As a result, the production and marketing became inefficient in yield and its price.

In conclusion if sustaining sesame farming is required; marketing programs are to improve; quality and surplus production of sesame has to improve then, farmers must have access to information and export network abroad and obtain the necessary and appropriate assistance to develop their farming management. Overcoming the losses and threats requires developing more responsive policies and regulatory institutions for adapting the methods that enhance their adoption and production to maximize market opportunities. Creating linkage between the production sector and the export sector and improve storage facilities are an important factor to consider creating export network abroad.

A better approach will be to support the initiative of the private sector to reorganize the plantation system into the contract farming system in which an agribusiness enterprise manages the processing/marketing process and contracts with small growers on the assured supply of farm-produced raw materials.

Chapter I

1. Introduction

1.1 Overview of the study

Progress in agriculture is one of the conditions for economic development, since agriculture contributes in providing different types of raw materials for industrial production which in turn helps the development of that sector. Agriculture at present is of vital importance in Ethiopia. It contributes to about 50% of the Gross Domestic Product. It is the major source of employment involving about 85% of the active population, and is a major source of foreign exchange earnings (about 90%).

The main feature of the agriculture sector in Ethiopia is the low level of productivity, particularly of the predominant subsistence/traditional farming sector. Agriculture is heavily dependent on the quality of the natural resources endowment. Environmental degradation impact on soil fertility is a serious problem in Ethiopia, which ultimately decreases the amount of available land for food production. Recurrent droughts and desertification are clear examples of consequences of environmental degradation and are becoming major problems (Customs Authority, 2001).

Sesame is a long season crop, taking about 90 to 150 days from planting to maturity. If planted in early June, leaf drop will usually occur in early October, and the stem will begin drying down. The sesame plants stand upright reasonably well with strong stems, but strong winds can force into a leaning position late in the season (ASP, 1988-89).

Sesame seeds have approximately 50% oil and 25% protein contents and are used in baking, candy making, and other food industries. Oil from the seed is used in cooking and salad oils and margarine. The oil can be used in the manufacture of soaps, paints, perfumes, solvent, and it is also used as a synergist for pyrethrum insecticides. Sesame meal, left after the oil is pressed from the seed, is an excellent high-protein feed for poultry and livestock. In addition to these, it is used to redress sufferings of the liver and kidneys. The seeds are prescribed for problems such as dizziness, and blurred vision. Owing to their lubricating effect within the digestive tract, the seeds are also considered

a remedy for constipation. Sesame seed oil benefits the skin and is used as a base for cosmetics. It is used in various traditions to treat coughs and asthma (FAO, 2005).

Sesame oil carries a premium relative to other cooking oils and is considered more stable than most vegetable oils due to antioxidants in the oil. Although at this time sesame oil is used almost exclusively for human food consumption, it has potential for a variety of industrial uses, as most vegetable oils do (Dan Burden, 2005).

Domestically, sesame is a relatively high-risk crop. Sesame yields are usually lower than other crops and it is necessary to have higher prices than other crops in order to grow the production. Though there is an advantage to sesame seed market which is strong and exported mainly to Arabic countries, Middle East and Japan, it is advisable to identify and guarantee a market before planting the seed. The Sesame produced in Humera area is highly quoted than other areas.

The types of sesame produced in Ethiopia is Humera type (whitish), reddish and mixed sesame in the area of Awi, Metema, and Wellega (Ander Gutin). The Humera type whitish sesame is known for its organic nature and it's less bitter. Particular attention is needed to pay attention in protecting its organic nature and at the same time ensuring market access. There could be factors affecting the Ethiopian sesame production in terms of the export market to the end user in maximizing its return. Among the problems are the skill needed in agricultural production and the poor management organization and the un-integrated marketing approach both domestically and foreign market.

Due to the sesame product importance as a major export commodity in Ethiopia, the area coverage and production has been increasing year to year mainly in the last six consecutive years (2000-2006). In 2001/02 the total sesame planted area was estimated to be 171,417 hectares with production of 65,207 tons mainly from the three areas. In 2003 national sesame plantation area increased by 10 % to 189,965 hectares of which 81,000 hectares were noted to be commercial plantings in Western Tigray. Generally both the small scale and commercial production systems exist in Ethiopia. Most of the sesame farms do not use chemical fertilizers and other chemical inputs hence the potential to sell under organic labeling by acquiring appropriate certification is

enormous. It is very drought-tolerant, due in part to an extensive root system. However, it requires adequate moisture for germination and early growth and a minimum rainfall of 20 to 26 in. per season is necessary for reasonable yields (see http://... drought).

To adapt to these changing circumstances, the cash crop sesame's production needs to be more accessible, affordable, acceptable and sustainable. The sesame cash crop's production varies greatly across countries in the World with an overall decline in quality in recent years. Improving this situation will require targeting public-sector activities to essential public-good functions and allowing the private sector to play a greater role but more carefully evaluated in delivery. In improving its production and its delivery, the public sector needs to be more proactive in enhancing poverty alleviation. Therefore, if the factors affecting production and marketing are removed or minimized and necessary inputs are used obviously, the production of such a product will increase.

Currently the government is working to change that reality. The development policies of the county are strongly linked with the agriculture sector. The government has put clearly that the driving force for the country's economic transformation is agriculture. A number of programs and packages have been put in place to help the development of agriculture.

One of the prior areas that agriculture development policy focused is introducing commercial farming. Commercialization of farming was not given due attention in the past. Mainly, agriculture focused on subsistence farming. The major if not the only commercial crop was coffee. The country's export also highly depended on coffee. Currently the agriculture development policy encourages diversification and specialization of crop production. Farmers are now developing various crops such as oil seeds, spices and horticultural crops. Farmers and investors are encouraged by the market demand of the crops and are expanding their products.

The increasing role of agriculture in the country's economy was, however, not felt more strongly than in the past three consecutive years. Agriculture and crop production in particular made significant contributions to the double-digit growth of the economy the country registered over the past three years. In the past agriculture accounted for 60-70

per cent of export earnings of the country but now other items are taking the biggest share. For instance, during the first half of the current budget year oil seeds and spices contributed the highest in export earnings. At this time, Coffee was second. The achievement in this regard was the direct result of crop diversification (The Ethiopian Herald, 2006).

However, in Ethiopia the traditional land use and farm management practices used have failed to bring about positive economic development and raise the standard of living of the rural population. To enhance agricultural productivity, careful analysis of the constraints and their remedies must be addressed (see http://... attra.org). Generally both the small scale and commercial production systems exist in Ethiopia. Most of the sesame farms do not use chemical fertilizers and other chemical inputs hence the potential to sell under organic labeling by acquiring appropriate certification is enormous. Others, among the problems insight are the poor management organization and their skill in the production and the lack of integrated marketing approach both locally and export marketing.

Currently, the government is starting to organize peasants into groups, cooperatives and unions at grass roots level so that they start to penetrate into domestic as well as international market trying to link with consumers. The area has suffered a serious drawback missing the critical month of July, a rainy season that was planned to give its highest water catchments.

Basically, producing cash crop purpose is for income generating, so, marketing as the wide range of activities involves in making sure that in continuing to meet the needs of suppliers and customers and are getting value in return. Various methods of market are used to find out information about markets, target markets and their needs, competitors, etc. Marketing also includes ongoing promotions, which can include advertising, public relations, sales and customer service. Therefore, upgrading rural markets is one way to improve access to marketing opportunities.

Producers need potential buyers (handlers) who become the first link between the grower and the ultimate market. The handlers are the first level in the marketing chain.

They acquire product from growers and may sell it to other handlers or processors or directly to the trade.

Generally both the small scale and commercial production systems exist in Wereda Kafta Humara in Tigray regional State. A number of reasons can explain the poor performance of yield in the area. To mitigate such problem, the stake holders in sesame product and its marketing should act in accordance with their obligations towards the national economic strategy and its integrated approach in the oilseed products sector in general and in sesame in particular. Therefore, it is important to correctly understand and study the main factors that are vital to enhance productivity in both commercial and small scale farms.

1.2 Study area back ground

The Wereda Kafta Humera lies on Northern part of Ethiopia and in the regional state of Tigray on the Western part. It shares boarders with Eritrea, Sudan, Wereda Mezega and Wereda Tsegedie. It is located between $36^0$26' East and $37^0$30' East longitude and $13^0$20' North and $14^0$25' north latitude. It is at the lowland about 500 to 800 meters above sea level. It occupies a vast agriculturally rich lowland area covering an area of 6,196.56 square kilometres. It has 18 Kebelle within these there are 8 small towns. In the urban and rural areas, there are 18 farmer associations, one union of the cooperatives and one investors association.

About 41% of the Wereda 73,682 people dwell in urban areas (CSA, 1998). The people's livelihood is dependent on agri-product earning a significant proportion of their income out of this activity. Almost all the population earn their income exclusively from this production. The remaining is engaged in trading. However, the productivity is still very low in the Wereda for many reasons.

The Wereda possesses high rate of temperature. It reaches its peak starting from March to July. It is estimated to be 30^0 to 45^0 degree centigrade. It is classified as temperate zone with a lower mean annual rainfall. Generally, due to its favourable environment and having a good cash crop ground for agricultural activities any investor can generate revenues.

Social and economic infrastructure developments are at their low ebb. The condition of existing road in the area is very low and poor, affecting the transportation service. There are two all weather roads though they have some problems. In the farming area there are no roads making it difficult to move and farm. The development of other physical infrastructure (market place, feeder roads, telecommunication, postal services, electric power and transportation) is also very limited. This situation further hampers the development initiatives of the Wereda and weakened the community living conditions.

The Humera Gondar, Humera Shire, and Humera Sudan high way lines are the major market movement routes in the area which runs and provides access to domestic market and export outlets to port of Djibouti and Port Sudan respectively. The Wereda is endowed with splendid natural resources that could have been used for agricultural production both farming and livestock production. However, due to lack of awareness about activities in its quality, shortage of irrigation facilities, limited provision of extension package, it is not exploited.

Humera sesame seed is one of the sources of revenue for the people living in the area, This crop, which is well suited to produce edible oil under the fluctuating climates of the country, has proven to be the appropriate choice to reclaim the production potential of the country's extensive arid zones. It also has a significant role in the national agricultural output. In the past its relevance was even higher because of the large volumes exported to the International markets.

Sesame is grown chiefly for export. Very small quantity is also used for the production of edible oil by traditional oil mills at the growing areas specially Humera area. Few edible oil producing agro industries also use sesame in small quantity. In Kafta Humera Woreda, recently over 124,700 hectares of land was covered by sesame. The stated size of land was developed by the local farmers and investors. The Kafta Humera Woreda expects over 700,000 quintals of yield to be harvested from the total cultivated land covered with sesame (The Ethiopian Herald, 2006).

There is an increase in market of the sesame seed in particular. The large volume of trading is the direct result of the marketing condition and by individual farmers which

involves the marketing of such products at competitive prices to generate income in meeting social and other needs, while holding onto grain crops in general and sorghum in particular for on-farm consumption. The large availability of sesame seed on the country's leading markets is a product of the combined effects of good harvest and of world market. This year, a phenomenon of sesame seed worm was seen in two Kebelle named Mykadra and Bereket, which are hardly damaged covering an area of 19,000 hectares. By planting, weeding and harvesting delays and not getting selected seed. Sesame prices have been gradually falling over the past few months on almost all major markets around the country, as a result of a good harvest and the wide availability of this crop since the beginning of the current marketing year in October. February 2007 prices for sesame on the markets increased by 32 percent from the month of December.

Sesame seed was affected by the Basic production inputs which were difficult to obtain, basic services that supported production such as breeding supporting schemes disappeared and prices stagnated with no incentives for farmers to sell. the national research organizations to initiate a research collaboration geared to understand the on-going socioeconomic processes and changes dictated by the application of new economic reforms, and propose the implementation of strategies to help overcoming production problems confronted by small-ruminant farmers. With out support, fruitful research collaboration with this Institute has been growing with time.

The new project complemented the preliminary steps taken in identifying production constraints and systems, with the development of an on-farm network, active participation of farmers, and the further strengthening of the research Institute. (Was selected as the site to implement on-farm studies and test technologies.) At this site; close interaction between farmers and researchers to solve production problems is taking place along with new hopes for linking their production systems to market opportunities.

1.3 Problem Statement

The Government of Ethiopia has placed great importance on agriculture and recognized it as an essential component for development needs of the society. However, agriculture can not play this role unless the participation of investors and the government working hand to hand due to its relevant to the development need. For this reasons investors are entering in to the commercial farming in different parts of the agricultural area. The amount of fund allocated to this sector has shown increment over the past few years. Accordingly the numbers of investors are increasing. Therefore, it is very appealing and important to evaluate existing situations or programs running in agricultural production and its marketing in general, in sesame in Wereda Kafta Humera in particular so that corrective actions can be taken by obtaining new information regarding the factors affecting the production and marketing of sesame to make all the stake holders benefit. Thus, it is of a paramount importance to asses the sesames production and its marketing situation.

In addition to this, the cash crop plays a significant role in improving the livelihood of the rural and hard currency generating to the country. They allow taking advantage of business opportunities. It increases incomes of the rural as well as the merchants and exporters and change social relations for better. Irrespective of its vitality of the agricultural sector as a whole and sesame in particular doesn't support the economy as much as it can. This is due to different problems faced in the country of which, sesame production and marketing are the main, especially in the study area. The absence of study on sesame seed (cash crop) is by itself a critical problem. To the best knowledge of researcher, the only document available is "the Humera integrated agricultural development study" by Tana Dashen trading company consultancy group May 1994.

Thus, lack of integration between the production of sesame seed and its marketing strategy as well as the problem in managing them is the main problem in improving the socioeconomic status of the growers as well as exporters. And ultimately the country is unable to maintain and promote businesses and farming in a systematic and integrated manner and make the stake holders to cope up with the fluctuations and crises that dominate their way of living. Keeping all these in view, it is of a paramount importance to assess the sesames production and its marketing situation and this work has been proposed with the following objectives.

1.4 General Objectives of the study

The general objective of this study is to show the extent of the factors affecting sesame production and its marketing in the Kafta Humera Wereda. The paper is geared towards answering the following specific.

Specific objectives of the study are:

- The business opportunities and markets to be supported by the government in establishing for the cash crop policy of sesame and need of self contained policy.
- The potential weaknesses of the growers in the Wereda and exporters to the development
- What design futures of sesame growing and marketing are appropriate for growers and exporters?
- To provoke further research to academic institutions as reference for usage.

1.5 Scope and limitation of the study

Though the study is limited to four kebelle in the Kafta Humera Wereda, these kebelle can represent to all kebelle of the Wereda, due to the result of the farmers product, production process, and marketing having similar size and are homogeneous, the data collected could be representative basing the homogeneity of the product. The reader can assure the final conclusion out of this paper. In addition to this, there is a firm socio-cultural interconnection between the growers and it is possible to apply the conclusion.

The assessment of the survey is not concerned with elimination of the situation or radical changes in bringing favorable situation at a time, but only on the central purpose what elements need to change or what things to do in minimizing the problems affecting so that the stake holders can do what they have to do to the possible maximum level.

Absence of fresh listing of growers for a sample frame was a problem faced by the researcher and the high cost of collecting data in some remote areas, the difficulty of identifying and contacting certain components of the target population has its constraints. The time period with its highly scarce also makes the survey to be a

complex process. Though, to study and cover the areas of the Wereda is beyond the scope, the study has been made using check list questionnaires focusing on targeted groups of four farmers cooperatives, one union, one investors association and agriculture and rural development bureau. For eight exporters who mostly export see http://... attra.org for sesame seed, questionnaires were given and collected. The researcher has used these in certain arrangement as a sampling frame.

The effort exerted to collect data from various organizations, mainly from FAOSTAT and Wereda Agriculture and Rural Development Office that contributes the data is somewhat resulted differently for the same purpose as information which is inconsistent.

1.6 Significance of the study.

The commitment of resources (time and money) to this study is justifiable in many aspects. Firstly, this paper provokes the government or policy makers to critically consider the area and its cash crop. The study will further play paramount role in filling the knowledge gap of the cash crop production and its marketing in the area. it will contribute towards the understanding of the nature of business opportunities and the significance of its production and marketing. Finally, the paper will serve as a good reference material for area as well as the nation and for those who are interested in doing further study on the same topic.

1.7 Research Methodology

1.7.1 Methods of data collection

The type of survey design used in the study is cross sectional. With regard to the sampling design, Wereda, and Kebelle were selected purposively. On the other hand, random sampling was used to select or to take individual cooperatives of growers. For exporters, it was taken those who are exporting and working in Humera area having a liaison office.

Structured questionnaire was basically used as a check list to gather the information from the focus groups to enable growers freely about various issues on the topic. It was conducted with key informants (four associations, one farmers union, one investors association and elders who were farming for long period of time). In addition to this, ARDO, trade and industry have been conducted. In relation to the marketing situations an interview was taken with traders' and exporters.

Farmer associations, cooperatives and trade unions genuinely represent the interests of the area. The farmers are living under similar economic conditions and have close social similarity and accept joint liability for their activities. The Groups as well as the areas or Kebelle are homogeneous. Through group discussions with individual associations, cooperatives, exporters and rural administrators, an analysis can be done.

In order to pick up problems not anticipated, pre-testing was under taken. This has helped in refining the questions and the variables in the questionnaire though, it has difficulty in location and surveying every farm, a survey population of most Kebelle' of the area would be conducted to source primary data which will be more of qualitative information. The questions concerned will enable to the observation, comments, and judgments from those persons involved in implementing the strategy.

In addition to this, secondary data from Customs, NBE, MoARD, FAOSTAT website, Wereda Agricultural bureau and companies (farming, exporters) documentation (reports and previous studies), file data, website visits, direct observation, and physical artifacts or manufactured articles. In addition to these, there will be data's that are quantitative in nature that need statistical analysis to understand and draw conclusion.

The sampling method is Non-probability sampling which are chosen arbitrarily. The sample units are only selected if they can be accessed easily and conveniently. The sample is chosen randomly, without use of a specific survey method due to the operation of cultivating or farming being homogeneous. It could safely draw almost the same information from any of the Kebelle where the sample will be representative.

1.7.2 Methods of Data Analysis

The data assessments provide a framework that significantly eases the issues of data analysis in exploring issues of production and marketing problems of sesame. In this study, in the analysis, both qualitative and quantitative techniques are used to analyze the data. Tabular, tables, ratios, percentages, line graphs are used to see the trends and to identify the importance of the influential that govern the production and its marketing as well as descriptive analysis is employed incorporating a reviewer's judgment on its saliency for assessment. The quantitative analysis is made basing the secondary data.

1.8 Organization of the Chapter

The whole study is organized in five chapters each dealing with a particular aspect of Wereda Kafta Humera Sesame production and marketing assessment. The first chapter has highlighted / provided a brief historical overview of the area and its performance. In addition to this, it explores methodological issues involved in carrying out the assessments, and emphasizes on the data collection method; representatives/ issues of sampling, how to conduct interview describing the questionnaires; reliabilities of the data and the plan analysis.

In the second chapter related to cash crop literature reviews. It deals the description of sesame and cash crop, about the industry basing production and marketing, the experiences of other countries and major challenges for the industry. Chapter three describes the study area based on the socio-economic and other characteristics on the production and sesame marketing. It deals with the conceptual framework exploring the issues as the model of the study. Chapter four discusses the major findings of the study by using both descriptive and quantitative analysis techniques. And finally, the last fifth chapter includes the conclusion and recommendations.

Chapter II

2. Literature Review

2.1 Sesame Production

2.1.1 Plant Description

Sesame (*Sesamum indicum* L. Pedaliaceae) is one of the oldest crops known to humans. Sesame was a major oilseed in the ancient world because of its ease of extraction, its great stability, and its drought resistance growing best in areas where cotton does well. It is a warm season annual crop which is primarily adapted to areas with long growing seasons and well drained soils and has since spread from its origin to many parts of the world. It is a broadleaf plant that grows about 5 to 6 feet tall, with height dependent on the variety and growing conditions. The plant has an extensive branching system of feeder roots. Growing this plant seems to help condition the soil by improving soil structure. The light colored seeds are small and flat, with a point on one end. Seed size varies. Since the flowering occurs in an indeterminate fashion, seed capsules on the lower stem are ripening while the upper stem is still flowering. The lowest flowers on a stem may not develop into pods, but pods will generally begin 12 to 24 inches off the ground and continue to the top of the stem (ASP, 1988-89).

Based on the findings of Vavilov (1945) and Zhulovasky (1970) there are around eight centers of origins for crop plants in the world and Ethiopia is one of these centers of biodiversity. About 146 crop types are grown in Ethiopia, and oilseeds are among the major ones. The oilseeds in Ethiopia comprise Sesame seed, Niger seed, Ground nuts, Rape seed, Safflower, Lin seed, Castor seed, Pumpkin seed, Mustard seed. Sesame and Niger seeds dominate largely the oil seeds category growing in the country for a long period non-conventionally. Sesame seed is by far the leading crop in the country's oil seeds export where by 95% of the production is directed to export followed by Niger seed. The majority of oilseeds, mentioned above are cultivated traditionally in millions of smaller land holdings through out the country except sesame seeds where commercial

farms with relatively large land holdings and relatively modern agricultural practices predominate (see http://... seelecttea).

There are three varieties of sesame in color; black, white, red (or brown). While the white has much oil, the black one is best for healing. The sesame plant can grow to a height of three feet and is an annual herb. It is an erect plant covered in fine hair and has a square stem. The leaves are flat, in shape. The flowers are pinkish purple in color or white and are bell shaped. The plant grows erect and reaches a height of 1 to 2 meters, with fine teenage leaves, pale rose or white flowers (see http://... edu).

Upon ripening, sesame capsules split, releasing the seed. Because of this shattering characteristic, sesame has been grown primarily on small plots that are harvested by hand. The discovery of a non-shattering transformed by Langham in 1943 began the work towards development of a high yielding, shatter-resistant variety. Although researchers have made significant progress in sesame breeding, harvest losses due to shattering continues to limit domestic production (D.H. Putnam, C.V. Hanson, E.A. Oelke May 1990).

2.1.2 Some of the Uses of sesame

Initially sesame seeds were used in a variety of baked goods and confections. The taste of sesame differs among varieties, and can be negatively affected by poor post-harvest processing and storage. Sesame seeds (approximately 50% oil and 25% protein) are used in baking, candy making, and other food industries. Oil from the seed is used in cooking and salad oils and margarine. Sesame oil and foods fried in sesame oil have a long shelf life. Its other uses as medicine or perfumes were discovered much later with time. The oil can be used in the manufacture of soaps, paints, perfumes, solvent, and also used as a synergist for pyrethrum insecticides. Sesame meal left after the oil is pressed from the seed and is a high protein material suitable for feeding to livestock. It is used to redress afflictions of the liver and kidneys. The seeds are prescribed for problems such as dizziness, and distorted vision. Owing to their lubricating effect within the digestive tract, the seeds are also considered a remedy for constipation. Sesame

seed oil benefits the skin and is used as a base for cosmetics. Its root is used in various traditions to treat coughs and asthma (Dan Burden, 2005).

2.1.3 Environment Requirements for Sesame

Soil: Sesame is adaptable to many soil types, but it grows best on well-drained, fertile soils of medium texture and neutral Ph more of in clay soil. Sesame, which has an extensively branched feeder root system, appears to improve soil structure. Sesame has a very low salt tolerance and cannot tolerate wet conditions (Langham, D.R. and Terry Wiemers. 2002).

2.2 Production Practices

2.2.1 **Seed Preparation and Germination**: Seed is cleaned and treated to prevent damping off. This treatment is especially important for non-shattering varieties because they are slower to emerge than the shattering varieties. Because the seeds of the non-shattering varieties spend more time in the soil before germination, they need more protection from fungal pathogens in the soil (ibid).

2.2.2 Cultivation pattern of sesame: Sesame requires a warm, moist, weed-free seedbed and 90 to 150 frost-free days. Sesame is a drought resistant annual plant and yields maximum when grown at temperatures 25 to 27 degree Celsius or 77°F to 80°F roughly one month after the last killing frost; below 68°F growth is reduced, and at 50°F germination and growth is inhibited. Moisture levels before planting and flowering have the greatest impact on yield. Rainfall late in the season prolongs growth and increases shattering losses. It requires adequate moisture for germination and early growth and a minimum rainfall of 20 to 26 in. per season is necessary for reasonable yields. Sandy loam, well-drained soil type with alkalinity ranging from 5.5 to 8 is required for the efficient performance of the plant but the crop can be grown on the various other soil types also. Many varieties of the plant are multi branched and the other less branched and it gains a height of 20 to 60 inches. White to pale-rose, bell shaped flowers begin to occur in 6 to 8 weeks of plantation and the leaves are generally variable in size. The sesame seeds are derived from the fruit of the plant, one fruit containing 50 to 100

seeds. Most of the harvesting is done manually making it basically a commercial crop the cost being quite nominal. Sesame plant does not survive in water logging or wet conditions (Dudley T. Smith, W. James Grichar, and Amanda A. McCallum. 2000).

2.2.3 Seeding Date, Rate and Method: Sesame should not be planted before the soil reaches a temperature of about 70°F roughly one month after the last killing frost. It can be seeded with a row crop planter. In Ethiopia, it is planted traditionally not by a row crop planter even those who are well organized commercial farms. Depth of planting varies with soil type and soil moisture from 1 to 2 in. Uniform depth and seed rate are essential for stand establishment resulting in maximum yield.

2.2.4 Variety Selection: The sesame varieties are usually divided into two types: shattering (seeds of this un-branched variety have high oil content over 50% but their bitter flavor limits their value on the whole-seed market) and non-shattering varieties (developed to allow mechanical harvesting). Though these varieties usually contain somewhat less than 50% oil, their seed is used for oil production only. The non-shattering are not known in Ethiopia. Mechanical harvesting is more successful with varieties that have minimal branching and a height from the soil surface to the first capsule of about 12 inch (Dan Burden, 2005).

2.2.5 Harvesting: At present, over 99% of the sesame in the world is harvested manually (Weiss, 1971). In general, the mature plants are cut, bundled, and shocked to dry. In some areas the shocks are left in the field. In other areas the bundles are moved to a shocking fence or to a threshing floor. As the plants dry, the capsules open and some of the seed can fall out. If on a threshing floor, the shocks can be moved every few days, and the seed is collected.

Sesame is ready for harvesting 90 to 150 days after planting. In general, the un-branched varieties mature earlier. The crop must be harvested before the first killing frost to obtain high quality seeds. At maturity, leaves and stems tend to change from green to yellow to red in color. The leaves will begin to fall off the plants. The shattering and non-shattering types require different harvesting techniques. Caution is recommended to minimize seed damage and loss.

Given the potential of fall rains, however, it is probably best to plan on direct and timely harvest of the crop. Harvest should be done before frost if at all possible, because frost can damage the appearance and quality of the seed.

Sesame seed damage during harvesting affects both the viability of the seed, and storage and oil quality. In developing countries, shattering varieties are usually swathed green and placed upright in small shocks, about 8 bundles per shock. The strings on the shocks may be tightened at intervals as the shocks dry. Tighten the strings on the shocks in 2 or 3 days. In 2 weeks the crop is ready to thresh. Light rains during the dry-down period will not seriously damage seed; however the crop should be regularly inspected for the onset of mold or similar fungal problems. Sesame should be threshed using a low cylinder speed. Non-shattering types can be combined directly at low cylinder speed. (Dan Burden, February 2005).

2.2.6 Mechanization Requirements: The major requirements for mechanizing sesame: (1) the plants should terminate flowering, (2) the plants should drop their leaves, (3) the seed in the capsules should mature before the capsules open, (4) the capsules should retain their seed until the plant is in the combine, and (5) the capsules should release the seed in the combine.

2.2.7 Flower Terminations: In many publications sesame is classified as an indeterminate crop which will continue flowering as long as moisture and nutrients are available. As the flowering continues, the early capsules dry down, open, and lose their seed. Many lines have this character, and it is quite a problem because the plants are cut as the lower capsules open. As a result, there is a variety from mature seed to immature seed on the plants. However, there are many lines from all parts of the world where the flowering stops.

2.2.8 Seeds Mature Prior to Open Capsules: In most of the world, maturity is defined as the time that the first capsule begins to dry down. These farmers want to cut the plant and move it into shocks prior to that seed being lost. At first dry capsule, there

is a full range of cultivars where the seed close to the top of the plant is mature to where the top of the plant is still flowering (ASP, 1988-89).

2.3 Need of Crop Rotation

Problems requiring immediate attention are technology transfer (needed to close the gap between significant advances obtained on a research station or by a good farmer and the productivity obtained by the average farmer), product development (needed for areas where the technologies available are not applied), and policy reforms. The issue of technology transfer must be addressed at both the national and international level, to enable farmers to move from where they are now to where they could be; frequently, this does not require sophisticated technologies. The greatest need is to build partnerships to achieve either better products or the same products at less cost or in less time (Jerry La Gra. 1990).

Crop rotation is an essential element for crops operations and can enhance economic stability by allowing the risks of production agriculture to be spread over a greater number of crops. All practices should be performed in a timely manner without competition for labor, equipment, and management expertise. In reality, this may not always be possible because of factors beyond a grower's control, such as unusual weather conditions, pest infestations, or peak work periods (Laura Tourte, David Chaney, Pete Livingston, Richard Smith, 1996).

According to James L. Helm (1993) crop rotation is a planned order of crop sequence on the same piece of land over time which increases the average profit from the land by selecting a cropping sequence that has more additive effects. To accomplish this, any grower considers to: (1) adapt to the local climate and soils (ease of each crop's cultivation), (2) compatibility with the producers management (in terms of labor, equipment, and seasonal timing), (3) have a potential market (profitable market demands), (4) the availability of nutrients, (5) select a crop that competes well with weeds, (6) the crop value and access to markets and (7) the ability to provide year-round employment for farm workers. If it is managed and planned, it maximizes water

use; controls erosion, weeds, plant diseases and insects; and distributes labor and machinery requirements.

Because of the importance of soil fertility and soil organic matter, organic vegetable growers increase planting to include in covering or green manure crops to continually recycle nutrients, break pest cycles, and maintain a balance between soil organic matter accumulation and decomposition. Organic matter is particularly important for improving soil structure and water holding capacity, and for providing nitrogen and other nutrients for crop production. The techniques to minimize the incidence of disease in crops include to avoid planting at certain times of the year because of severe disease incidence; the mechanical and hand cultivations to remove weeds that may harbor disease and crop rotations (ibid).

Benefits can still be gained from rotations when it is adapted. It includes the influence by the moisture left by the preceding crop or practice for the crop yield (usage of summer fallow, early maturing crops) and tending to encourage weed seed germination and allow excellent weed control, which prevents weed seed production by the summer fallow in the rotation. To maintain soil productivity for continued high yield, grasses and legumes in the rotation helps keep soil in good physical condition, maintains organic matter and provides a change in rooting patterns. These crops also add raw food material for soil microorganisms and improved tilth. All annual crop residues should also be incorporated or left on the soil surface. Legume crops such as alfalfa and sweet clover generally improve the fertility level of the soil. Farm manure is needed to increase the productive capacity of most soils. It is helpful in controlling disease caused by fungi and bacteria. Insects which have feeding habits restricted to certain crops can be controlled or at least reduced by rotations (James L. Helm, June 1993).

2.4 Need of Rainfall

Sesame is reasonably drought resistant but the crop will yield very well in areas that have a 400-650 mm rainfall. It can grow in a wide variety of soils. Rain in Ethiopia falls in two distinct seasons: (i) the *belg,* a minor season that usually begins in January-February and ends in April-May; and (ii) the *meher or kiremt,* the main rainy season,

which starts in June-July and ends in September-October. In the area, *meher or kiremt* rains are needed and regularly enough to support the generally opportunistic *meher* harvest which may. It often generates good income, which although good for perennial crops sesame (FAO/WFP 2005).

Some of the years *meher* rains were considered to have been "normal if it is conformed to the expected pattern, they began on time, and they were reasonably evenly distributed during the season and they either finished on-time or later than expected and characterized as being reasonably well-received. In some years they were less than satisfactory and later starts and an erratic distribution with breaks of 10 to 20 days noted and early finishes. Despite the variable nature of the rainfall inherent in the area, which means that in any year, particularly in the lowlands, that will experience a less than satisfactory rainfall? (FAO/WFP 2005).

Rains at the time of harvesting, had only negative effects. It needs harvesting campaigns to be conducted as a precaution against possible losses, to secure all vulnerable crops. Elsewhere in the area, the harvests of short-cycle crops were either completed or well- advanced, or, as in the cases of late planted sorghum, crop production will only benefit from the continued precipitation (ibid).

Mechanized rain-fed farming projects suffer mainly from irregular yields and vast difficulties of input supply and output marketing. Employment creation has also been included to emphasize the fact that income generation through economic growth is feasible as long as larger numbers of people can find productive employment (Directorate of Economics and Statistics 1980 of India).

2.5 Cash crop

In agriculture, a cash crop is a crop, which is grown for money. The term is used to differentiate from subsistence crops, which are those fed to the producer's own livestock or grown as food for the producer's family. In earlier times cash crops were usually only a small (but vital) part of a farm's total yield, while today, especially in the developed countries, almost all crops are mainly grown for cash. In non-developed nations, cash

crops are usually crops which attract demand in more developed nations, and hence have some export value (Arid-zone agriculture, 2006).

Prices for major cash crops are set in commodity markets with global scope, with some local variation (called basis) based on freight costs and local supply and demand balance. A consequence of this is that a nation, region, or individual producer relying on such a crop may suffer low prices should a bumper crop elsewhere lead to excess supply on the global markets.

Agribusiness, with its high-capital-investment and industrial-scale agricultural practices, very often skews production towards cash crops and away from anything that is consumed locally or which cannot be preserved, shipped and sold abroad. When used in conjunction with practices which seek to maximize crop yield and which favor monoculture, increasing reliance on cash crops tends to have adverse, long term environmental consequences (ibid).

The development trend over the last decade, the actual trend and planned strategies of farmers become quite obvious and understandable by comparing the income possibilities from sesame seed. It is only logical that *sesame* has become the leading crop in the area, for its high cash return and stable income.

2.5.1 Role of Cash Crop

There are income possibilities from the cash crops grown under rain fed conditions.

- Farmers obtain a much higher productivity in terms of cash value from cash crops as compared to cereals.
- The ever growing market conditions of sesame pressure forces farmers to cultivate more and more of their arable land with this cash crop in order to generate income or eventually realize some growth.
- The cash crop economy with its important cash flow offers a wider range of off-farm income possibilities as compared to subsistence farming areas, having a positive impact on vulnerable households by improving their capacity to cope with averse

situations. But job opportunities and possibilities for self-employment created by the cash crop economy are by large insufficient to have any effect on the urgently needed decongestion of the agricultural sector.

- It enables to obtain foreign exchange that, in turn will enable to buy capital goods for its industrialization.
- Cash crops launched the growth of the economy, by monetizing it, but also that the incentive nature of their economic relations with food agriculture and with industry and commerce underpins that growth.

Generally, the role of cash crop in continuous economic development industries is 1) to decently feed so that, among other things, production in the various sectors of the economy can be increased; 2) to receive adequate incomes by providing with jobs in agriculture: 3) to contribute to the growth of other sectors by providing the industrial sector with cheap labor, raw materials and sometimes, financial surpluses.

2.6 Plant marketing

2.6.1 Markets and marketing issues

In 1993, the world trade in sesame seed was 486,000 t. Japan was the largest importer taking 24% of the world imports. The second largest importer was the USA with 8% of world imports. It is forecast that the imports of sesame seed will grow at between 6 and 8% per annum until the year 2012 (Bennett and Wood, 1995).

Sesames are generally classified by color (white, red {brown} and mixed) and by seed size. They are primarily produced for human consumption. They are high in fat and in protein. Ethiopia is a net exporter of sesame of which a significant quantity is produced solely for the export market. Domestic consumption is largely focused on other oil seeds by producing as well as importing. The bulk of whitish sesame is grown in North and North-Western of the country. Domestic production of the other varieties of sesame, on the other hand, is significantly less.

Generally, with the growing demand for organically grown food there is a market for sesame products produced under organic conditions.

2.7 Theoretical backgrounds and the empirical evidence

2.8.1 Theoretical backgrounds

Adoption of new technology in agriculture is crucial to boost output and enhance profitability of commercial farming. Increase in agricultural output will have to come from higher yield per hectare (Jude Hobbs, 1999, Rutta, V.W, 1998). Therefore, a shift from resource based to a more science-based system of agriculture will have to play an important role in improving and increasing agricultural productivity (Umale, 1995).

The introduction of improved agricultural techniques (like improved seeds, chemicals, improved farm implements and cultural practices) increases the production (Gershon Feder, Gerald T.O'Mara, 1981). Timely cultivation, planting and weeding can have a striking impact on yield, and farmers know about them but facing severe labor constraints at critical points in the crop cycle, that technology is often not practicable (Cass, 1989). Modern technology alone is not enough to get agriculture moving, there are institutional, in restructure and cultural factors that must be changed in process of transformation (Marshes, 1997). Research is needed to development of agriculture in dry areas.

According to Cheema A. A, 1978, "Changes in productivity (the attribute to increase yield) than to any thing else becomes more significant for the developing countries" and "The input for technological change is research and development". It is also an absolute requirement and fundamental requisite in many form of planning irrespective of the stage of development and economic and social system. It can be achieved through change in efficiency and technological progress. The main source of productivity is technological change, complemented by human capital.

The improvements of farmers' productivity can be achieved using the same level of input by producing more yields or a reduced level of input results more yields through improved methods (investment in machinery and technology, improved quality, and improvement of techniques) and the usage of just-in-time, total quality management, lean production, supply chain management principles, and theory of constraints. Yield also can increase with increase in mechanization and by expanding land usage. There

are paths for improving production and productivity and to be, they must be developed the varieties of improvement to the needs of specific area like asking for ideas from workers, studying how other firms have increased productivity, reexamining the way work is done, low-cost technologies usage, improved resource management and practices, and public investment in infrastructure and other needed.

Agricultural production is affected by land quality and by other factors such as change in inputs. Also the effect of land degradation on production is likely to be more severe in some areas due to natural factors (terrain, soils, rainfall) and economic factors (poverty, tenure insecurity and lack of infrastructure) (USDA). Technical, economic, and institutional constraints have also an impact on soil fertility, and productivity (World Bank, 1998), which indicates that in improving productivity, it requires a coordinated set of actions from policy makers, resource managers, farmers, researchers; and in fact all, who care about influencing policies about how land and water is used.

In Ethiopia crop production and productivity depends not only on growing higher yielding varieties and adequate rainfall, but also on efficiency of the seed variety (Wolday, 1999). In general, growth in production must be achieved through the application of modern technology to increase the yield using the land already cultivated not by expanding. In addition to these, intensification of agriculture implies to continuous increase in production and productivity at a given point in time through efficient allocation of resources.

In the past, production in agriculture was achieved by expanding the amount of land under cultivation. However, today this approach is not economically feasible. Intensive agriculture, which requires various know-how and necessary inputs, is indispensable to insure competitiveness and profitability.

Most of the sesame farms do not use fertilizers and other inputs hence the potential to sell under organic labeling by acquiring appropriate certification is enormous. Sesame production is a complex business, requiring many skills (such as biology, agronomy, mechanics, and marketing) and covering a variety of operations throughout the year. At harvesting time, it shatters and if it happens like this the farmer can not get his result (see http://... attra).

Productivity is useful as a relative measure of actual output of production compared to the actual input of resources, measured across time or against common entities. As output increases for a level of input, or as the amount of input decreases for a constant level of output, an increase in productivity occurs. Therefore, a "productivity measure" describes how well the resources of an organization are being used to produce input.

Productivity is the increase in yields without increasing land demand. The focus has primarily been on getting more yields per unit of land. In other areas, it is only in the past decade that attention has turned to producing crops that can yield more with a less land, less water in water stressed areas (withstand water scarce conditions) and increase on low quality water.

Cash crops grown under rain fed conditions indicate the importance of respective production costs and main risk factors. It should be understood that with risk factors high for climatic hazards and/or pest and diseases, the overall risk taking increases considerably with high production costs. On the other hand, risks are much lower for crops cultivated under irrigation, alongside with a higher yield expectation and better producer prices.

Unless Agricultural Marketing is dealt with, and their management integrated with the marketing-decision-making process, long term marketing success is unlikely. A crop marketing program will not be successful in the long term if built solely upon emotional decision-making or speculative price forecasting. A long-term successful crop marketing program must be based upon financially-informed, balanced, and objective decision making. Objectives of a successful marketing strategy should seek to obtain marketing balance, where profitability assurance, and upside opportunity are provided (see http://www.ag.uiuc.edu).

If farmers do the farming all right, and improve their productivity, it can be reflected in their standard of living with a greater return on their marketing investment though marketing productivity can not accurately measured. Marketing isn't just something you do to get clients; it's a process to help in competing, in shaping the practice to own the desires and dreams (see http://www.mapnp.org).

Marketing starts with the product since it is what a Commercialized farm and small holder farmers have to offer their target market. They attempt to provide solutions including tangible or intangible (or both) product offerings marketed to a target market's problem. In addition to satisfying the target market's needs, the sesame product is important because it is a cash crop that generates revenue.

Marketing analysis is needed for the producer which includes finding out what groups of potential customers (or markets) exist, what groups of customers prefer to serve (target markets), what their needs are, what products or services to develop to meet their needs, how the customers might prefer to use the products and services, what the competitors are doing, what pricing to use and how to distribute products and services to the target markets.

A practical way for most growers to analyze the market is to seek information and recommendations from handlers that will help them match their product quality characteristics against market requirements. Market may provide a good outlet if the grower can reach that market through a handler. Specialized high quality markets may offer an alternative to standard industrial production for some growers. Since handlers are "on the market" regularly they are in a better position than the majority of growers to evaluate market needs. The levels of quality in a product's design will vary with the market segment to which it is aimed though sesame seed can not be designed which is an agricultural produce. But if it is made to grow with out using chemicals it will be organic product and it keeps its quality. This quality of the product commands a higher price in the market place due to its special features. This makes to establish a goal in having the proper level of product quality which focuses on the requirements of the customer. In the other way the process quality is critical as it relates directly to the reliability of the product. Thus, the goal in process quality is to produce error free products. Product specifications, given in dimensional tolerances precisely define how the product is to be made (Chase Aquilo, 1998).

Domestic markets can also be partly insulated by large marketing margins that arise due to high transfer costs. Especially in developing countries, poor services in

infrastructure, transport and communication give rise to large marketing margins due to high costs of delivering the locally produced commodity to the border for export or the imported commodity to the domestic market for consumption. High transfer costs and marketing margins hinder the transmission of price signals, as they may prohibit arbitrage (Sexton, Kling and Carman, 1991; Badiane and Shively, 1998).

Therefore, marketing must be considered during the planning of production and throughout all the business activities associated with the flow of goods and services from production to consumption. In this sense, the concept of market is present when the farmer makes decisions about what crops to plant, when to plant, which and how many inputs to apply, how much and what source of labor to use, when to disc, plant, weed, harvest, and when to sell for whom. The intermediary is also thinking of the market when s/he decides what products to buy, what quantities, what quality and at what price; how and when to transport, select, store, package and sell the produce. Marketing is the integrating force for all these different decisions.

Developing countries are keen to increase their earnings of foreign exchange. They normally attempt to do either by increasing their domestic production of imported items or by increasing their exports of traditional and non-traditional products. Most countries attempt to do both.

Effective marketing requires the ability to provide some minimum quantity of an agreed-upon-quality product to a given market on a regular basis and at a competitive price. When analyzing the marketing distribution system, it is necessary to generate information which will permit a good understanding of the system and its potential for development. Farming is a way of life and farming must be managed as a business, or it cannot be a way of life (Jerry La Gra, 1990).

2.7.2 Empirical Evidence

To identify the influence of various inputs in yield growth and marketing of sesame, ideally, it would need to observe different countries experience or studies and/or time-periods when these were thought to be present and absent so that the yield and

marketing performances may be compared. So, the project reviews the empirical evidence to examining the influential inputs to production and marketing of sesame by:

- testing for a positive impact of the variables on production growth and marketing;
- testing whether the evidence supports models with and without the various inputs;

Countries using the appropriate varieties of inputs tend to grow faster, other things being equal. There is some evidence that the magnitude of this effect observed at the economy-wide level may exceed that observed at more micro levels indicating possible influential inputs. Most evidence comes from cross-section regression analysis on samples of developed and developing countries from the magnitude of written works. There might be a variety of factors which can affect productivity, both positively and negatively including the factors which are related to 1) capital investments (in production, technology, equipment, facilities), economies of scale, workforce knowledge and skill resulting from training and experience, technological changes, work methods, procedures, systems, and quality of products; 2) quality of management in problem solving, handling the situation, integrating production and its marketing and the countrywide movement and legislative and regulatory environment; 3) general levels of education, and social environment and 4) geographic factors.

All these seem to have evidence being important more via its effects on the production and marketing of sesame, which in turn raises income growth of the area.

2.7.2.1 Asia: In Pakistan, the changes in cropping patterns which require more labor are also consistent with trends in rates of profits of individual crops. Some of the increased labor requirements due to changing cropping patterns have an influence (ILO, 1996-2001). Sesame, in general, is a low yielding crop, its average yield is only 405 kg/ha, which is obviously very low as compared to the yields realized in Egypt, USA and Mexico. Average yield of sesame in the country has increased during the last 19 years from 341 to 405 kg/ha, which indicates an annual growth of (+) 0.91 percent. Factors responsible for low Production are shattering losses, lack of improved high yielding varieties, cultivation on marginal lands and low level of fertilizer use (ASP, 1988-89).

2.7.2.2 Europe: In Europe, yield differences from year to year are mostly due to climatic changes while the yield variability between farms is attributed mainly to management practices and that between fields is explained by differences in soil conditions (Ali, Mubarik Byerlee, Derek, 2000). Variation in soil temperature may be a significant cause of yield variation (Gales 1982). Low yields could be caused by deficiency of nitrogen in the soil, or conditions which prevent nitrogen from being absorbed. Others are pest and diseases, soil structure and composition, thus affecting yield, weather in any season, fertilizer to be applied are based on soil type, winter rainfall and previous cropping, topography of fields also has an effect upon yield; angle, aspect and altitude, nature and condition of field drainage (Andrew Landers and David Steel).

2.7.2.3 Africa: In Tanzania, there are several factors which influence the way in which maize marketing is carried out. These include time of the year; location, transport facilities and infrastructure; availability of market places; size of the harvest nationally; and size of the harvest in neighboring countries (Conrad Richter, 1998).

In Uganda, a new high yielding sesame variety released in Uganda is set to have a major impact on production. Sesim-2, released by the National Agricultural Research Organization, is drought resistant, quick-maturing and resistant to most sesame pests and diseases. In addition, farmers can expect to achieve yields of 800kg per hectare, 300kg more than Uganda's traditional varieties, with each seed containing up to 20% more oil. The variety has been undergoing trials by scientists and farmers over the last five years, and is set to replace varieties released in the 1970s which were subsequently crippled by inadequate research during years of political turmoil (Johannes Woelcke. 2001).

2.7.2.4 USA: In California, sesame yields in test plots average 1,000 to 1,500 lb/acre, though, as much as 2,300 lb/acre have been produced under irrigation. Commercial yields are usually lower. The introduction of the non-shattering characteristic into high-yielding, normally shattering varieties carried with it a reduction in yield and/or seed quality. The development of higher-yielding non-shattering varieties is necessary for sesame to compete with other crops (E.S. Oplinger, D.H. Putnam, A.R. Kaminski, C.V.

Hanson, E.A. Oelke, E.E. Schulte, and J.D. Doll, 1990). Yield and varietals characteristics of sesame performance of shattering and non-shattering lines of sesame in trials conducted by Lubbock, 1977–79 in Texas are summarized as follows: the yield for shattering varieties ranges from 7701.65 to 18412.90 kg/acre and for non-shattering varieties from 9039.25 to 19384.75 kg/acre.

2.7.3 Factors Affecting Marketing and Prices of Sesame:

Marketing and the prices of sesame are influenced by a number of factors:

- Supply, which is influenced by how much Sesame farmers produce, how quickly they need cash, how much storage they have, and the price they are offered for their sesame
- Consumer demand, which is influenced by the price (a high price will make consumers reduce purchases and be more careful with what they do buy. A low price will encourage increased consumption, although consumers can only eat so much maize meal).
- Trader demand, which is influenced by production levels in other parts of the country and the world. Traders will prefer to buy in easily accessible areas basing quality. Demand for sesame in other areas will thus be low until there is no more left in easy-to-reach areas. In addition to this it is influenced by the size of the harvest/ production levels in neighboring countries.
- Location that is distance from the market, condition of the roads, quantity of sesame available and extent of competition between traders
- Transport and infrastructure
- Time of the Year which indicates the seasonal price pattern is influenced by farmers' cash needs after harvest, suitability of on-farm storage, size of total harvest, storage by traders and forecasts of following year's production
- Information that indicates the extent of information available is an important influence on prices
- Quality which shows better quality sesame at the right moisture content will get better prices (Shepherd, 1999).

2.7.4 Ethiopia's Experience:

In Ethiopia Crop Improvement, attempts have been made by the agricultural research organization to develop 10 improved varieties, which are found to give better yields, particularly when cultivated by irrigation. This varieties include; *t-85, E, S, Kelafo 74, Mehado 80, Abasena, ADI, Arabane, Serkem, Kate,* which most of them yield 0.3-1.2 and 0.9-2 tons as rain fed and irrigated crops respectively. Melkaworer and Pawi research centers are responsible for Sesame improvement programs in the country. These varieties have not yet introduced in the area. Except ADI others are not introduced in Humera area. Even this does not have a continuous supply as well as it does not have change. The area selects *Hirhir* originated from Sudan.

Quality of sesame seed is measured in terms of its color, cleanness, (purity), moisture content and free fatty acid content. The Ethiopian whitish Humera type is known for its taste (sweet) in the world market. Ethiopian Sesame has three grades standards set by the Quality and Standard Authority of Ethiopia. Although, the increasing number of complexity of quality requirements and control measures in most developed countries have detrimental effect on exporting countries, the Ethiopian sesame has continued to be demanded in world market due to its inherent taste and being organic product. Quality of sesame seed is measured in terms of its color, cleanness, (purity), moisture content and free fatty acid content.

In Ethiopia, marketing of oilseeds like Niger and Sesame are largely directed to exporters and oil producing industries by big wholesalers and suppliers. In accordance with the demands generally large environment friendly packs of 40, 50, 60 kg are used in the export of oilseeds. Again depending on buyers other packs of various weights can be used (EEPAPD & MRD, May 2004).

World sesame production in 1999 indicated that the yield per hectare the lowest amount 0.152 tones/ hectare and the highest being 2.553t/h. in totality, world yield was 2,427,000 Metric Tons in an area of 6,228,000 Hectares (FAO Data Base Statistics).

ADD and NFIU (1986-1989) reported that organizational research institutions had various studies that gave clues to the effect of intensification in Ethiopia. For instance,

with improved seeds, commercial fertilizer and improved soil and water management raised productivity at least by 100 percent compared to traditional rain fed production methods. High yielding varieties introduced in 1960`s in Pakistan (Punjab) helped spur out growth by making crops responsive to water and fertilizer which not only allowed but indeed encouraged far greater use of capital.

Change in the production of a crop at house hold level has to date been directly associated with increase in the size of cultivated land. There is low level of technological application. (Zerihun Gudeta, 1996)

From the empirical evidence, it can be said that, the climatic change could affect agriculture in several ways:

- Productivity, in terms of quantity and quality of crops.
- Agricultural practices, through changes of water use (irrigation) and agricultural inputs such as herbicides, insecticides and fertilizers.
- environmental effects, in particular in relation of frequency and intensity of soil drainage (leading to nitrogen leaching), soil erosion, reduction of crop diversity

Most agronomists believe that agricultural production will be mostly affected by the severity and pace of climate change, not so much by gradual trends in climate. Rapid climate change, however, could harm agriculture in many countries, especially those that are already suffering from rather poor soil and climate conditions, because there is less time for optimum natural selection and adaptation.

So, inputs usage in farming, have a positive connotation, believed to bring high yield. As long as there are insufficient employment opportunities in urban areas, it may be beneficial to keep the rural population employed in agriculture. From the marketing side, U.S is the highest producer as well as importer (approximately 40,000 tons of sesame seed is annually imported from Africa, Southeast Asia, and Latin America).

Pakistan is a major producing country with some production statistics. Sesame seeds were cultivated on over 100,000 hectares (247,100 acres) of land during the 2001 to

2002 crop year. Total production for that season was an estimated 57,000 tons. Per-hectare yield of the seed is the highest and overall average yield was 503 kilograms per hectare (448.8 pounds per acre).

Ethiopia remains a net sesame exporting nation. Product image (quality perception) is important to ensure a top price from sesame and to enhance the market share through exports.

Australia is a leading sesame producer and is a growing market for sesame and sesame products that has focused some of their infrastructure resources on developing this crop. Sesame producers are actively targeting the Japanese and other export markets, yet with respect to domestic consumption, Australia remains a net sesame importing nation.

In 2003, the world trade in sesame seed was 486,000 metric tons with roughly 4-million tons produced by growers. Japan was the largest importer taking 24 percent of the world imports. The second largest importer was the U.S, responsible for 8 percent of world imports. Australia imported 6400 metric tons of sesame seed in 1996, with China, Mexico and India the main suppliers (Langham, D.R. and Terry Wiemers. 2002).

A large number of countries import sesame seeds to fulfill their domestic consumption demand. Japan leads importing around 165000 tons of seeds every year followed by Egypt with around 86000 tons. The list of the major sesame importing nations are Japan, Egypt, South Korea, United States of America, Netherlands, China, Syria, Saudi Arabia, Greece, Israel, Mexico, and Germany

The major importing countries are Japan, the European Union, the Republic of Korea, the United States, and Egypt. The origin of imports in these markets varies substantially. Japan imports sesame seeds mainly from China; the United States from Central America; the European Union from India and the Sudan; the Republic of Korea from the Sudan and China. The producing countries are large consumers of sesame seeds, mainly processed as cooking oil, and only part of their production is exported. In 1997 India exported 18.3% of its total production, the Sudan 25.6%, Myanmar 15.9%

and China 7.3%. In 2000 the top three countries major exporters (in 1000 t increments) were India (183), Sudan (139), China (103), Nigeria (35), and Ethiopia (31) (COMTRADE database, UNSD, 2007).

In the world market particularly for sesame, Ethiopia has a status of being a net exporter and it has exported more sesame to international market. In Ethiopia the seeds are valued on the basis of their color. The seeds having whitish color are considered to be of good quality and having high oil content and have high price differing at least by five dollar per quintal. Ethiopian sesame export since 2000 has continued to grow remarkably in quantity and value being as principal cash crop. The export was 31,042; 42,990 and 68,313 tons generating 21,190; 24,207 and 31,042 million USD in 2000, 2001 and 2002 respectively. In 2002 Ethiopian sesame has bean exported to 29 countries and Israel, Turkey, Egypt, Yemen, Greece, Japan Jordan, Netherlands, Saudi Arabia Germany, United States of America, Hong Kong, China, Korea, United Kingdom, and United Arab Emirates and Switzerland (ibid).

On July 26, 2006, Aklilu Lema, senior officer with the Ethiopian Customs Authority, said in a news release that the revenue was obtained from the export of over 510,700 quintals of sesame to international market, 183,000 quintals more than the previous fiscal year. During the past fiscal year, Ethiopia earned 142 million dollars (Xinhua, 2006). From this amount, Kefta Humera, North Ethiopia's Tigray state collected over 38 million U.S. dollars from export of sesame during the fiscal year July 2005-July 2006.

All these indicates to have Resource Management and this includes the availability of resources such as land (proper & timely preparation), water (availability & its proper usage), technology (best suited for crops cultivation & marketing), credit, physical inputs (quality, price & availability), storage (proper use), marketing & distribution and time is always limited. Integration of the available resources is therefore of utmost importance in this sesame production and its marketing (Jerry La Gra, 1990). The next chapter discusses the conceptual frame work of the project.

Chapter 3

3 A Conceptual Framework

This chapter describes a conceptual framework for examining factors that are affecting sesame production and its marketing that underlies the case studies of Wereda Kafta Humera. It presents the framework in a systematic way in order to identify significant aspects of the relationship that call for further research. It uses the framework to develop a series of researchable questions that are related to the outlined in the title.

3.1 Premise for the Frame work

A conceptual framework is developed to illustrate and serve to assess the problems with production and marketing. It is drawn from theories of induced technical and institutional innovation in agriculture that explain changing management systems in terms of changing economic environment that is facing to farmers as well as merchants. Additional variables that are also important determinants of resource management have been included such as market and institutional development, the linkage between production, and marketing for the cash crop.

The conceptual framework considers the effects of driving forces of change, and changes in access to technology, inputs, markets, infrastructure, services, resource management, know how of farming and marketing. It also reflects on more slowly changing factors such as agricultural potential, local institutions, and culture. In addition to this, it also considers the influence of government policies, programs, and institutions. These all influence income strategies, land management, and outcomes in many ways at different levels. They affect the driving forces and factors at the local level, by directly promoting income strategies and land management practices, or by directly affecting outcomes.

The primary intention of the framework is not to attempt to quantify the magnitude of the impact of reforms on indicators of production and marketing (that is, a change in X has a Z percent impact on the production and marketing status of Group Y), but to provide a mechanism for better understanding the likely direction of change brought about by the

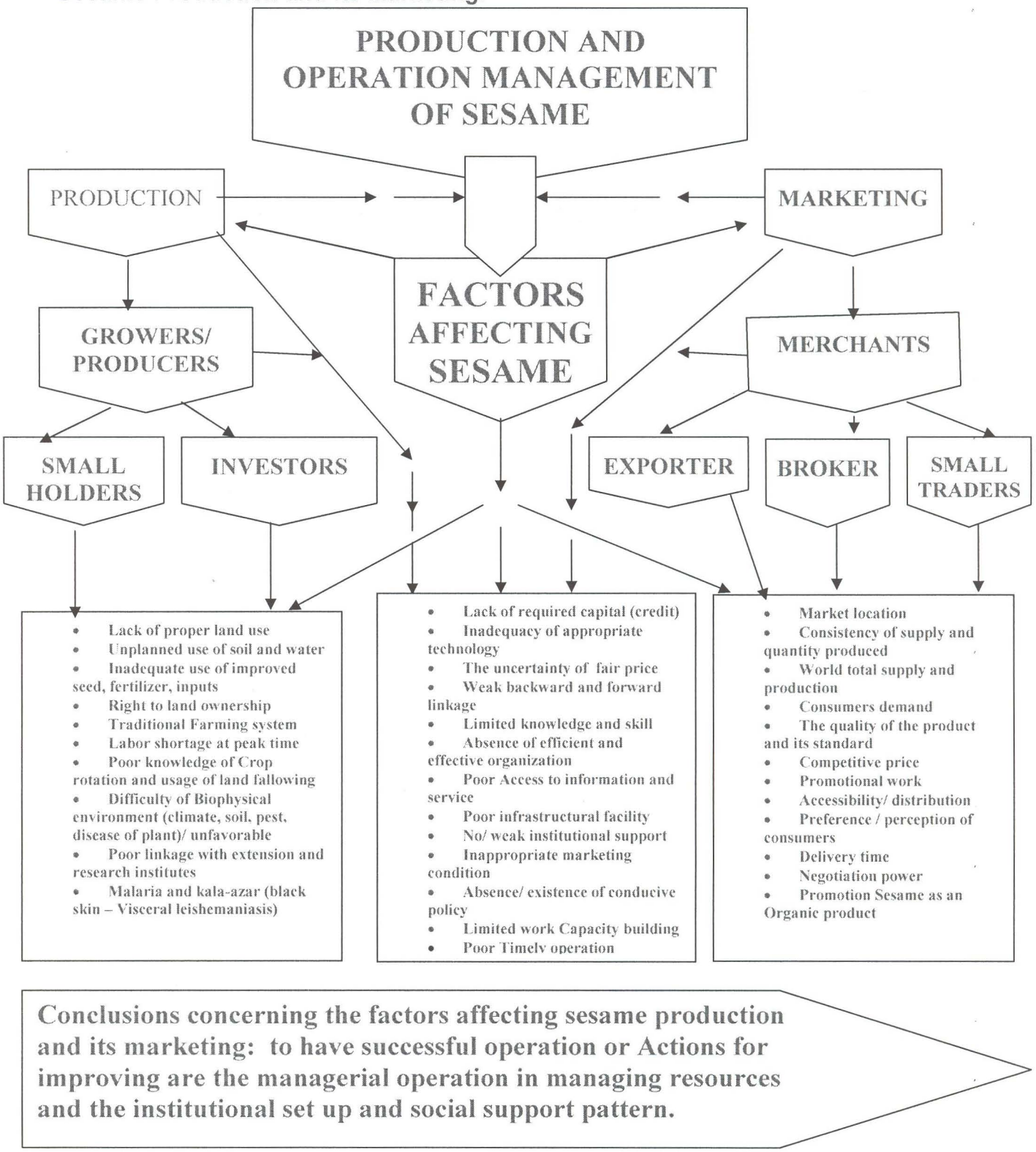
factors that affect and how this is affected in a particular context. The aim is to inform a more considered design and implementation of integrated work and utilization of resources package.

Generally, this conceptual framework indicates the operations management. According to William J. Stevenson, it is the management of processes or systems that create goods and/ or services (growing and/ or marketing). It encompasses forecasting (weather, soil, demand, price, quality etc.), capacity planning (labor, capital, facility), scheduling (time set up), managing (storing, timely operation), assuring quality (organic, based specification), motivating employees, deciding where to locate facilities and more. The system of producing sesame and its marketing consists of resources (land, capital, labor, time, information and other facilities). Most activities performed by growers as well as exporters fall into the realm of operations management. The operations are of two types. One is primarily grower of sesame seed (agricultural product) and the other is a service giving (marketing sesame basically exporting). Both involve scheduling of activities, ordering and managing demand and supply, selecting and using different inputs, satisfying quality standards and above all satisfying customers. In both the success depends on managing resources, integrating both and needs institutional support.

3.1.1 Description of the Framework:

Any attempt to assess the impact of various inputs on sesame production and marketing should take into account, the agro-climatic constraints, and the level of physical and human capital. The framework is proposed in describing a process for the factors that account for the diversity of national and household-level responses participating in growing and exporting sesame in a change both between and within countries. It also incorporates the different input changes component, and the ability of farmers to respond to the changes.

Figure-1: An Analytical Conceptual Frame work for linking factors affecting Sesame Production and its Marketing.



Conclusions concerning the factors affecting sesame production and its marketing: to have successful operation or Actions for improving are the managerial operation in managing resources and the institutional set up and social support pattern.

3.1.2 Crop production

Crop production requires skills in managing each resource in using and covering a variety of operations throughout the year. In cultivating, cultural operations begin with land preparation. First, the soil is disked once or twice. After this initial disking, land is chiseled one or two times, followed by one or two additional disking. The number of passes for each operation depends on the amount of residue of the previous crop to be turned under as well as the tilth of the soil. Land leveling is not known in the area. Other soil fertility management techniques include crop diversification, rotation, and cover cropping. The grower's experience and management style, soil type, and each crop's unique cultural requirements factor into the variation depending on the planted crop and weed densities. In addition, harvest and packing methods may vary depending on a grower's labor and equipment complement, as well as whether or not any packing facilities are available.

The current farming system (notably its productive potential) is a key determinant of the preferred strategy. For example, in irrigated farming systems, intensification has been observed to be an important strategy for enhancing livelihood standards.

A crop's rooting depth and growing season greatly affect the water needs. For example, shallow rooted crops and crops grown over the summer months generally require more frequent irrigation than deeper rooted crops or crops grown in the winter months. Soils with high levels of organic matter may be better able to retain moisture and therefore decrease the amount of applied water.

In Agricultural sector productivity increases come from improved technologies, education for producers, better infrastructure, improved institutions and more effective policy. Improved technologies have provided the most noteworthy and the most reliable source of increased productivity (Alexandratos, 1995). In addition to this, rainfall, altitude, soil type and depth, topography, access to irrigation, presence of pests and diseases, and others influence the production of agricultural products in a particular place. Agro-ecological conditions also influence labor intensity and resource

management practices. In general, these are expected to be associated with higher labor intensity and adoption of more labor and input-intensive practices, by increasing the marginal return and/or reducing the risks of these inputs. For example, fertilizer use is likely to be less profitable and more risky in low-rainfall areas because nutrient uptake may be limited by inadequate soil moisture.

The growers have marketing challenges such as world supply, consumer demand, pricing, and the market structure that contribute in the growers' ability in selling his/her product. Therefore, production and market risks both affect the profitability and economic viability of grown crops (Laura Tourte, David Chaney, Pete Livingston, Richard Smith, 1996).

Land management, human capital (e.g., investments in education), improvements in land quality, promotional work for markets that promotes greater production and incomes as well as improved resource conditions are changes that lead to improved agricultural productivity, income, and natural resource conditions.

The objective of this project is that to have an appropriate strategy for minimizing the constraints which are largely affected by resource management, inputs, rain distribution, the market access, infrastructure (e.g., roads, electricity, and communication), available technology and labor etc. All these together determine the local relative prices of inputs and outputs, which in return determine farmers' comparative advantages in choice and determines the agricultural production possibilities. Irrespective of local comparative advantages, other factors, such as access to new technologies via technical assistance, access to credit, education, land tenure, and others, can also influence resource management practices by affecting the information that farmers have access to and the constraints that they face.

Other important influential factors are the access to programs and services, such as government or nongovernmental organization technical assistance and micro–finance institutions, education and health services, and so on. Although local institutions can evolve in response to changes in economic opportunities and scarcities, they are also largely affected by history and cultural factors and preferences. Culture is also an

important determinant of local consumption preferences and uses of factors of production.

Government policies, programs, and institutions at many levels influence production and marketing of sesame. The government tried to organize exporters of oil seeds, as well as growers to have cooperatives, unions and for the one who hold above 30 hectares an association in the area. In addition to these, a research institute in the area is organizing. The land management affects production, resource conditions, and household income. Macroeconomic, trade, and market liberalization policies affects the relative prices of commodities and inputs in general throughout a nation. Agricultural research policies affect the types of technologies and inputs that are available and suitable to farmers in a particular agro-ecological region. Infrastructure development, agricultural extension, conservation technical assistance programs, land tenure policies, and rural credit programs affect awareness, opportunities, and constraints at the grower and merchant level.

Irrigation directly affects agriculture. It likely contributes to labor intensity by enabling multiple crops per year to be produced and by increasing the return and/or reducing the risk of labor invested in crop production. It also encourages farmers to adopt complementary productive inputs such as fertilizer, particularly where soil moisture constraints limit farmers' willingness to use fertilizer. As a result of these effects, irrigation is likely to contribute to increased value of crop production and incomes.

Cash crops that are produced organically can often be sold for a premium price over conventionally grown products. However, the industry is extremely competitive and returns to growers are dictated by the total supply, consumer demand, and the available organic outlets. If market saturation occurs, growers may then be forced to accept lower returns and/or market their product without the organic designation at conventional prices since marketing is a process that helps in competing, in shaping the practice to own and your partners/ desires and dreams. Consistency of the supply, market location and accessibility may influence a consumer's willingness to purchase organic commodities though, organic agriculture's perceived benefits.

3.1.3 Marketing and Distribution

Effective marketing and distribution systems, where agricultural inputs are timely and efficiently delivered and small farmers are able to sell their product easily and satisfactorily, and in turn buy what they need, are essential for agricultural growth.

Access to Markets and Infrastructure: Infrastructure such as roads, telecommunications and power also contributes to the high cost transaction. When roads are not in good condition the turn-around time becomes longer and hence charges per kilometer become higher. In telecommunications and power the problem is not on the price but the ease of use. Without modern telecommunication export and import is becoming virtually impossible. To upgrade and modernize this infrastructure major investment programs are being undertaken. These programs are expected to give tangible results within the coming five to seven years (see http://www.eeaecon.org).

Access to markets and infrastructure is critical for determining the comparative advantage of a given location (e.g., distance to roads, condition of roads, distance to urban centers, access to foreign markets, degree of competition, access to transport facilities). Humera type Sesame has little or no comparative advantage since it was far from roads, more remote from markets. It is transported over long distances and will have high costs. But in areas of high market and road access, production of high-value crops is likely to be profitable if agro-ecological conditions are suitable. The product sesame is not more storable in the area because of no storage as well as the area hotness though the seed is a transportable crop. In addition to these, it incurs additional costs for fumigation and other costs.

The non available of market and road access on the value of crop production have negative effect on input use, out put sales and income. To the extent that better access promotes production of higher-value crops, increases the local prices of crops, and promotes more intensive use of inputs, it tends to increase the value of crop production in return increases households' income earning opportunities. By increasing the profitability of agricultural production, greater market access will promote expansion of production into forest areas or other fragile lands if the costs of productive factors and output prices are unaffected by market access, which will increase land degradation in

such areas. But the best option will be an increase in its productivity in a given plot of land than expansion using different inputs.

These factors (agricultural potential and market access) interact with each other in complex ways. Market access also tends to be better where agricultural potential is higher because the returns to developing infrastructure are greater. Some of these relationships can contribute to self-reinforcing patterns of development.

The potentials for income, resource management practices, and the effects of policies influencing these decisions are likely to vary across such domains. For example, commercialization of high value, but less perishable, crops such as sesame seed also can be produced in areas of high potential and market access. Non-farm development, linked to agricultural production through development of input supply and agricultural processing industries and demand linkages for rural services, also may have strong prospects in high-potential, high-access areas.

Access to programs and services can influence the resource management practices and marketing the products by affecting their access to information about technologies, their capacities to effectively use and remove constraints. In this subsection, its assistance programs (technical assistance is likely to be an important determinant of their adoption since natural resource management which are knowledge-intensive), credit (enable farmers to acquire physical capital, thus contributing to its adoption and increased capital and input intensity in agriculture) and microfinance programs, and educational services are considered to have significant influence on income and resource management. This may promote increased production and marketing of high-value crops production. Credit may also facilitate labor hiring and thus promote labor intensification.

3.1.4 Promotion of Sesame Seed

To promote the market of cash crops, the government has organized the exporters of pulses and oil seeds as well as a body that looks for this as an export promotion having a web site. Trade fairs were made repeatedly to show what products are produced in the country. A diplomat led visit/ tour was made taking with their samples and

brochures. Property rights and the form of land tenure can affect land management and productivity for several reasons. If there is insecurity of tenure, the household operating the plot may have less incentive to invest labor and capital in land improvement. This is not necessarily the case, however, if the household can increase Tenure security by investing in the land. In that case, there may be more investment on land having insecure tenure. Ownership strengthens the impacts of tenure security. In particular, formal title may facilitate access to credit and help to prevent or resolve land disagreements.

In growing cash crop and marketing, the basic operations priorities include cost, product quality and reliability, delivery speed, delivery reliability and ability to cope with changes to demand. Starting from these, any grower must be the lowest cost producer because any buyer buys strictly on basis of low cost. As a result, customers use cost as the primary determinant for making purchase due to being fierce of competition. After all, there can only be one low cost producer who establishes the selling price in the market.

The ability to respond to increase and decrease in demand is an important factor in the ability to compete even it requires even to sell below its cost at a loss. It is difficult to develop the ability to offer different products using the time requirement and diversification if possible. In addition to this, the priority relates to the potential of the growers and exporters to supply the product on or before a promised delivery due date by providing the needed quantity and types of product (Chase Aquilano, 1998).

3.1.5 **Management**

Management of the growers as well as exporters have the responsibility to concentrate or decide on which to focus the resources basing the characteristics. Growers have to adopt on international perspective toward production and marketing. Competition is more intense and has greater number of players and tremendous opportunities that can exist. Generally, the growing intensity in competition forces to re-examine the decisions done. The individual as well as the team have to realize the need to establish priorities as dictated by the market place requiring changing over time and needing to update by improving the performance continuously for being competitive.

Conformance quality (the ability to grow and produce and export as per the specification), product reliability and delivery dependability are included in the priority that are basic requirements. Low price and product quality are increasing their importance. The low price capability in particular has moved up and appearing that quality alone does not satisfy customers any longer. To have low price the production per hectare must increase other wise cost will not decrease. Therefore, the product must contain the important attribute like conformance quality, delivery speed, reliability at the lowest price possible.

An interface between marketing and production is necessary to provide a business with the understanding of its markets from both perspectives in order to describe market oriented. Priorities are key to competitive success. So, differentiating the product of one from another (cost of product, quality and reliability) and screening criterion that permits the product to even be considered as possible candidate for purchase. Meeting global quality standards is difficult due to the difference in operational practices in different countries. Ethiopian whitish sesame, particularly Humera type is organic though it is not certified by certifiers, has sweat taste for consumers, and its colour is white.

Managing the entire entity operation must excel on all dimensions of products in finding out what are important to the customer. In improving the production and export it needs to seek a continual usage and improvement of different inputs (technology, labour utilization, method) through the application of suggestions, ideas of team members. With the globalization of sesame seed market, management can no longer be contended with a local view. On demand side exporters and growers approaching the world market face a number of questions. The market is served from a number of competitive countries of origin (Chase Aquilano, 1998).

3.1.6 Linking Farmers to Markets

Traders and farmers have not developed markets together; it needs an external organization that plays the role of integration. The essential feature of all of these is the importance of a high level of trust between the two parties' exporters and growers.

Exporters have developed informal mechanisms that allow them to link farmers to their businesses in order to ensure a permanent supply according to market requirements. Agreements are not written, but everyone understands and accepts them. The exporters emphasize quality. Some of the exporters are committed to pay in cash or by post dated cheque for three months after delivery. Additionally, they buy the entire yearly production according to the pre-established parameters of quality and quantity. Some of the products are sold to the nearest country surrounding the boarder at the time of price variation and this indicates the export process is not formal - rather, it crosses the border unofficially.

The supply chain upstream is not consistence, since it does not base on mutual trust and a written contract. A precondition for such a linkage is the availability of markets for quality produce, in this case provided by two supermarket chains.

There is no a pilot market chain analysis involved collectors, processors and traders, policymakers and cultivation specialists in order to identify ways to generate market value and reorganize the chain to generate income for the resource poor. A multi-stakeholder meeting with the market actors was not organized to bring together the market actors to discuss means of further developing the sesame market.

The major constraints recognized in consultation with the various market actors were (i) the lack of cultivation practices, (ii) harsh working conditions, (iii) lack of training or machinery for value-addition, (iv) high fluctuation of demand and price with unstable supply, and (v) lack of control of the marketing chain by the suppliers, poor market transparency and little trust among the actors. For the constraints solution, there were no opportunities in enhancing the market like: (i) horizontal integration through cooperatives of collectors to increase their benefits, (ii) vertical integration of collectors and traders through the involvement of the business sector to benefit the rural communities, and (iii) development of sesame cultivation practices supported by the government and local institutions.

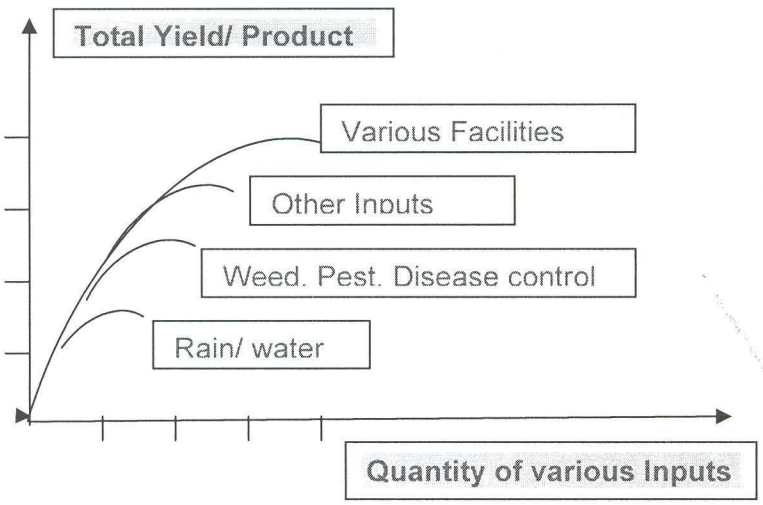
Among other measures, there is an urgent need to fill the information gap in respect of technology, market and other inputs for the betterment of the farming community. It is

also necessary to support the farmers and exporters by enhancing their access to technologies, market information and linkages, expert advice and risk coverage options through knowledge connectivity. So, awareness campaign must have both growers as well as merchants.

As the primary governmental and general support institution, Ministry of Agriculture is expected to provide overall policy direction for the sector; monitor developments in the sector, provide current information and develop long-term plans; and respond to emergencies in the sector in areas such as a sudden crop loss as a result of pests and disease or weather.

The knowledge of marketing is limited and with this limitation entering the export market will be difficult and marketing knowledge is a prerequisite to trade. Basing this, the government is trying to solve part of the problem by establishing specialized institutions such as the Export Promotion Agency for exporters and marketing agency for growers (Assefa *Admassie; and Abay* Asfaw). In general, the relationship between various inputs used in production and marketing can be seen using PPF.

Figure – 2: Relationship between inputs used and yield.



Source: McLeod (1989).

As an important concern, some issues that require discussion in relation to the farming area of Wereda Kafta Humera are:

- Empowering the poor for timely agricultural operation in credit arrangement, facilitating for establishing and managing own marketing institutions;
- Conducive policy and legal frameworks for grassroots peoples' capacity building for organizing/ managing true cooperatives/partnerships;
- Macro/ Micro policies on the sesame production and its marketing; and
- The role of the government on production and marketing in the Area. empower

The Agriculture and rural development bureau is primarily responsible for the provision of technical and extension services to the farming communities. The problems affecting the extension service can be summarized as follows:

3.2 Organizational problems that affect production are poor linkage with agricultural research and other related organizations in agriculture which needs commitment of extension workers in helping the grower to produce as much product as he/she can from that given plot of land; poor policy direction implementation; lack of an infrastructure to support extension; limited transportation and other support facilities; scarce material resources; and weak monitoring and evaluation of extension officers and the overall program.

3.3 Extension program problems are a top down approach to program planning; poor linkage between extension officer and farmers; programs that do not respond to the real needs of farmers and do not encompass the whole commodity system; and not enough focus on the marketing component.

Chapter 4

4. Descriptive Analysis

4.1 International trade in sesame

FAO Statistics Division document dated January 26, 2007, on volume of production and coverage of land, imports, and exports for 150 countries indicates that Sesame is still one of the most important trade items.

4.1.1 Sesame Seed Production and Producing Countries

Sesame is produced in around 65 countries of the world. The production of sesame seeds in the world is dominated by a few countries in Africa and Asia. China produced approximately 32.3 - 25% of the total world's production for the 2000 to 2005. The five topmost producing countries contributed around 70% of the total production in 2005. The production volume has grown steadily over the last decade and is still rising. Ethiopia's share in 2000 - 2005 was 1.7%, 0.6%, 1.45%, 1.17%, 1.92%, 2.24% respectively. See Annex – 1 in the years 1994 to 2004.

In terms of land coverage of sesame production as well is dominated by a few countries of Africa and Asia. From 2001- 2004, India's area coverage on sesame seed was the largest having share of approximately 23% - 27% of the world's production. The land coverage in all the years shows insignificant variation (see Annex – 2, 1994 to 2004).

4.1.2 Imports:

The information covering the last five years indicates the recent import patterns and future trends. It indicates exporter target at strategies and focus where demand is increasing. China produces a lot, but it is a major importer and its share is the highest in 2004, approximately 16.52%. The five topmost importer countries are China, Japan, Korea, Turkey and USA. Japan was leading in the year 2000 to 2004 on a declining trend 21%, 19%, 19%, and 17% respectively. Production has grown steadily over the last decade and is still rising. The origin of the imports varies substantially. Most of the exporters' countries are large consumers of sesame seeds, mainly processed as

cooking oil, and only part of their production is exported. Ethiopia exports almost all of its produce. (See Annex – 3 in the year 1994 to 2004).

4.1.3 Exports:

The presence of export is generally an indication of a huge volume of local production. However, it may also include re-exports in the absence of any local production. Therefore, drawing conclusions based on statistical data alone may be misleading. For example, if a cold-climate country exports an exclusively tropical product, it is a clear indication of re-export (COMTRADE database, UNSD).

In 2000 the major exporters (in 1000 tones) were India (185), Sudan (210), China (126), Nigeria (30), and Ethiopia (27) while in 2004 the major exporters were Sudan (195.86), India (160.43), Ethiopia (76.53), China (62.95), Myanmar (46.83), and Nigeria (39.8). Ethiopia's share for the years 2000 to 2004 was 3.25%, 1.82%, 8.27%, 8.46%, and 8.87 % respectively. This indicates a steady increment in exporting its sesame seed except the decline in 2001 (See Annex – 4).

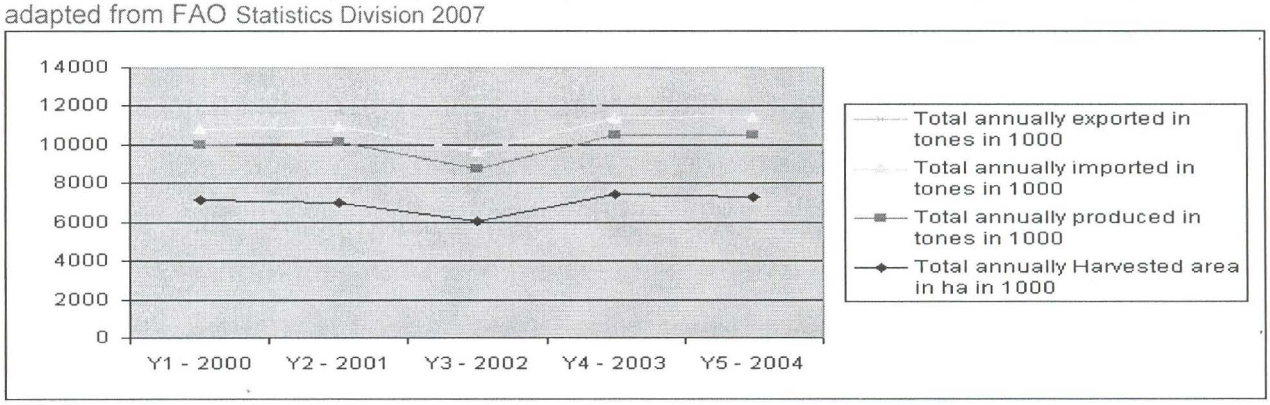
4.1.4 Sesame Status:

In 2000 the area of sesame harvest in the world over was 7,158,000 ha, and the amount of seed produced was 2,823,000 tones at an average of 394 kg/ha. There were 796,250 tones of sesame imported. In the year, 2004 area coverage was 7,291,000 ha; amount of sesame seed produced was 3,188,000 tones and export was 984,030 tones. This indicates that there is an increase in area coverage by 1.9%, in production by 12.93% and in export by 4.22% and imports increased by 23.58%. The trends are illustrated below as follows and you can refer FAO website as of Feb. 2007 except the data of 2005 (http://www.intracen.org/) in Annex – 5).

Table – 1: Trends of five years (2000 - 2004) cultivated land, production, import, and export adapted from FAO Statistics Division 2007

Year	Y1 - 2000	Y2 - 2001	Y3 - 2002	Y4 - 2003	Y5 - 2004
Total annually Harvested area in ha in 1000	**7158**	**6964**	**6087**	**7430**	**7291**
Total annually produced in tones in 1000	**2823**	**3188**	**2691**	**3094**	**3188**
Total annually imported in tones in 1000	**796.25**	**815.48**	**822.79**	**879.06**	**984.03**
Total annually exported in tones in 1000	**827.58**	**805.89**	**772.07**	**816.26**	**862.47**
Source: FAOSTAT, 2007;					

Figure – 3: Trends of five years (2000 - 2004) cultivated land, production, import, and export adapted from FAO Statistics Division 2007



Most of the sesame cultivated under rain fed agriculture. In any given year, the production can go up or down depending on rainfall. The increase in production in some area like China is due to improved cultivars and in others; the use of improved seeds as well as irrigation.

4.2 Sesame Seed production in Ethiopia

Among the important oil crops grown in Ethiopia, sesame seed commands a unique position chiefly because of the fact that it is highly adapted to arid and semi arid low land environment and yields well. Viewed in this context sesame is a major oil crop in North-west Tigray (Humera and its environs), North Gonder (Metemma and the surrounding areas), and Oromia (East Wellega). The whitish Humera type has very high demand in the world market and is known for its quality by major importers and is also used as a reference for grading in the international markets.

Ethiopia grows sesame the shattering varieties in huge amount in Humera, which have been produced from the variety of *Hirhir, and Adi* under rain, fed. The seeds of these un-branched variety have a high oil content of over 50 percent, and the Humera type sesame has not bitter flavor that limits its value on the whole-seed market, its whitish color and being organically grown seed, due to these, it makes it to be quality product to be selected. It has not been developed to allow mechanical harvesting. In other areas of the world, the sesame seed has bitter flavor that limits their value on the whole-seed market. Non-shattering varieties have been developed to allow mechanical harvesting.

Mostly all small-scale farmers who handle below 5 hectares and commercially farming investors who hold above 30 hectares and up to 2,500 hectares for whom it is a major source of cash income and hard currency grow the crop. Its yield in the area is between 2 and 7 and on average about 4 quintals. On the average output per hectare has stagnation over the years. It tolerates drought but it needs rain at critical time and is the most important agricultural commodities in the country with respect to value of production. Sesame seed is an export of unprocessed commodity. The domestic market is characterized by weak demand.

A report of one well-organized commercial farm producing sesame has put that the productivity of Sesame even under small holders' traditional farming is observed to be between 0.25 - 0.6 tons per hectare. However, some improved varieties developed by EARO Ethiopian Agriculture Research Organization found to yield between 0.9 - 2 tons per hectare under irrigated condition (see http://www.attra.org). Nevertheless, in Ethiopia particularly in Humera area the yield varies between 0.25 – 7 tons per hectare. There is no irrigation used to plant sesame in the area.

In 2003 national sesame area increased by 10 % to 189,965 hectares of which 81,000 hectares were noted to be commercial plantings in West Tigray. Generally, both the small scale and commercial production systems exist in Ethiopia. Most of the sesame farms do not use chemical fertilizers and other chemical inputs hence the potential to sell under organic labeling by acquiring appropriate certification is enormous (ibid).

4.3 Trends in Wereda Kafta Humera in Sesame Seed production

Sesame seed production increased from 20,280.19 tones during 1988/89 to 66,076.30 tones in 1998/99. Its area coverage expansion increased from 48,247 hectares during 1988/89 to 135,604 hectares in 1998/99 accounted for 281 per cent and yield for 326 per cent. In the last decade, from 1988/89 to 1998/99, the annual growth except from 1989/90 and 1990/91 declines seen in yield and usage of area in the other years and expansion of land is increased. The yield growth is the result of area expansion.

Table – 2: Sesame Production in tones and area coverage in hectares & yield/ hectare

S.N	YEAR	HAM Plc			WKH		
		Land cultivated	Production in tones	Yield/ hectare	Land cultivated	Production in tones	Yield/ hectare
1	1988/89	3603.59	1,421.80	0.395	48,247	20,280.19	0.42
2	1989/90	4411.50	1,564.40	0.355	45,819	18,327.61	0.4
3	1990/91	4582.30	1,504.84	0.328	45,819	18,327.60	0.4
4	1991/92	2,675.00	612.58	0.229	75,502	24,494.40	0.324
5	1992/93	5,330.00	1,449.76	0.272	78,000	52,732.10	0.676
6	1993/94	4,468.00	2,189.32	0.49	75,658	22,237.80	0.239
7	1994/95	3,448.00	841.31	0.244	60,166	23,875.70	0.4
8	1995/96	4,429.00	1,846.89	0.417	91,271	34,929.60	0.383
9	1996/97	6,115.00	1,042.54	0.17	124,844	62,422.20	0.5
10	1997/98	6,633.00	2,076.57	0.313	128,644	77,152.40	0.6
11	1998/99	2,155.13	646.57	0.3	135,604	66,076.30	0.487

Source: Data are adapted from the reports of HAM Plc and ARDO of WKH.

For the purpose of comparison, it can be seen the table above, and the two figures shown by pie graph and line graph of the HAM Plc and Wereda Kafta Humera cultivated land, produced and the yield per hectare difference.

Figure - 4: Trends of HAM Plc of 1988/89 – 1998/99 EFY Production in tones, and Area Coverage in hectares.

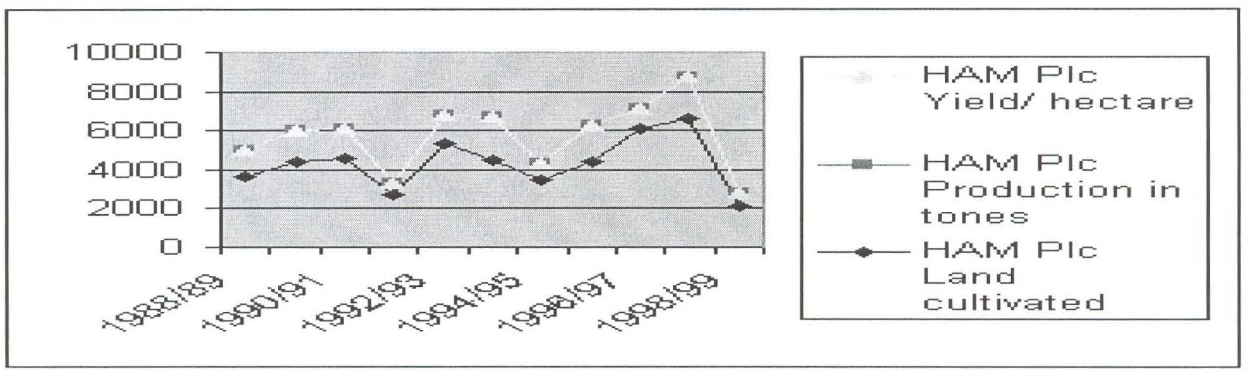
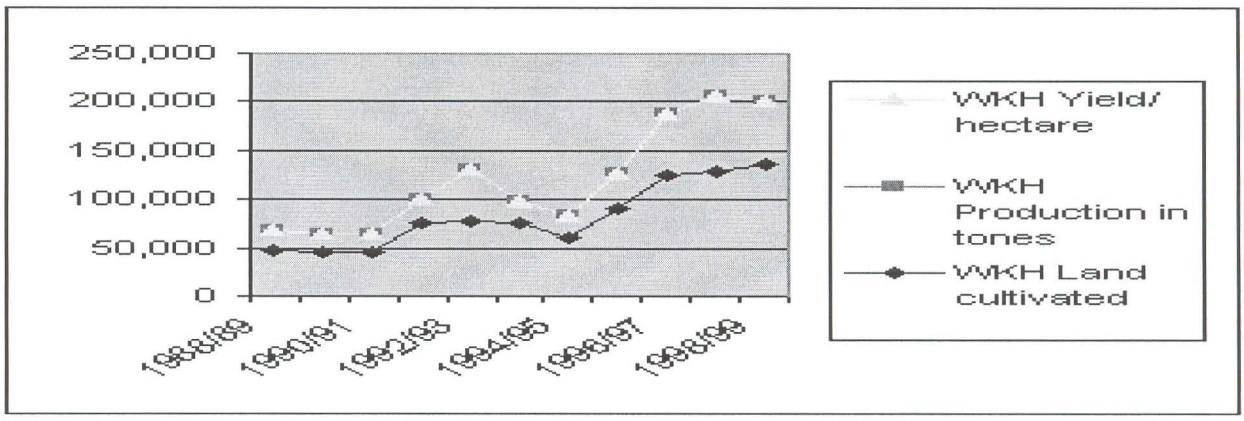


Figure - 5: Trends of WKH of 1988/89 –1998/99 EFY Production in tones, and Area Coverage in hectares.



4.3.1 Weather data: it is understood that there is no long-term complete weather data records of temperature, rainfall and humidity for the area. However, a 14 years 1972-1986 rainfall data of Humera at an altitude of 550 meters above sea level indicates to be 613.4mm. The mean annual temperature is believed to be between 30 and 40 degree centigrade.

Table - 3: Rain Fall Trend by Year and rainfall in mm (Source: HAM Plc)

S.N	Year	May	June	July	August	Pagumen	September	Total
1	1989/90							883.4
2	1990/91							NA
3	1991/92		152.8	314.3	256.8	40.2	39.5	**803.6**
4	1992/93		91.8	192.3	209.8	17	140.5	**651.4**
5	1993/94		135.9	199.1	119.7		27.6	**482.3**
6	1994/95		73.8	246.6	194.5	8.8	17.7	**541.4**
7	1995/96		215	203.2	309.8	65.1	13.5	**806.6**
8	1996/97		90.8	135.8	123.7	30.8	26.3	**407.4**
9	1997/98	21	144.9	286.6	-	-	-	**452.5**
10	1998/99	-	57	199	166.8	-	103.1	**525.9**

The rainfall data collected from HAM Plc farms show that:

1) The lowest rainfall in 1996/97 EC was 407.4mm, the highest 883.4mm in 1989/90.
2) In another area the lowest 616.7mm and the highest 984.5mm.
3) In other lowest 367.4mm and highest 771.3mm.
4) In another area lowest 273.1 and highest 759.4 mm.

The forth represents almost to all. From the data, the rainy season ranges between 48 and 61 days in some and 33 and 70 days in other farm area. However, for an agriculturalist having the total amount of rainfall and number of rainy days is not sufficient to manage a farm. The distribution of the rainwater has an impact on the plant. The non rainy days interval at the critical time of need of rain is problematic, since the non rainy days have longer intervals lying between 10 to 15 days a month.

The rain fall 1994/95 to 1998/99 EC distribution is not fair. It differs in some months very less rainfall and in some it seems excess and this by itself within the month is not fair in distribution of rain.

4.3.2 Various premises obtained from group discussions: Basing the discussion made with different groups and individuals, the crop production looks like:

- **Rain fed:** Total crop failure or yield reduction of sesame was due to shortage and excessive rainfall. This indicates that the rainfall in both distribution and amount were not fair and the relative low yields of sesame grown in the area suggest that the rainfall is the most important limiting factor for production. Because of the distributions of rainfall being fair or not, the farmers say that if the first year is for growers, the next will be for animals.

The combination of the positive factors fair distribution of rainfall described previously, and their experience on land and farm management explains the overall improvement in crop performance in all the main production area. It is due to (i) direct effect of rainfall distribution on crop growth and development, (ii) timely pre-season cultivation and main season husbandry, and (iii) increased investment in inputs.

The growers are waiting for a given favorable rainfall and this indicates that the role of rainfall as the single most important determinant regarding crop performance in the area is critical. They and the government have not done other alternatives for cultivating through out the year, though at this time the government has studied to irrigate about 50,000 hectares of the area by diverting Tekezie River.

- Types of sesame seeds used in the Wereda are *Hirhir, Agunaema, Abuyosef and Adi.* They collect the selected seed from the best farmer or if no alternative, they select the best from their crops

The land cultivated is flat but in some areas, there are shallow areas. Both have their own advantages and disadvantages basing the amount of rain. In shortage of rain the flat lands productivity is high while in shallow the yield becomes low. In excess of rainfall the flat area becomes muddy and its yield becomes low while in shallow area its yield will be high. Most of the soil type is black cotton soil or clay unless in some areas you can get reddish and sandy

Except for the peasants who are resettled and the poor accepted to own two hectares others or investors get land renting. The rent per hectare and per year is birr 30. According to the area the investors are those who hold 30 and above hectares of land. The highest owned hectare is 2500. Some investors are rented from those who have rented from government for Birr 1,500 per hectare.

Basing the discussion with the six focused groups, there is high variability in crop productivity from year to year as well as from farm to farm in all crop types of the area. However, the variability is more pronounced in sesame. From the variability point of view among farms, the highest yield per hectare recorded for sesame is6.50 quintal, whereas, the lowest productivity is 1.65 quintals. This varies between 74.6% and 25.4%. Crop productivity could be boosted with minimal efforts such as introducing superior varieties, maintaining proper cultural practices (timely sowing, weeding, maintaining proper plant population and harvesting). The farmers are cultivating sesame due to demand of sorghum not only become low and also its market price become low while sesame market became attractive and its price is being high since 1994 no decrease in its price and has been an income generating cash crop.

- **Seedbed preparation:** sesame seedbed requires a well-levelled, fine seedbed but little attention is given to the proper preparation and pre-planting operations. Due to shortage, erratic conditions of the rain and nature of the soil, such exercise was slowed down the application and its practicality. The first disking is done immediately

after the first shower of rains since the soil is somehow workable due to the nature of the black clay soil hardiness having a problem in disking. They disk it only once that has been exercised. It indicates weak preparation.

- **Planting date:** due to unpredictable and high variability of rainfall pattern, optimum planting date is often missed and following operations such as gapping, thinning and weeding are not done effectively and efficiently on time. The recent trend of late rainfall occurrence early to mid July forces sesame growers in the area to search and go for very early materials about 90 to 105 days maturity. The delay results in yield reduction due to moisture stress.

There are two known varieties of sesame (*Hirhir and ADI)* under production. The varieties are sourced primarily from Sudan and the surrounding areas and from own farm selection, which is done traditionally. They are of shattering variety. On late harvest and by wind hazard they shatter resulting low yield. White sesame seed has high demand in export market. *Hirhir* is the major commercial variety introduced and most preferable due to its colour, short seasoned, uniform maturity and tolerance to water stress. *ADI* from WARC is additional cultivar source and whitish but not used. The other varieties from WARC were not accepted basing colour. Seed assistance programs were practically absent being restricted to a few emergencies programs in response to localized problems. There is no preparation of improved varieties. It is true that without improved seeds release better estimates of performance are not waited. However, improved seeds, which adapt to the agro-climatic conditions of the area and having different growth periods, are crucial. Most growers select seeds haphazardly/ randomly though there are best growers who select seeds strictly and carefully. In land preparation and disking, first they clear the land once; after a rain rains they disk the land before plowing and finally the land is disked for the second time at time of seeding.

- Planting in rows is not used. They do not exploit at the environmental resources through planting in rows. The benefits of fertilizers and pesticides are unlikely to be fully realized. There is no timely seedbed preparation, planting, weeding, and harvesting. Late preparation of seedbed causes a delay of planting and the late planting of sesame (should end by end of June) results in substantial decrease in

yield. If the rain is high and continuously raining, the weeds grow faster than sesame seed, so delaying in removal of weed reduces the soil seed bank and the quality content of the seed will loose.

- **Sowing date, rate and method:** sowing is one of the very important operations for successful rain fed agriculture. Its quality depends on the quality of seed bed preparation, level of moisture, the implement used for sowing etc. sowing date is June 20 to July 10 for sesame. There is no one time sowing operation is completed in accordance to the schedule. It is delayed up to 12 days due to the complete fall of late occurrence of rainfall. Spacing and depth of planting plant density and optimum population per hectare are not known and there is no row and spaced planning. Seed rate is estimated on time taken by tractor coverage. This affects the uniformity of seed distribution. The seeding rate used does not have any standard indicating that it is not known due to this they might use excess seed or less seed. It is the same with the depth of sowing. They do not control it. The method of planting employed is neither broadcasting nor row drilling.
- **Weed control:** the current weed control practices are manual weeding using hand tool. Mechanical and chemical weed control is never used in farms. Emergence and rapid growth of weed leads to severe crop. If it is not timely handled or yield is directly related to the earliness and effectiveness of weeding in the area, the seed cannot compete well and will be damaged. Weed competition was again fierce, as the good distribution of rain generally enhanced all plant growth. The weeds are spreading at an alarming rate and it is the most limiting factor for sesame production. There is an increase in frequency of hand weeding in the area.
- **Harvesting and threshing:** Age of sesame in the area is 90 – 105 days due to the hotness of the area needing on time cultivation. Sesame was harvested using manually cutting, binding/ swathing and leaving the sesame to dry in windrows, shocking, and combining but in others like U.S can be combined using an all crop reel head or a row crop header. Air speed and cylinder speed should be lowered. At maturity, leaves and stems tend to change from green to yellow then to reddish tint. Sesame is harvested with a small hand sickle below the lowest capsules tied into small bundles and stacked upright. After two weeks of drying the pods open and

collection of seeds is done upon inverting the bundles or *Hillas* and shaking them on carpet beneath. It is the most difficult and labour consuming operation since it has to be carried out within short interval period after maturity. Thus to collect on time with out losing, the grower pays high wages to labourers because of high labour demands within a very short period.

In the area, the temperature heats the plants to dry down quickly allowing direct harvest. Some percentage of the seed was lost. No machine was developed that would go through the field when the lower capsules were dry and shake the seed into trays to feed a holder. However, the traditional method usually provides less return to the growers. Combines with row crop headers are not available in Ethiopia. It will be difficult for farmers to try the platform headers with several of types of air assistance to use because some of the plants of sesame were too tall and others were too small for platform headers. In the threshing, the farmers invert the bundles and hit the stalks, and the seed falls out.

- **Storage facilities:** absence of storage facilities compels farmers to store their products in dwelling houses and in the open air. Under this kind of storage, seed loss in both quantity and quality is unavoidable. In addition to this, sucker insects (they operate at nighttime) suck the seed stored in open air. This all has forced growers to sell their produce at a low price immediately after harvest.
- Crop rotation has received considerable attention in farming business with weed control, disease, pest optimizing water and nutrient use etc. The best rotation decision depends on the crop at hand, available moisture, nutrient disease and weed level and technologies being used etc. but farms are suffering from heavy infestation of weeds such as *Humeray, Demayto, Teken, Wayka, Chiwchiwit, Hareg* etc. weed names are local. These weeds germinate repeatedly through the cropping season, grow fast, propagate by means of seed, cuttings, rhizomes are difficult to uproot and are host for flee beetle and other pests and compete the nutrients. On top of this the area is characterized as arid zone and thus it is a moisture limited environment. Such condition of the farm calls for an urgent and broadened focus on crop rotation. However, there is no planned crop rotation practice; random crop

rotation is undertaken every year. The current crop rotation practices differ from farm to farm and area to area significantly. According to the group, cotton followed sesame is the best for better yield. In view of weed control cotton, followed sorghum is best. In addition to this, one of the reasons in crop yields decline is a result of shortening the fallow period because of increased demographic pressure.

- **Unavailability of materials/ Farm machineries:** getting tractors in time is the problem of most growers who do not have their own tractors, though some investors rent at different locations. They get after the time has passed and it is clear that each operation has its own timeliness. Receiving after delaying even two or three days results a decrease in yield indicating that growers did not meet the demand to make use of the available service within a specific period. There is unavailability of adequate quantity at time of peak demands exposing growers to pay high prices for fuel. In the area, there are no proper maintenance services and distributions of spare parts and results in increasing cost of production by paying over priced spare parts that come from Sudan illegally as well as not durable and genuine.
- The labor rates were noted above the previous year's 30 Birr per day for workers harvesting sesame under piecework contracts elements linking their choice being the vigorous growth of weeds and a shortage of labor. Insufficient family labor and unreliable hired labor to cover all the activities performed at the same time on the farms (crop production, of various types and requirements, and off farm activities). Hired labor is unreliable due to increased construction activities and better opportunities across the border and yellow fever. However, the availability of labor varies from year to year, the hot climatic condition coupled with the outbreak of malaria and *kala-azar* (black skin and its scientific name is Visceral Leishemaniasis) are not inviting to workers. Laborers from highland Tigray, Gondar area and Sudan migrate seasonally to work in Humera area.
- There is no treatment of sesame seed and seeds dressings are not practiced by the commercial farmers and the small holding growers. At time of harvesting and at storage there are pests *Setaito* (sesame suckers) especially that suck the oily content of the seed, are noted to be, as usual, as a cause for concern throughout the

area, where stored sesame weight losses are noted to be high and quality to be less. Diseases and pests damage have been reported in sesame grown in other parts of the world. In Ethiopia a phenomenon of pest has occurred in this year only in the area of two Kebelle (Mykadra and Bereket) which covered 19, 000 hectare by web worm or sesame seed bug or Galmage (an insect which sucks the flower of sesame seed). This pest has also covered a wide area of Sudan in the boarder. This kind of event happened before twenty years but the damage was not significant. Because of this, the yield has been strongly reduced as well as its quality and its color has been changed. Until it damages this all hectares the pest is not well known and treated at the time of production life cycle and the measures taken was unsatisfactory. The extension service giving and the Agricultural and Rural Development office concern was very little to the farmers for the adverse effects of crop diseases seen this year which has covered and damaged 19,000 hectares.

- Soil fertility is determinant for crop yield but, growers are not aware of the fertility levels of their soils. No laboratory tests have been done in any one of the farms. The impact of this also is high in yield. In the other way, the notion that the land is endowed with rich nutrients make most the farmers not even to think of applying fertilizers on their farms. However, the land after it has been cultivated for many years cannot have the same fertility status as it had initially. Those who are aware of the importance of fertilizers are also facing problems in getting them from the local market with a reasonable price. On this year one investor has used fertilizer for sesame seed and he has doubled his yield from 3 quintal to 6.8 quintals. Setting to fire bushes and grasses destroy the essential organic matter of the soil. Some growers leave residues for a longer period in the field which results in the build up of diseases and insects indicating that no usage of cultural practices on clearing crop fields immediate after harvest and burning crop residues in controlling pests and diseases.
- **Credit provision:** The Ethiopian farmers are not able to borrow money using their land ownership as collateral. They have not adequate access to credit. The commercial banks are no longer willing to extend credit facilities to anyone other than the very largest investors in the agricultural sector, which is limited. The

reasons are that agriculture is highly risky and the repayment of loans cannot be assured; the administrative cost of credit provision of small sums to many farmers is high-priced and local currencies are subject to fluctuation and devaluation.

The majority of the rural poor growers get financial services not from the formal financial institutions. They did not get the chances to take credit from bank and micro finances though the credit is limited from microfinance after establishment. Recently, the delivery of financial service for the poor is considered as a policy instruments and development strategy in the process of poverty reduction (FDRE, 2001 and BoPED, 2002, and FDRE, 1996). But the loan size is limited up to 5000 birr and repayment period is a year. And its methodology being group collateral and peer pressure which had been negatively affecting the contribution in filling the financial gap to borrowers.

The kind of service given in the area aims for profit and it is exploitative. The lenders lend money as well as take collateral in the form of physical assets. There is binding agreement of a fixed term, entered before production begins, under which a producer either agrees to sell or deliver all of a specifically designated crop raised on identified area in a manner set in the agreement, and is paid according to a price or payment method, and at a time, determined in advance. The interest rate is often so large and having short maturity periods. Advance sale of the crop or tripling the money they have taken to pay on due the harvest time mostly between 3 to 4 months. The grower is already selling for his leaves.

Still, farmers suffered high prices and higher interest on credit at the hands of lenders. Since most farmers had to take out loans for clearing land, planting, weeding and harvesting until they could (use all of it to grow cash crops) repay their loans, which charged heavy interest. Consequently, these risks and costs are reflected in heavy interest rates, which, in turn, add to the uncertainty of debt repayment. Due to this, the problem remains. The possibility to protect farmers by themselves from usurious moneylenders and traders who can take advantage of their inability to store their produce in periods of low prices is closed.

At the time of weeding, harvesting, the growers have lack of power in setting the credit, as a result forced to enter to the exploitative terms of loan. Screening costs, default rates are low. Requirements to get this credit needs local insiders knowledge, relies extensively on personal knowledge of borrowers, lenders have reliable information and some control over borrowers because of their close relationships with their clients. Even this is not enough. From this, it can be said that still now there is inadequate credit facility and financial services.

- **Economic speculation:** The type of credit that was used to be given by the Ethiopian commercial bank and Guna Trading House Plc was low or in availability of credit facilities. Mainly Guna could not extend the credit facility to growers in the area. It has already stopped. Farmers could not settle the debts claimed by the Commercial bank. Guna had tried over the last six years (1987 to 1992 EC) to boost the agricultural production of sesame at both the farmers and regional levels. It was having a great contribution in the enhancement of agricultural activities.

Until 1991, farmers from their experience about their selling price believe that, Guna shares the idea of promoting the common interest and benefits of the farmer while fixing its purchasing price. After 1991, the condition was changed and a few traders have entered to the market. With fewer players in the market, there would be a fixed and lower price of the product, which made farmers not comfortable with the local selling price of sesame. A dealer may exploit the difference in the market, in competition with other dealers/ exporters, by creating a less efficient market. The ability of a farmer to sell his product on a futures exchange at a known price ahead of its production was contracting. By now even exporters has opened their liaison office and directly exporting Humera via Port Sudan and price of sesame has risen up.

- Because of man made disaster (cultivating the forest area) and natural disaster (shortage of rainfall and soil degradation), drought is becoming a common phenomena in the Wereda. It is a part of their day-to-day activity.
- Though sesame is produced organically, growers do not get fair price for their organic sesame product. The farms in this Woreda are not registered and certified

as organic producers resulting to have a normal price indicating that losing for a premium price over conventionally grown products. It affects grower returns in supplying organically produced, in competing in the world market and in the demand of the consumer.

- **Security of land tenure:** even no long-term leasehold or no links the incentive for long-term benefit and production. Due to this no follow up in both analyzing problems and developing practices that reduce land degradation. The rent bases for only a year making not to invest on land. There is no subsidy for risks and hazards happened. Tax payments are not basing on each evaluation of their income, that is no neat and clear policy basing farms but they base on merchants policy and this makes to complain. In addition to this, it is not evaluated basing their yield. They only see product of one best farmer, whether you get like that or not you pay calculating the yield per the covered area and will be unfair. Due to the land tenure of the area policy not secured which is rented by yearly base, the investor almost 456 who cultivates above 30 hectares say that, let me only farm this year and see my result. They do not care about the land whether it is eroded or not, the things that they can do basing their knowledge in handling and making fertile are not doing and caring.
- Even if the economically active sections of the growers and merchants have an interest to diversify their source of income, they lack managerial, technical and marketing skills to identify in solving their problems accordingly on time and to take calculated risks of the farming activities. They also misunderstood the use of fertilizers and tend to consider using fertilizer in the area bringing a disaster.
- All the constraints can be generalized and are problems of farm management or managing resources. The field operations in farms are field sanitation, plowing, sowing, weeding and sesame cutting, threshing and bagging. All these need to pay serious attention on proper and timely accomplishment of which are critical issues. Practically most of the operations are not conducted on the right time. All are delayed 4-24 days. Due to such delay, it is presumed that heavy losses in yield and product quality are experienced in the farms, though data for loss is not maintained or recorded. Therefore, on time cultivation practices is critical.

In land use planning and in managing the natural resources depends on technologic know how as well as on people's aspirations indicating the usage in exploiting the available resources in cost effective way to increase production. Some active growers use traditional way of managing in cultivating and seeding early not to get in shortage of rain fall, weeding on time from three to four times seasonally, and crop rotation is used after two or three years of harvesting. They prepare on time materials needed, timely harvest and collecting of seeds is needed if not due to the shattering nature of the crop the farmer cannot get the product and timely labor usage.

Some growers were not controlling constraints on time. They do not check plant density; harvesting, crop rotation, and cleaning crop residues soon after harvest, the yield will be low as well as the incidence of disease and pests can not be reduced. The land use arrangements on time are on the hands of growers, but there's inadequate knowledge how to use their resources as well as inadequate support of extension.

The significant variations in the level of inefficiency across sample farms given the scarcity of resources are attributed to the variations in the use intensities of resources such as seed, labour, mechanical power managing timely, having manageable land etc. In addition, the variation is also related to farm-specific attributes such as the farmers' level of risk attitude, the farm manager's education, and family labor endowment. This indicates that the importance for economic growth to depend on production efficiency improvement in achieving growers target.

Disease incidence and pest damage is very low but there is a challenging in weed populations which are reduced through a variety of techniques. The techniques include mechanical cultivations, hand weeding three times per the season and flame weeding before cultivation to make the land neat and clean. All growers do not seriously follow.

Improved varieties and associated technologies have had a major impact on crop production causing an absolute yield increase. Environmental stresses, especially drought, are important constraints, but it is not the only one: crop and water management, socioeconomic factors and the policy environment are equally important for achieving further sustainable increases in yield.

Farming needs better management practices so as to overcome the different constraints of internal as well as external that limit sesames productivity in the specific ecologies where the crops are grown basing on the crop's compatibility to the area climatic situation, the disease-resistance capability, yield potential, overall quality at harvest, and the cultivar's marketability. To improve crop management in production systems, the problems must constantly be minimized by on scientific way in finding and applying effective measures and solutions in usage of inputs, managing labor, weed control, malaria, and other diseases that make daily laborers fear control, forecasting and taking corrective actions etc. On the other way to attain sustainability, deliberate integration of crop production and its marketing systems is needed in a manner that suits local conditions to make profitable and it needs to manage the field. It also needs to develop and enhance markets and marketing strategies that bring consumers into contact with the sesame seeds. These all challenging must be handled by the management otherwise failure occurs (see http://www.fao.org/sd).

There is a problem or lack of development in managing the resources and major challenges. They do have little or no scope for marketing their products; lack of access to diversify, know how that can be cropped in the area and that have demand or enough market. The circumstances are becoming beyond their control like drought, lack of skill and knowledge what to decide) and ggenerally, with all associated constraints or difficulties, it needs to be monitored carefully.

- **Market Led Sesame Production:** Sesame farmers' have not an idea of Market-Led Sesame Program. They are product oriented, simple if this year's price of sesame is good they cover the land by growing sesame. They do it in pragmatic way and their result become somewhat good that is the production of sesame has improved their life standards by improving their economic access to goods and services. Main problems with marketing of *Sesame* mentioned by farmers are: the hotness of the area losing weight and character of product not allowing storage, the recent tax increase lowering producer prices and in some cases, the low number of traders resulting in imposed prices. Marketing efforts for sesame seed is weak and not being stepped up to meet the growing demand from traders. With in the year, prices for

sesame at Humera were up from December up to February (Birr 480 to Birr 650 respectively) by as much as 35 percent but the same trend from the same time last year. However, farmers are organizing into cooperatives, they are not becoming increasingly conscious in their behavior patterns, and are not focusing on advance planning and breaking away from traditional day-to-day stock management systems.

Prices can be expected to be lowest immediately after harvest and then go up as supplies become scarcer. The prices may even vary within the same area, with some traders offering more than others at any particular time. Farmers may sometimes have to sell their sesame for less than the cost of production not only when there is a large surplus also at the time of no competitors as well as shortage of money. These are the problems faced by the growers particularly in Humera before 1994 EC.

The government has also established and organized a body called Marketing Agency regionally to look the growers in the region and has started to work and support the growers in interlinking markets and production. So far, not yet well support has done. It needs exhaustively to do and challenge a lot of things.

- **Market availability/ lack of market know how/ lack of trade support**: growers have a tendency to get rid of most of their produce immediately after harvest. Thus soon after harvest the produce flood the market and even become the cause for the reduction of prices below the cost of production. Because of this, growers of the area decreased producing sorghum. The impact of this on crop production would be to grow the same crop year after year and as a result, there will be a build up of diseases and insects and the chance of improving the physical condition of the soil and fertility status by employing crop rotation will not exist at all. In addition to this resistance of the crop for diseases will be weak.
- Merchants buy on post-dated check and if this is not paid on time, there will be a conflicts as well as loss of reliability. This happens mostly due not getting enough merchandise loans as well as not timely exported. There is also bad culture if the sesame seed is not issued to the buyer even it has a contract the speculation of prices makes them to change their decision in selling to others. This indicates that

there is no trade ethics. In the local sales, there is a withdrawal of merchants from buying sesame due to the world price or the selling price of growers diving from Birr 230 to 140 in 1996 or 1989 EC because of withdrawal of exporters. In addition to this, ssome times in both exporters and importer it happens the cancellation of letter of credit due to the changes of world price (for importer if the price decreases and for exporter if world price increases).

There is a serious breakdown in trust between farmers and especially between farmers and traders. This means that farmers work alone, buy inputs for themselves, and will only sell to cash buyers. Operating as an individual in the production and marketplace makes farmers highly vulnerable to being price takers. There is lack of co-operation that farmers do not benefit from economies of scale and lack of information flow between farmers impedes any progress that could be achieved through the transmission of new technologies. This shows that there is no linkage and having weak as well as not well-organized cooperatives, unions, and association of investors.

The buying and selling process has a problem, which indicates to have conflicts between grower and merchants. Some exporters buy on credit bases with the post dated check and the contract being the spot price as well as additional birr 50 to 100. If the price increases above the grower expected, the grower changes his idea and sells it using the opportunity. On the other side if the world market decreases he may not sell as a result payment will not be done. Some buyers purchase from many areas and by mixing them export it by the name of whitish or Humera type and this will make its quality disturbance as a result reliability will be at question. In any means, some exporters as well as some growers do not have the ethics of trade. They only see the daily benefit and opportunity. They are not going on the scientific way.

4.4 Export

Almost all export from Ethiopia is in raw. Only a small amount, which is insignificant of sesame, would be locally made into products, which means that processing opportunities at the domestic level are not fully exploited. Several factors have

contributed to this situation. First, selling prices received by domestic producers in foreign markets are sometimes more remunerative than local prices. Such a price differential has encouraged export of sesame in raw forms to the disadvantage of diversification into edible oils and other uses of sesame exports. For example, producer price differentials have been largely responsible for raw sesame exports. Secondly, it is often economically more viable to import vegetable oil at more competitive prices rather than to locally process sesame seeds into oil. In addition to this there are other alternatives on which their prices are less (Cottonseed, Niger seed, Sunflower etc).

Though Ethiopia accounts for a small share of world exports, its sesame production is largely for export. It is one of the main cash crop and one of the largest sources of export receipts for Ethiopia. Sesame production is also critically important to rural welfare, since sesame-related activities employ the rural households. Particularly to Humera area it is an income generating and almost all the growers are diverting on growing sesame than sorghum and it is a key on which all people in the area are involved in growing, trading as well as giving loans.

Ethiopia exports more sesame to int'l market and its results for sesame market from Kafta Humera, north Ethiopia's Tigray state, garnered over 38 million U.S. dollars from export of sesame during the just-ended fiscal year (July 8, 2005-July 7, 2006). The revenue was obtained from export over 510,700 quintals of sesame to international market, 183,000 quintals more than the previous fiscal year (see http://www.highbeam.com).

There is an Export encouragement which is available, attractive, and easily accessible credit facility from both commercial banks and NBE. These forces exporters to increase their export volume and augment their turn over at any cost that enables them at a minimum maintaining the existing credit facility and at large to increase their loan facility. It is true that for the short period of time, at large traders (speculators) and to some extent the producers are getting higher price than the actual market can offer but this situation has a counter effect on the total export business, for the exporters are not benefiting from the export itself but from the financing that the export business can

provide mostly by diverting the loan extended for export to other lucrative business. It is obvious that the current exporters will divert their attention and effort to other businesses like construction machinery rental and real estate development.

4.4.1 Export incentives:

The government of Ethiopia has put in place a number of export incentives, which creates an enabling environment for exporters (EEPA, 2004). Among them are:

1. Export Credit Guarantee Scheme: This is to support the export sector by availing the necessary financial resources for a pre and post shipment financing of exports. The credit is equivalent to the total value of the previous year export proceeds with out any collateral requirement for existing exporters and with 30% collateral requirement for new exporter. The NBE gives a pre-shipment credit guarantee to the financing banks in lieu of 80% of the loan availed and 20% on clearing bases. Both guarantees are provided to a maximum of 360 days.

2. Export Trade Duty Incentive Scheme: The scheme is meant to enable exporters' access to inputs at world market prices, so that they will be able to compete on equal footing with their competitors. The system comprises three incentives schemes and is:

- Exporters are refunded 100% of the duty paid on raw materials used in the production of commodities upon exportation of commodity processed. The duty includes all indirect taxes and duties paid on raw materials and semi-processed commodities imported or produced locally.

- Bonded Manufacturing Warehouse Scheme: - The beneficiaries of this scheme are producers wholly engaged in exporting their products and who are not eligible to use the voucher scheme.

Private Public Partnership: Public private partnership forum on oilseeds and pulses, with a task of assessing competitive strengths and weakness formulate and implement competitive strategies based on incentive and structural policies, monitor the

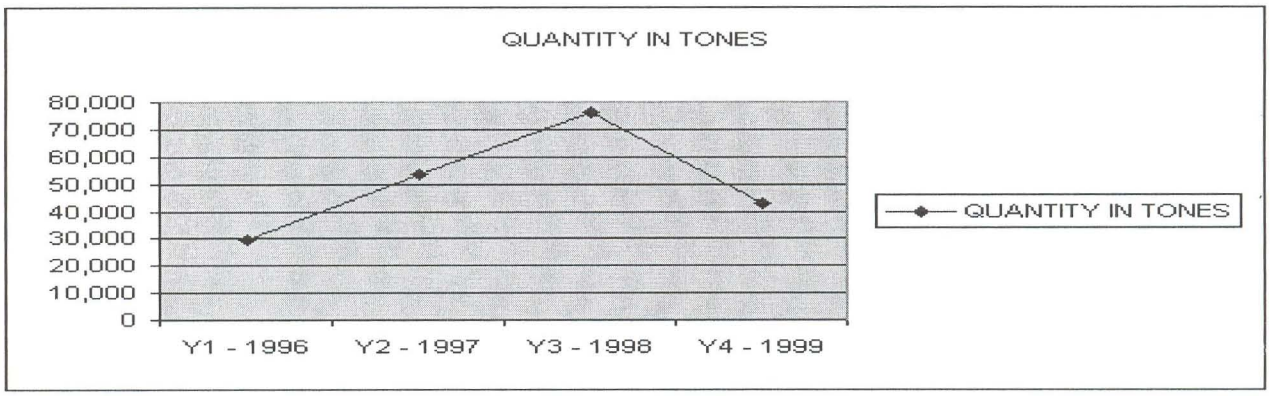
achievements correct policy gaps and solve pressing problems facing business, and develop future strategies based on international best practices, have been established and meets once in two months to assess developments in the sector. (EEPA, 2004)

Humera type Sesame seed exported: There is an obvious potential to develop markets for Humera type sesame seed, in overseas. Sesame seed is presently exported as a whole seed or as a raw material. It is fully exported to different parts of the world, mainly to Japan, China, Korea, Israel, Egypt, Jordan, Arab countries etc.
Taking the data of four consecutive Ethiopian Fiscal Years basing the data of Express Transit Service Enterprise leaving other transitory work and ports, Humera type sesame exported directly from Humera town via Port Sudan are as follows.

Table - 4: Humera type sesame exported directly Via Humera, Port Sudan and its trend.

S.N	YEAR	QUANTITY IN TONES	REMARK
1	Y1 - 1996	29,850	Through out the year
2	Y2 - 1997	53,545	Through out the year
3	Y3 - 1998	75,959	Through out the year
4	Y4 - 1999	43,053	November to February exported
55,320 tones additional are expected to be exported in these 4 months, since there is a contract m between exporters and foreign buyers.			

Figure - 6: Humera type Sesame exported directly from Humera via Port Sudan and its trend



4.4.2 Rural infrastructure facility: facility shortage like electric, road, water, no clear procedures and systems basing land allotting. The development of the rural infrastructure and the growth of agriculture are interlinked. If there is an expansion of infrastructure in rural areas, it promotes agricultural production by reducing the cost of transporting inputs, and by transporting outputs to the area. It also provides faster access to market centers and speeds the transmission of technology through improved

communication systems. It also provides job opportunities for landless and small farmers and this contributes to their purchasing power. Due to changes in infrastructure like telephone, banking services and a little bit better road construction that works from harvesting season to starting of summer; customs etc. exporters have started to center in purchasing sesame in the town Humera and to export directly via Port Sudan.

However, the development of the rural infrastructure must go hand in hand with other incentives specialty greater access to rural credit by the poor, if it is to generate an impact. It should be pay special attention to have a conducive policy environment and an institutional arrangement for the private and public sector in facilitating agricultural growth the development of the rural infrastructure.

4.4.3 Transport: Very poor and inadequate transport and communication link. The roads, which connect Humera to other areas, are very rough though some of them are maintained and have a plan to make them standard roads. It resulted in high cost of transport. The problem is highly stated at rainy season and virtually the surface is brought to a standstill during this season. The role of transport is one of the factors and constraints in agricultural production and marketing as a whole in transporting marketable surplus to all income groups mainly during the harvest period. During the land preparation, planting and weeding stages of crop cultivation, most households walk to the fields. It asks regularly with needed inputs to travel to the fields in all stages, which are often sufficiently burdensome. The increased agricultural production by increasing the number and area of cultivated plots and involves making more and longer journeys during the agricultural cycle. To fulfill this, the travel problems and transport burdens arises from the trend.

Harvesting presents the greatest transport problem for all households in the area, which stands for a substantial logistical problem or burden. The crop marketing mainly involves the transport of produce from the farmhouse to the market place. The logistical problem makes worse by the requirements, in hiring labor, in getting trucks to collect from the remoter farm fields and the crop was left to spoil and to be sacked by the insects. In the process, the role of management comes critical to shorten the time over

which a journey is made; to increase the efficiency with which loads are carried; to reduce the effort and labor involved in the produces from the fields and to reduce the damage and spoilage at harvest time. Managing the farming process enables to extend the effective distance over which agriculture is practiced. In labor terms, managing time, which can then be spent on activities that are more productive in periods of peak, labor demand, such as weeding and harvest time.

4.4.4 Marketing and promotion prospects: All exporters including the government-owned "Ethiopian oilseeds and pulses export enterprise" praised the country's present market liberalization and foreign exchange regulation. In addition, good rains this year have exporters predicting a substantial harvest. Now Ethiopia must expand its promotion and marketing program for these products. Under a recent directive of the national bank of Ethiopia ("the retention and utilization of export earnings and inward remittance"), exporters are allowed to use some portion of their earnings for promotional and other activities, which may help in expanding the volume of export. The oilseed and pulse exporters plan to form an association soon to help promote sales of these products (EPA, 1997). Though, there is a program to promote, it was weak not making any change in strengthening sesame as cash crop like the things done strongly to strengthen coffee production and marketing in solving the problems seen .

4.4.5 Market Information to improve market linkage: Market information is the most important constraint by farmers in terms of access to markets after roads. It is considered a cheap and effective means of supporting producers and exporters. This is a first step in a strategy for improving the commercial thinking and action of small-scale producers.

4.5 Sesame Seed Export Major Problems in Ethiopia

Export price setting: though Ethiopia is known in producing one of the best types of sesame seed in the world, by virtue of the Ethiopian sesame seed share of world production is below 3% while export's share is about 9%. Ethiopia sesame seeds exporters are far behind price setters; rather they are accepters of price set by the exporters of major producing countries like China, India and Sudan.

Exposure to International trade: Ethiopia is open to the international market just recently, hence compared to the major sesame seeds exporters of other countries the experience and exposure of Ethiopian exporters to international trade tricks and systems is limited. For example, almost all sesame seed exporting countries have their own citizens in the major transiting and international trade hubs of sesame (Dubai for Middle East, Geneva, Amsterdam and London connecting East West) operating either as traders or established companies operating for years. They have warehouses and cleaning facilities there as well as an exporting company or farm in their origin country. Hence the market chain though seemingly the same with Ethiopian export, the producers and exporters of these computing countries are benefiting from the market chain in terms of updated information exchange and getting back the major slice from the export business, which of course they will back plow it to their origin country investment.

Speculation: At the beginning of the season just during the harvest and immediate post harvest time all level players (producers, dealers, and exporters) based on their empirical experience they confidentially expect that the local and export price will eventually increase much more than the existing price. Most of the time the producers prefer to wait for higher price to come believing price must eventually rise hence most of the exporters will be forced to fix an attractive price that really do not reflect the prevailing export price mostly at loss. The subsequent is obvious. Most traders and exporters will burn their finger and get out of the game at times not to return to the export business. In addition to this, At the time value of sesame is low and fluctuates more with market a serious problem of loss happens and the delivery may be delayed but also canceling of the contract occurs.

4.5.1 Aims of the government: the federal government has a projected plan to have irrigation in the area that covers about 54,000 hectares, to fulfil the infrastructural facility electric and already started road construction from Gondar to Humera and tendered for the road from Shire to Humera to boarder of Sudan (Lugdi). Others planned are to make blocks, to exactly know the landholder, and to have a contract of the land for 25-30 years for a grower.

4.5.2 Improving market conduct and reducing restrictive market practices: The organizations of cooperatives, unions and investor associations as well as pulses and oil seeds exporter with its organizing body the export promotion agency operate inefficiently and have inability to enter markets with competitive goods. It is the same with the regional market agency office opened for the help of growers.

4.5.3 Organization: There is no any distinguishing feature of the sector in having the organization of producers at the local level in sesame producers' associations, which interface with buyers as well as the government. It is by large in the hands of the importers' organizations. In other countries, there are strong organizations of growers; the government supports exporters as well as them. There was no responsible for organizing virtually all services needed for sesame production and marketing. No company/ institution is responsible for producing, purchasing of sesame seed throughout its allotted area. There is no often implemented by signing contracts with growers stipulating the area to be planted and the quantity and quality of sesame seed to be delivered. Growers also wait to get solutions for all their problems from the government; they do not try some of the problems in solving, though some tough and hard growers try to solve their problem by them selves. Therefore, from the discussion it can be said that it needs an institutional support, strong organization that fulfills facility, infrastructure, education, motivation, job satisfaction etc.

As a cash crop, sesame seed has not got an attention like coffee. Coffee has seriously seen and many kinds of international meetings have been taken to reduce the constraints internationally. It also has detail day to day information of price as well as the quantity produced. It is also well organized and selling on auction program which has a very significant contribution to national as well as grower's economic benefit because of well established marketing information system both at national and international levels. If you take sesame, in Ethiopia it does not have such integrated marketing and production systems of the sector that adds or contributes to the national as well as growers and merchants. It is an organic product and if tested by an international organization that certifies it's organic in its product, it will be selected and preferred in the agricultural business.

In the area, the government tries to facilitate through the extension workers like chemicals, fertilizers, sprayers etc. for the small holder farmers though it is not fully giving services in bringing improved seeds. They did not give service for the growers who are categorized as investors. A research centre has been established (a branch of Tigray Agricultural Research Institute) not yet functioning and fulfilled by the needed labour and resources. Its establishment is promising. An immediate step can be taken to improve production using improved seeds and also through better harvesting and related operations to be advantaged by its good quality sesame (sweet tasting, whitish in colour, low pesticide residues). The sesame and cotton was given priority in the area development plan. This selection was for income generation (as a means of earning) and for generating hard currency basing world demand particularly Humera whitish sesame. Even the small holding growers have decreased planting sorghum because of the decrease in its value to grow sesame seed. There is an absence of strong institutional frame work, and lack of proper governance environment.

4.5.4 Government's role in Market information: It is recognized by the governments for the need to inform to the agricultural sectors about market conditions for the farmers (the regional marketing agencies) and for exporters (the export promotion agency). But they did not provide the necessary resources of market information services. The assistance given was weak and failed to meet the needs to both particularly the export promotion agency existence is doubtful.

Most farmers are not aware of prices and other market conditions even in their nearest town which puts them in an impossibly weak bargaining position with traders who are able to take advantage of their lack of knowledge at the harvesting time. The markets of sesame for small-scale farmers are influenced only by local conditions and basing each farmers problem. The lack of market information has the effect of draining resources out of rural areas where most poor people live. It also means that farmers are unaware of the types and quality of produce being sought by regional, national and international customers that hinders the entire nation in its efforts to earn more from exports.

The integration of producing and marketing is very important to have a solution for the farmers' problem on the Agriculture marketing issue like obtaining feedback of situations in agricultural marketing systems that inhibit efficiency and profitability, identification of the primary inefficiencies, recommending appropriate management techniques, and an institutional framework for accomplishing this. At this time, the regional marketing research has started to support the production and marketing of sesame since 2005. However, emphasis was given on cash crop, international trade, and market information by the government to link with others; it needs to work harder and to change the environment. Agricultural marketing and agribusiness sector can harvest a lot of benefits out of this opportunity.

The role of agricultural research and development programs: The situations and development of the country, the Ethiopian growers are going to depend heavily on agricultural research to obtain access to better yielding varieties; drought and disease-resistant crops. Also is important for the improvement of quality, and the adaptation of the crop to more efficient production practices, such as mechanized seeding and harvesting. For small-scale farming under difficult conditions, adaptation to low input/low soil fertility levels is a core criterion for varietals development (see http://www.fao.org). In addition to this, the product must be marketable. It must assist to find products, which farmers can grow with their limited access to tools and pesticides, etc. It needs to undertake an analysis of the farmers' needs and abilities in assessing existing and potential demand for the range and quality of seeds that can be produced. In addition, improved varieties and other technologies are needed that fit specific production locations and socio-economic conditions more fully with one of the most easily adopted and cost-effective innovations. They need to estimate the resources required to assist farmers to produce new products and compare the cost of such assistance with the benefits that farmers might receive from the sale of those products.

Chapter 5

5. Conclusion and Recommendation

5.1 Introduction

Ethiopia, like any other developing country, is characterized by weak economy, backward infrastructure, and low level of technological advancement. Hence every sector of the economy is at its infancy, which, in fact, includes the foreign trade sector. For many years the country is characterized by the export of few agricultural products, which face severe competition in the world market.

Ethiopia is growing Sesame seed on area of more than 205,000 hectares as an important cash crop. It provides raw materials to generate income and foreign currency. The crop is beset/ weighed down with many problems that are affecting its production and marketing in low yield leading to yearly fluctuation in production and on its quality as well as price due to not promotional work. The sesame is lowly water consumptive crop, thus gaining comparative advantage on water scarce scenario.

The Kafta Humera Woreda is one of the areas where in cash crop most concentrated in Ethiopia. The crop is organically produced with out the use of chemicals and man made fertilizers. The area's conducive environment here resulted in significance volumes of production in for sesame; sorghum and cotton have supported significant growth in the country in recent years. It has no proximity to urban areas and easy access to a variety of market channels except Humera town which itself was remote. It has a comparative advantage in using the Port Sudan easily. As a cash crop growing sesame has greatly benefited the growers. As a result, farmers of the area have shifted to sesame t to increase household income and improve living conditions for families. From year to year, they worked on the development of sesame marketing as a strategy to increase sales. This knowingly or unknowingly improve the regional market system allowing the marketing of larger amounts and increasing their incomes.

By adapting to the specific geographical situation and marketing, Humera's cash crop producing farmers could maintain or even improve their income level over time; even when fluctuations affect their income adversely. The number of houses covered with corrugated iron sheets is getting more visible every day but it is not the most significant sign of the rise in income and a moderate wealth within the community of Humera compared to areas with mere subsistence farming. Mixed farming and commercial farming insures food security more than subsistence farming as long as the trading potential for cash crops is not exhausted, producer prices remain on an acceptable level and local market supplies with the main staple food are assured.

Sesame production in Humera area is a very important socio-economic feature. It is a major contribution to export market. Almost all farmers of the area grow sesame. The semi-arid climate of the area combined with its low population density provides a great opportunity for sesame production. The growers have tried to overcome the challenging seasons by themselves without external assistance so far.

From the agricultural, ecological and economic point of view, sesame appears to be the only cash crop well adapted to the needs of this area. Its drought resistance nature makes it suitable to the predominant agro-climatic conditions of Humera's lowland and midland areas. It has a considerable role in controlling erosion, while its regular yield and high market value allow a stable and substantial cash return.

Sesame in the area has shifted from a food security quantity to a trade quantity and quality mindset/ attitude and starting to build commercial trading relationships with farmers but it does not include advisory services on commercial bases. There is no body which has recently been established with a view to building relationships with farmers to provide them with information, capacity and incentives to deliver more consistent quality sesame.

At this time, as a result of the market-led economy principle adopted by the government has resulted in macro-economic liberalization measures and increased private sector participation, though, the development of the economy in general and the export sector in particular are subject to many constraints.

Most of the sesame produced is not consumed on the farm and the country. As there is no proper procurement system and no established markets for sesame seed like coffee, the farmer has every reason to question the capacity of the market to absorb the surplus produce at a price that assures him an economic return. Consequently growers have no incentive to increase their production much beyond their own requirements.

5.2 Conclusion

Infrastructure facilities constraint: Despite the current effort the development of infrastructure is not at a satisfactory level. For instance; facilities in telecommunication already fulfilled, roads at construction and budget to fulfill. But electric, water, and other services are weak which is extremely low even compared to other areas of Ethiopia.

Rainfall: Cash crops grown under rain fed conditions indicate production costs and main risk factors. It should be underlined that with the need to take into account high risk factors due to climatic hazards and/or pest and diseases, the overall risk increases considerably together with high production costs.

The most important variables affecting the productivity of a particular farm includes weather conditions, fertility of the soil, availability of resources, seed selection and rotation of crops, labor and equipment requirements, market options, managing resources on timely and the linkage of production and marketing. Poor quality in management, the lack of integration of producing and marketing affect yield adversely.

Market information constraints and undeveloped local market system: Lack of timely and accurate market information on supply, demand, and price adversely affects producers and consumers. Though there is some effort to provide sector specific information to market participants, the system is not well developed.

Because of its short experience and other factors, it is expected that the private sector is generally characterized by small business activities. Among the constraints in the international trade is in selecting a reliable distributor and communication with foreign

customers to be. It is also the Ethiopian Embassies' failure to provide required trade information.

In improving production and its marketing, the growers and merchants must look at the system as a whole in deciding which operations are most critical, on efficiency that pertains to getting the most out of a given set of resources, improved management practices and improved resource management and public investment in infrastructure etc. Therefore, increasing productivity requires the coordinated set of actions from a range of people: policy makers, resource managers, farmers, managing others; researchers from agronomy, and natural resources management; and in fact all of us who care about influencing policies about how land and water is used. All these help to improve productivity (WB, 1999).

Producer and Marketing Organizations: Producer organizations serve an important function through representation of producer interests and the provision of services more effectively supplied by a group rather than by individual producers. The distance between an individual producer, especially a small farmer, and market outlets for inputs, credit channels, and markets for outputs is sometimes very great. Whereas a large farmer may have a truck with which to pick up wholesale loads of fertilizers, and carry the crop to market, a smaller farmer may have to pay someone else for those services, thus increasing his or her costs and reducing his or her income margins. In this regard, producer cooperatives can play a vital role.

In Ethiopia, there are no producer organizations or any other apart from the coffee Producers Association. For about five to six years, exporters of pulses and oil seeds have been working on it but not yet effective. Being poorly organized among producers and exporters limits their ability to receive information on marketing conditions, services and inputs. If a policy environment conducive to the delivery of agricultural and rural development services must be created. The government attempted several market coordination mechanisms like export promotion and marketing agency including cooperative but their performance is poor.

Other constraints: Weak research and development; inadequate trade support services, supply of inputs, climatic hazard, lack of resource management, shortage of information and absence of regulatory actions (eg. Land security) are other among constraints that should be addressed as the key problems in order to develop production of sesame, its domestic and foreign markets.

In conclusion, Ethiopia should grow sesame in semi and arid zone climatic area to maintain self sufficiency level and gain from its export market than in domestic. It will be feasible for country to grow for export purpose keeping its quality in its organic nature. On the other hand, the country should increase its productivity per unit of resource use especially scarce irrigation water. In addition to this, if sustaining sesame farming is required; marketing programs are to improve; quality and surplus production of sesame has to improve then, farmers must have access to information and export network abroad and obtain the necessary and appropriate assistance to develop their farming management. Creating linkage between the production sector and the export sector and improve storage facilities are an important factor to consider creating export network abroad.

5.3 Recommendation

Based on the major findings of the study and the existing sesame farming and marketing system the following recommendations are made so as to develop sustainable sesame farming and marketing programs in Wereda Kafta Humera.

Land security: The identification of appropriate land use policy is necessary to improve the handling of land tenure. Attention must be given to improve technical support to coordinate supply of inputs like seeds, tools, fertilizers, and to the provision of credits. To improve knowledge transfer between research agencies and farmers, emphasis is needed on the training in extension techniques, soil conservation measures and alternative farming systems.

Credit facility: Fill the agricultural finance gap. Limited access to commercial finance prevents many farmers from investing and innovating. Financial service providers are

often reluctant to meet small farmers' credit needs. New approaches promoted and supported by governments are needed to fill the void.

Infrastructure development: Agriculture income could be improved if the cost of inputs and transporting products to market was reduced. Consideration should be given to offer tax incentives to transporters serving rural areas. The elimination of road charges would also have a positive effect. Improving the road system- feeder roads in particular is important for the marketing system in general. Poor transportation and communications can be a serious impediment to exporting and often reduce income margins. So Improving infrastructure indeed has to be part and parcel of a dynamic export promotion strategy.

Training, skill developing program: an integrated approach to farming and marketing in the Wereda will contribute in reducing poverty and generating income as well as earning currency. Most of them in the area are uneducated and lack basic business as well as farming knowledge. So, training program focusing on these, identification and dissemination of new ideas and opportunities, should be promoted. Training in low cost product handling, packaging and storing should also be given. Institutional strengthening and capacity building is also useful. Private sectors need to educated personnel from the civil service and should tackle their problem by communicating with specialized institutions.

Extension service: Tackle market failures to reduce the transaction costs and risks that inhibit the private sector and restrict access of small and medium-sized enterprises (SMEs) to markets. Where markets are thin or weakly developed, smart subsidies or time-bound grants may be provided to entrepreneurs to get markets to work and encourage private sector participation in market development.

National Agricultural Research Institute: A research program on crops and to develop and optimize agricultural production through findings of research; and thus facilitate the use of improved production technology by agricultural producers, and establish adequate feedback systems.

In collaboration with the government, there must be a problem-solving research based on the identification of main production constraints and to come up with improved technologies.

To successfully promote these cash crops, it is recommended to intensify efforts in the field of applied research in order to select more resistant varieties, well adapted to the specific conditions at farm sites, to promote the controlled multiplication of selected seeds at farm level. Invest in the research of highly demanded crops that open market access and build competitiveness.

The provision of market information: Upgrading rural markets is one way to improve access to marketing opportunities. Therefore, it needs a designed to assist community planners, rural engineers and agricultural extension units to formulate and approach implement relevant market-development plans. The issues need to include how to design markets that meet a community's social and economic needs; working with communities to identify their marketing problems and identify new markets; using appropriate and simple methods to survey and plan the site layout and to design market buildings; prepare a market-development proposal and make budget estimates; undertake simple social and economic feasibility studies; look for financing the construction of the market; and manage, operate and maintain the market. Market information services need to co-ordinate local information with market information at the regional, national and international levels. The role was to improve market access and provide market intelligence, analyze market performance and bring about better post-harvest handling practices to reduce the risk involved in the marketing of agricultural products by strengthening the bargaining power of farmers and providing market information to increase marketing efficiency. In addition to this, promote the production of non-traditional crops specifically for the export market; and to provide market extension services.

Linkage: In Wereda Kafta Humera, most of the growers land holding is between 2 and 8 hectares and the investors have 30 to 2,500 hectares. They are economically active and willing to pursue more gainful farming and trading activities. Therefore, efficiently

administered farming and demand led activity remain to be an important component of rural development. Aggressive cash crop production and marketing accompanied by risks need to be undertaken; however, the continuation of farming and exporting without integration may not give the expected result. More gains can be made by developing managing resources as well as providing the institutional support. Strengthening the link between the production sector and the export sector is also important and takes place in the form storage facilities, marketing and distribution channels, making available information on prices and production, and creating export network abroad. Furthermore, it requires exporters to keep abreast of developments in international markets and advances in production and marketing technologies.

There is a need for the Government to undertake measures that will further improve the enabling environment for the export sector and for the private sector to take advantage of globalization and liberalization of the world economy. The Ethiopian Government has already undertaken a number of measures for the development of the export sector as well as production improvement. Exports have indeed been receiving much attention in policy formulation and implementation. Furthermore, the Government is considering an array of additional measures for further encouragement of exports. An important set of these measures relates to improving access of exporters to finance, land, and free trade status. It must be controlled and followed up in its implementation.

Coordination: farmers need to be encouraged to form their producers' associations to get access to market information; increase their share of export price and make use of collateral guarantee schemes to raise credit.

To improve the quality and value of farmers' production, they must have access to information about the markets for the product and must receive the necessary and appropriate assistance to learn a modern, commercial farming management.

A Marketing Agency for both growers and exporters need to be created to (a) improve the competitiveness of the marketing system by creating better market access for potential participants and by distributing relevant information on prices and related variables for market participants; or (b) Provide the marketing services directly.

To successfully promote cash crops, it is advisable to intensify efforts in the field of applied research to select more resistant varieties, well adapted to specific conditions at farm sites, to promote the controlled multiplication of selected seeds at farm level.

Institutional support development: Without undermining the system of free market pricing, the government and its development partners should take appropriate steps to protect growers and exporters until they become strong. Appropriate institutions in support of the private sector are also crucial for an effective export promotion program that includes export and investment promotion agencies, banking system, as well as trade financing institutions.

The problems that affect competitiveness in international and domestic markets have to be addressed in creating an enabling environment for farm management, traders and exporters. Strengthening and establishing effective partnerships between farmers, the Government and the private sector is useful. Appropriate institutions need to be created and in appropriate links between the production sector and the export sector brought.

Public policies are needed to support institutional mechanisms (producer organizations, marketing associations) that assist to connect rural producers to markets. Work closely with private sector to identify emerging challenges and opportunities in export markets; make appropriate policy changes and choose suitable strategies and investments.

Private sector role: Agricultural export trade requires an entrepreneur to hear and see a market opportunity, elicit production from the farm, process, and package and market the product. Invest in market expansion and competitiveness enhancing measures, e.g. processing facilities, private laboratories and quality management systems. Work with the public sector to develop policies, regulatory frameworks and conformity assessment procedures that will enhance rather than impede exports.

Develop linkages with multinationals and large domestic companies. Linkages between enterprises of different sizes provide an effective channel for domestic enterprises to gain access to external markets, financing, skills and know-how. Large-scale export firms can also provide business opportunities for micro enterprises and SMEs.

Extension workers can make an effort to deliver relevant and cost-effective services for sustainable development ends. The staffs need commitment in providing information and advice according to criteria implicit in the Agricultural and rural development program: the highest standards of efficiency, competence, integrity and neutrality."

In view of the potential benefit sesame production promises to the farmer, agriculture sector and the nation at large. The marketing of the produce in the market imperfections must be removed through marketing efficiency and institutionalization of market intelligence. It requires utmost attention of the kind being provided to coffee and its growers. At a time where national focus is being increasing and wisely shifted to a market oriented system failing to provide all the necessary input to make the most of sesame will only be self defeating. In addition to this, the government should focus in advocacy work for the commodities like organic sesame to establish niche markets for premium prices like the activities undergoing for coffee by the government, Coffee Cooperative Union, Oxfam international and private investors.

List of Reference

ADD and NFIU. 1986 – 1989. Result of fertilizer Trails conducted on Major crop. Addis Ababa, Institute of Agriculture

Agriculture and Rural Development Office of Wereda Kafta Humera. (2007)

Agricultural Statistics of Pakistan. 1988-89, Government of Pakistan, Ministry of Food, Agriculture and Co-operatives, Islamabad.

Agricultural sample survey, 1997/98 Vol 111, "Report on farm management Practices". Statistical Bulletin 111, Addis Ababa, Central Statistical Authority.

Alexandratos, N. (ed). World Agriculture: Towards 2010, an FAO Study, New York: John Wiley & Sons, 1995.

Ali, Mubarik*Byerlee, Derek, 2000, "Production growth and resource degradation in Pakistan's Punjab", a decomposition analysis, World Bank, WPS 2480. David Steel (Tits et al., 1989) (Gales 1982) Precision Agriculture — A Viable Option for Future Arable Farming in Europe?

Andrew Landers and David Steel, on Crop management. Retrieved Feb, 2007 from www.sdstate.edu and www.agbiopubs.sdstate.edu

Andrew W. Shepherd, 1999, A guide to MAIZE MARKETING for extension officers, Food and Agriculture Organization of the United Nations Rome © FAO 1999.

Arid-zone agriculture. August 2006. Retrieved Dec, 2006 from http://en.wikipedia.org/wiki/Arid-zone_agriculture#column-one#column-one.

Assefa Admassie and Abay Asfaw, 1997, "The Impact of education on allocative technology effectiveness of farmers". The case of Ethiopia small holders. Paper presented to seventh annual conference of the Ethiopian Economy in Nazaret, Addis Ababa University.

Bennett, M.R. and Wood, I.M. (eds) (1995). Proceedings of First Australian Sesame Workshop, Northern Territory Department of Primary Industry and Fisheries, Darwin. http://www.rirdc.gov.au/pub/handbook/sesame.html.

Cass, 1989 – 1999, Wheat yield, Missouri Department of Agriculture and USDA

Chase Aquilano Jacobs, 1998, Production and Operations Management, 8th ed, p 25- 27.

Cheema, A. A. (1978), Productivity Trends in the Manufacturing Industries, The Pakistan Development Review, XVII (1).

COMTRADE database, UNSD, 2007; Retrieved Jan 2007 from http://www.intracen.org/mas/MB/english/guide/statdata.htm.

Conrad Richter (April 5, 1998) Marketing Non-certified Organic Herbs Factors influencing maize marketing Tanzania.

CSA, 1998, Statistical Abstract 2006, FDRE of CSA.

Customs Authority. 2001 Major Export Commodities of Ethiopia and U.S. Embassy Commercial Section: address: U.S. Embassy Addis Ababa, Washington, DC Ethiopia's Pulses and Oilseeds. Available in www.ethiopianembassy.org/expimp or http://www.ethioembassy.org.uk/fact%20file/a-z/agriculture.htm. www.telecom.net.et/~usemb-et/wwwhecpu.htm.

Dan Burden, content specialist, Ag Marketing Resource Center, Iowa State University. Feb 2005, Thomas Jefferson Agricultural Institute. http://www.jeffersoninstitute.org D.H. Putnam, C.V. Hanson, E.A. Oelke May 1990, sesame.

D. Gale Johnson, 1988, "Policy Issues in Rain fed agriculture". Section v. Retrieved Feb 2007 from http://rds.yahoo.com_ylt=A0oGKKDVF_dfhBsBybFXNyoA.

Directorate of Economics and Statistics 1980 of India, Report and recommendations on arid lands management, 22-25 October 1978. Retrieved Dec 2006 from http://www.unu.edu/unupress/unubooks/80044e/80044EOc.htm#.

Dudley T. Smith, W. James Grichar, and Amanda A. McCallum. April, 2000 Crop Profile for Sesame in US. Retrieved Jan, 2007 from http://www.ipmcenters.org/cropprofiles/docs/ussesame.html.

Ethiopian Export Promotion Agency, Product Development and Market Research Directorate, May 2004. Retrieved Jan, 2007 from http://www.africa.upenn.edu/Hornet/hararghe998.html.

Ethiopian Herald, 2006 from Xinhua news agency. 2006. COMTEX News Network, Inc. Addis Ababa, (Xinhua via COMTEX)

Ethiopia town exports more sesame to int'l market. sesame market Available in: http://www.highbeam.com/doc/1G1-148685981.html.

Ethiopian privatization agency: Available at: Available at: http://www.telecom.net.et/~epa/Sectors/food_oil.html. or www.moinfo.gov.et/English/010109FactsaboutEthiopia.php1997 -

E.S. Oplinger, D.H. Putnam, A.R. Kaminski, C.V. Hanson, E.A. Oelke, E.E. Schulte, and J.D. Doll May 1990. Chapter 4 environ requirement. Retrieved from: http://www.hort.purdue.edu/newcrop/afcm/index.html

Express Transit Service Enterprise, Annual and Semi-annual reports of 1996 to 1999 EC.

Factors Affecting Productivity. (Tools and practices of organic agri- Retrieved Dec, 2006 from http://www.attra.org/attra-pub/drought_RI.html.

FAO Data Base Statistics; USDA Economic Research Service Trade & Marketing Division. FAO Agricultural Statistics. As of Feb. 2002. Available in: apps.fao.org/cgi-bin/nph-db.pl?subset=agriculture.
FAO/WFP Crop and Food Supply Assessment Mission to Ethiopia, Feb 2006. Available at: http://www.fao.org/008/j7071e/j71e00.htm#1#1.

FAO of the United Nations for 2005. Retrieved January, 2007 from http://sanangelo.tamu.edu/agronomy/factshet/sesame.htm (http://faostat.fao.org/site/567/DesktopDefault.aspx?PageID=567):

FAO/WFP Crop and Food Supply Assessment Mission to Ethiopia Jan, 2005. Retrieved Dec, 2006 from http://www.fao.org/giews/.

Gale. 1982. Agricultural Productivity Growth, Rural Economic Diversity, Retrieved Dec 2006 from adfdell.pstc.brown.edu/papers/johnson.pdf

Gershon Feder, Gerald T.O'Mara, 1981, "Farm size and adoption of green revolution technologies" Economic development and cultural change.

Government of Pakistan, 1988-89, Agricultural Statistics of Pakistan, Ministry of Food, Agriculture and Co-operatives, Islamabad.

Guna Trading House Plc. Study of the Wereda on agri-products at different periods.

Hiwot Agricultural Mechanization Plc from the report of the organization, Annual and semi annual Reports of 1996 to 1999 EC.

International Labor Organization (ILO) 1996-2001. Retrieved Dec, 2006 from http://www.ilo.org/public/english/employment/strat/publ/iddp33/htm#N_19d._

James L. Helm, June 1993 (Reviewed and reprinted 1996), Crop Rotations for Profit in North Dakota. Retrieved December 2006 from http://www.ag.ndsu.edu/pubs/plantsci/crps/a1059w.

Jerry La Gra August 1990. Chapter 4 - Application of the commodity systems assessment methodology. Retrieved Dec, 2006 from http://www.fao.org/Wairdocs/ X5405E/x5405e06.htm#

Johannes Woelcke. December 2001, Land Management and Technology Diffusion in Uganda. FAO/GIEWS - December 2003 Uganda.

Jude Hobbs, 1999-August, Population and Land Degradation September 1995 Alain Marcoux, Retrieved December 2006 from http://lists.ibiblio.org/pipermail/permaculture/1999-August/001496.htm

Langham, D.R. and Terry Wiemers. 2002. Progress in mechanizing sesame in the US through breeding. p. 157–173. In: J. Janick and A. Whipkey (eds.), Trends in new crops and new uses. ASHS Press, Alexandria, VA. Retrieved Dec, 2006. http://www.hort.purdue.edu/newcrop/ncnu02/v5-157.html or http://www.hort.purdue.edu/newcrop/afcm/index.html California.

Laura Tourte, David Chaney, Pete Livingston, Richard Smith, 1996. Retrieved Dec, from http://www.sarep.ucdavis.edu/pubs/costs/96.

Marshes June 1997, Plant transformation (problem and strategies for practical application by R.G. Birch, Australia. Retrieved Dec, 2006 from http://arjournals.annualreviews.org/doi/full/10.1146/annurev.arplant.48.1.297.

McLeod 1989, Factors affecting production and marketing among small scale farmers, Botswana, http://www.fao.org/wairdocs/ilio/

National Campaign For Sustainable Agriculture. December 20, 2005 Sustainable Agriculture: Retrieved Feb, 2007 from http://www.ers.usda.gov/Data/Organic/index.htm. http://www.sustainableagriculture.net/

Rutta, V.W.(ed)(1998), Research Systems for Sustainable Agricultural Development, ... Retrieved Dec, 2006 from http://www.ifpri.org/divs/eptd/dp/eptdp40.htm.

Sexton, R., Kling, C. & Carman, H. 1991. Market integration, efficiency of arbitrage and imperfect competition: methodology and application to US celery. American Journal of Agricultural Economics, 73:568-580.

Tana Trading Company Consultancy Group, May 1994, The Human Integrated Agricultural development study.

The Ethiopian Herald August 23, 2006 Ethiopian News Agency (ENA). Commercializing crop production. Retrieved Jan, 2007 from http://www.ena.gov.et/Link3/Commercializing%20crop%20production.asp.

Umale, D. L. (1993/5): Irrigation-induced salinity: a growing problem for development and the environment. World Bank Technical Paper No. 215. Washington, Retrieved Dec, 2006 from http://www.un.org/popin/fao/land/land.html.

Vavilov (1945 and Zhulovasky (1970), Ethiopian Export Promotion Agency, Product Development & Market Research Directorate, May 2004. retrieved from http://www.africa.upenn.edu/Hornet/hararghe998.html, http://www.ethioconsulate-la.org/ProfileofEthiopianOILSEEDS.doc

Weiss, E.A. 1983. Oilseed crops. Longman, London. p. 282–340. Retrieved Dec, 2006 from http://www.hort.purdue.edu/newcrop/ncnu02/v5-157.html.

William J. Stevenson, 2002, Operations Management, 7th ed, New York.

Wolday, A. 2002. The Structuring and Functioning of the Post PADETS Grain Marketing System in Ethiopia, draft, A Paper Presented on EDRI/EFPRI Workshop on Diffusion of Agricultural Technology and Price Policy in Ethiopia (Draft), Ethiopia.

WORLD Bank, 1989, Sub-Saharan Africa: From crisis to sustainable growth – A long term perspective study. Washington D.C. 1995, Public and Private role in agricultural extension, beyond farmers' practices frontiers, vol.236, Washington D.C. Documents and Reports, 1999.

Zerihun Gudeta, 1996, Usu fruct Rights in land in grain supply Response Analysis, Case of Ethiopia.

December 1995 Revised 1/1/97. Retrieved Dec, 2006 from http://www.photius.com/countries/ethiopia/economy/ethiopia_economy.

Retrieved Jan, 2007 from http://www.fao.org/sd/RTdirect/RTre004.htm.

http://www.eeaecon.org/proceed/7th/assefanabay.htm.

http://www.herbalgram.org/seelecttea. Retrieved Dec, 2006.

http://www.mapnp.org/library/ad_prmot/definition.htm.

http://www.ag.uiuc.edu/~asap/topics/Integration.html.

Annex – 1: World Sesame Quantity produced

Quantity produced (1000 tones) | Sesame seed

YEAR	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
China	548.27	583.34	575.33	566.43	656.53	743.46	811.82	804.73	895.76	593.59	704.46
India	590	531	641	570	527.3	479.9	587.1	730	430.9	800	680
Myanmar	223.33	304.16	303.55	344.05	296.02	210.05	295.51	426.38	399.28	501.32	550
Sudan	170	313	416	281	262	329	282	296	122	325	300
Uganda	70	71	73	73	77	93	97	102	106	110	110
Nigeria	56	60	64	66	66	69	72	74	73	74	75
Ethiopia	14	14	14	17	21.96	17.68	15.63	18.88	38.9	36.27	61.46
Bangladesh	48.44	49.59	48.75	48.93	49.03	49	49	49	49	49	49
Central Africa	27	28.6	30.6	32	33	36	37.4	39.4	41.1	42.8	42.8
Tanzania,	30	31	33	33	36	40	42	39	41	41	41
Thailand	31.8	33.5	34.3	35	36.1	37.4	38.78	38.57	39.53	40.48	41
Egypt	27.7	32.3	36.81	32.99	26.23	33.55	36.81	34.85	36.93	36.96	37.38
Guatemala	27.22	33.56	35.56	32.2	31.68	32.81	19.05	31.75	32.39	34	35.05
Chad	13.09	10.44	12.81	26.11	29.01	21.22	33.01	43.39	35	35	35
Paraguay	0	0	0	0	0	12	8.34	19.93	36.01	25.23	34
Mexico	8.86	21.08	47.4	21.47	31.65	31.46	40.78	42.88	20.21	31	33.1
Pakistan	36.26	39.46	44.93	42.47	32.12	35.4	50.7	69.6	19.3	25	30
Sub Total	1921.97	2156.03	2411.04	2221.65	2211.63	2270.93	2516.93	2860.36	2416.31	2800.65	2859.25
Others	280.03	305.97	310.96	299.35	295.37	292.07	306.07	327.64	274.69	293.35	328.75
Total annually	2202	2462	2722	2521	2507	2563	2823	3188	2691	3094	3188

Adapted from FAOSTAT | © FAO Statistics Division 2007 | 26 January 2007

Annex – 2: World Sesame Area harvested

Area harvested (1000 Ha) | Sesame seed											
Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
India	1,971.00	1,826.00	1,992.00	1,660.00	1,609.00	1,560.20	1,720.00	1,670.60	1,385.00	2,000.00	1,850.00
Sudan	1,346.52	1,493.52	1,860.60	1,581.70	1,404.06	2,174.34	2,006.34	1,587.60	1,174.32	1,700.00	1,668.18
Myanmar	946.2	1,131.90	990.9	1,015.24	774.2	704.56	964	1,240.00	1,159.00	1,410.34	1,369.87
China	690.52	642.67	594.22	566.76	630.87	697.84	785.43	759.19	759.48	688.06	650.23
Uganda	158	166	172	172	179	186	194	203	211	211	211
Nigeria	126.7	133	139	140	143	143.7	151	153	166	167	165.1
Tanzania	83	84	86	85	90	103	106	100	105	105	105
Chad	53.91	45.44	45.44	74.63	61.51	91.43	102.24	97.81	95	95	95
Ethiopia	22	22	22	28	39.75	32.2	38.19	42.37	58.84	57.72	91.53
Bangladesh	79.76	80.09	84.2	79.73	79.65	80	80	80	79	79	79.75
Pakistan	80.15	89.52	99.46	96.12	71.08	71.67	101	135.6	88	60	66
Thailand	59.36	60.96	61.76	60.96	61.92	62.4	62.72	63.04	63.2	63.5	63.68
Guatemala	35	42	50.26	49	49.65	50.47	52.5	52.5	53.55	55	56
Mexico	18.9	36.68	80.32	43.03	57.76	54.26	69.7	70.94	37.35	55.6	55.62
Niger	5.5	6.1	6.7	7.4	17	51.21	93.65	41.55	45	45	44.99
Senegal	3.77	5.82	6.18	9.34	2.55	5.49	1.62	7.85	7.51	22.06	43.4
Venezuela	21.7	29.95	41.35	44.55	45.62	51.57	48.7	51.54	10.58	6.57	43.15
Sub Total	5,701.99	5,895.65	6,332.39	5,713.46	5,316.62	6,120.34	6,577.09	6,356.59	5,497.83	6,820.85	6,658.50
Others	595.01	613.35	604.61	623.54	572.38	570.66	580.91	607.41	589.17	609.15	6,658.50
Total annually	6297	6509	6937	6337	5889	6691	7158	6964	6087	7430	7291

Adapted from FAOSTAT | © FAO Statistics Division 2007 | 26 January 2007

Annex – 3: World Sesame imported

Import quantity (1000 tones) | Sesame seed											
Year	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
China	72.15	53.93	54.69	73.44	62.07	47.55	50.3	50.46	52.44	114.04	162.57
Japan	146.6	142.15	148.54	156.69	144.29	139.25	168.93	152.09	157.77	153.3	159.28
Korea, Republic	72.3	42.95	68.75	66.22	54.48	62.14	71.35	78.62	64.33	82.37	80.42
Turkey	24.91	26.76	22.81	30.71	26.55	19.47	23.15	38.1	70.02	66.11	79.23
USA	55.75	55.57	63.01	59.08	63.48	60.25	68.89	69.21	70.56	60.2	59.56
Syria	10.64	19.12	22.72	18.86	10.47	18.5	29.21	29.25	30.38	28.86	43.67
Israel	22.29	20.03	23.48	21.04	15.33	20.07	18.71	29.42	31.97	25.72	33.05
Egypt	10.77	69.88	39.37	45.94	38.43	45.43	85.94	68.68	50.14	38.55	32.27
Germany	15.86	16.82	15.28	17.09	18.09	17.75	18.75	20.09	19.41	21.01	26.95
Netherlands	12.6	14.08	16.5	21.86	23.91	28.67	33.58	32.98	31.41	45	26.93
Mexico	6.43	7.37	7.82	4.29	11.48	12.16	17.64	20.16	13.44	15.01	25.95
Greece	8.31	14.47	20.82	17.62	19.68	14.57	19.32	18.59	21.2	21.73	23.56
Lebanon	6.2	7	6.4	17.23	9.13	16.24	16.74	20.8	17.93	14.48	21.52
Jordan	9.75	10.9	11.77	13.73	10.83	13.25	12.68	16.1	14.23	12.79	14.32
Malaysia	8.41	8	10.28	9.32	11.1	10.87	12.66	12.29	15.42	15.34	14.15
United Kingdom	8.52	9.59	10.31	10.22	11.96	12.28	13.33	13.23	13.62	13.16	13.2
Poland	4.35	4.74	5.38	6.11	7.15	7.27	6.68	8.48	7.23	8.8	12.68
Sub Total	495.84	523.36	547.93	589.45	538.43	545.72	667.86	678.55	681.5	736.47	829.31
Others	71.68	94.03	116.76	100.28	98.52	111.77	128.39	136.93	141.29	142.59	154.72
Total annually	**567.52**	**617.39**	**664.69**	**689.73**	**636.95**	**657.49**	**796.25**	**815.48**	**822.79**	**879.06**	**984.03**

Adapted from FAOSTAT | © FAO Statistics Division 2007 | 26 January 2007

Annex – 4: World Sesame Export quantity

Export quantity (1000 tones) | Sesame seed											
Year	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Sudan	136.13	101.04	160.73	184.84	133.11	153.25	210.05	176.07	172.54	114.46	195.86
India	52.93	74.95	92.18	114.86	86.87	95.72	184.64	220.06	121.31	194.28	160.43
Ethiopia	4.5	2.56	9.3	10.55	21.86	26.64	26.86	14.82	63.87	69.09	76.53
China	125.3	153.14	144.03	71.39	74.68	115.27	126.07	89.8	119.66	129.15	62.95
Myanmar	91	50.3	52.5	53.03	43.76	20.39	35.29	14.76	5.68	43.56	46.83
Nigeria	7.5	1.04	33.93	27	30	35	30.28	43.3	41.7	35	39.8
Tanzania	8.5	9.8	15	13.43	19.69	9.4	13.26	14.78	17.34	17.98	25.57
Thailand	22.01	10.17	9.15	8.01	7.73	20.37	12.13	12.89	13.84	14.4	23.75
Paraguay	0.2	0	0.34	2.16	0.61	1.93	3.06	8.62	1.11	7.24	22.62
Mexico	17.28	9.89	15.79	27.77	24.08	20.52	19.71	22.07	18.51	18.52	19.07
Netherlands	10.82	12.85	13.27	12.44	17.25	20.81	19.26	21.17	30.32	42.11	18.19
Burkina Faso	2.35	5.43	5.73	10.2	10.45	10.87	8.59	14.13	20.03	17.37	18.11
Guatemala	32.27	34.83	32.81	44.94	21.49	18.86	18.64	19.54	25.92	20.51	17.66
Venezuela	7.88	6.15	10.98	26.91	20.08	25.08	24.38	17.35	6.58	4.7	15.19
Sub Total	518.67	472.15	595.74	607.53	511.66	574.11	732.22	689.36	658.41	728.37	742.56
Others	90.78	108.46	109.91	80.83	66.05	76.91	95.36	116.53	113.66	87.89	119.91
Total annually	**609.45**	**580.61**	**705.65**	**688.36**	**577.71**	**651.02**	**827.58**	**805.89**	**772.07**	**816.26**	**862.47**

Adapted from FAOSTAT | © FAO Statistics Division 2007 | 26 January 2007

Annex - 5: Yield per hectare (tones/Ha) Sesame seed

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Angola	0.27	0.26	0.28	0.28	0.29	0.26	0.26	0.26	0.26	0.26	0.26
Bangladesh	0.61	0.62	0.58	0.61	0.62	0.61	0.61	0.61	0.62	0.62	0.61
Benin	0.61	0.63	0.6	0.58	0.66	0.53	0.64	0.65	0.58	0.65	0.63
Brazil	0.59	0.59	0.59	0.59	0.59	0.63	0.63	0.63	0.63	0.63	0.65
Burkina Faso	0.27	0.65	0.55	0.31	0.65	0.52	0.3	0.51	0.56	0.6	0.47
Cambodia	0.44	0.46	0.47	0.41	0.54	0.51	0.54	0.51	0.56	0.57	0.57
Cameroon	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.17	0.12	0.12	0.12
Central African	0.69	0.87	1.06	1	1	1	1.01	1.01	1	1.02	1.02
Chad	0.24	0.23	0.28	0.35	0.47	0.23	0.32	0.44	0.37	0.37	0.37
China	0.79	0.91	0.97	1	1.04	1.07	1.03	1.06	1.18	0.86	1.08
Colombia	0.62	0.58	0.68	0.66	0.56	0.63	0.64	0.7	0.65	0.65	0.78
Congo, Dem	0.55	0.53	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Congo, Rep	0.5	0.5	0.5	0.49	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Costa Rica	0.58	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Côte d'Ivoire	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Cyprus	0.4	0.4	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Ecuador	0.5	0.5	0.5	0.54	0.49	0.55	0.56	0.55	0.77	0.78	1.27
Egypt	1.13	1.07	1.17	1.21	1.17	1.18	1.21	1.22	1.22	1.22	1.26
El Salvador	0.68	0.67	0.79	0.68	0.74	0.66	0.76	0.73	0.73	0.78	0.78
Eritrea	0.34	0.6	0.31	0.21	0.41	0.38	0.36	0.24	0.22	0.25	0.15
Ethiopia	0.64	0.64	0.64	0.61	0.55	0.55	0.41	0.45	0.66	0.63	0.67
Gambia	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Greece	0.72	0.63	0.75	0.63	0.65	0.75	0.7	0.92	0.85	0.9	0.97
Guatemala	0.78	0.8	0.71	0.66	0.64	0.65	0.36	0.6	0.6	0.62	0.63
Guinea	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Haiti	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.3	0.3	0.26
Honduras	1.27	1.27	1.27	1.27	1.2	1.13	1.13	1.14	0.78	0.84	0.51
India	0.3	0.29	0.32	0.34	0.33	0.31	0.34	0.44	0.31	0.4	0.37
Iran	0.63	0.63	0.47	0.51	0.7	0.69	0.69	0.69	0.7	0.7	0.7
Israel	1.43	1.43	6.25	6.25	8	13.3	13.3	10	10	10	10
Jordan	0.72	0.42	0.65	0.61	1.02	0.92	0.81	1.33	3.23	1.39	0.65
Kenya	0.45	0.43	0.41	0.43	0.45	0.41	0.38	0.38	0.38	0.38	0.38
Korea, Rep	0.68	0.61	0.69	0.68	0.52	0.49	0.72	0.71	0.54	0.34	0.66
Laos	0.64	0.61	0.62	0.62	0.6	0.61	0.6	0.63	0.68	0.67	0.7
Lebanon	1.55	1.65	1.78	1.8	1.8	2.08	0	0	3.33	3.33	3.33

ANNEX – 6A: **Schedule - 1**

To be administered on producers used as a check list

The purpose of this interview is to provide basic information about factors affecting sesame production and its marketing. The information can be used to better promote and to make strategic decisions about community improvements. This questionnaire is intended to be filled out by the responsible person who is growing sesame. The Information you provide will remain strictly confidential and only be disclosed as part of aggregate data reporting. Responses will be used in the preparation of the report to provide useful background information and research findings. Therefore, please answer the questionnaires carefully.

Thank you very much for responding.

1. Please complete the information on the total crop area planted & level of production for the past five years.

S.N	Year	Hectares	Production in quintals
	2002		
	2003		
	2004		
	2005		
	2006		

2. Is this crop given priority in the area Development Plan? Yes ( ) No ( )
3. If No, why not? _____
4. If Yes, why?----------
5. What are the criteria for selection of sesame growing in the Wereda?

( ) Food security	( ) Export potential	( ) Income generation
( ) Market demand	( ) Marginal land use	( ) Others (specify):

6.

S.N	a) Availability of vehicles for:	Good	Acceptable	Poor
	- Production inputs	( )	( )	( )
	- Farm to packinghouse	( )	( )	( )
	- Farm to market	( )	( )	( )
	- Packinghouse to wholesaler	( )	( )	( )
	b) Farm accessibility(road conditions)	( )	( )	( )

7. Rainfall is considered high ( ), average ( ), or low ( ).
8. Are rains heavy enough to damage the crop? Yes ( ) No ( )
9. Does the crop suffer from excessive amounts of standing water at any time during the growing season? Yes ( ) No ( )
10. What is the temperature of the area during growing season? High ( ) Low ( ) Average ( )
11. Are commercial (improved) seeds available: Yes ( ) No ( )

12. If yes, write the names of available seeds in details

S.N	Name of improved seed	Source
1		
2		
3		

13. What are the complaints concerning seeds
Quality _____
Cost _____
Availability_____
14. Why do you grow this crop?
( ) No other alternative, ( ) Tradition, ( ) Best money-making alternative,
( )Other (specify)_____
15. Which type of farming system do you practice:
( )mono crop ( )intercrop ( )rotation ( )backyard garden
( )weed flame/ burn ( )plantation
( )other (specify)_____
16. Do you prepare ground for planting?
( ) Plowed by tractor ( ) Plowed with animals ( ) Worked by hand ( )
Others:_____
17. Do you use fertilizer? Yes ( ) no ( ).
18. Why is the reason?----------

---
19. Do you use irrigation? Yes ( ) no ( ).
20. Why is the reason?----------

---
21. Farmers focus on pest and disease management Yes ( ) no ( ).
22. Farmers focus on drainage Yes ( ) no ( ).
23. Farmers focus on leaf punning and weeding Yes ( ) no ( ).
24. Does the product meet its specification? Yes ( ) no ( ).
25. Is the supply of labor a problem during production? Yes ( ) no ( ).
26. Is the supply of labor a problem during harvest? Yes ( ) no ( ).
27. Laborers are: ( ) highly skilled, ( ) satisfactory, ( ) poorly skilled.
28. How do you make the decision when to harvest the crop?
( ) Maturity ( ) Market price ( ) Danger from theft
( ) Other (specify) _____
23. How is crop harvested? ( ) Mechanically, ( ) Manual labor, ( ) Family labor,( )Other (specify) ----------
29. Identify all those points in the post harvest system where delays or waiting occur.

S.N		Ye	Nc	Describe
	- on the farm	( )	( )	
	- during transport	( )	( )	
	- at packinghouse	( )	( )	
	- at market	( )	( )	
	- other	( )	( )	

30. Is there any developed a new innovative market channel? Yes ( ) No ( )
31. Is there any conflict seen between you and exporters? Yes ( ) No ( )
32. If Yes is the answer identify the reason ----------
    ---
33. Is there any conflict seen between you and your administration? Yes ( ) No ( )
34. If Yes is the answer identify the reason ----------

    ---
35. What can you say about the marketing situation?----------
    ---

    ---
36. Considering the production of sesame and its marketing, how do you measure your satisfaction?----------
    ---

ANNEX -6B **Schedule -2**

To be administered on exporters

The purpose of this bulletin is to provide basic information about factors affecting sesame production and its marketing. The information can be used to better promote and to make strategic decisions about community improvements. This questionnaire is intended to be filled out by the responsible person who is marketing/ exporting sesame. The Information you provide will remain strictly confidential and only be disclosed as part of aggregate data reporting. Responses will be used in the preparation of the report to provide useful background information and research findings. Therefore, please answer the questionnaires carefully.

Thank you very much for responding.

1. Is the sesame market very susceptible (at risk) to?

S.N		Y	N	Explain
1	- changes in price			
2	- changes in quality			
3	- changes in supply			

2. What volume of product was imported from Humera area by the different countries during the last three years? _____
   and the previous four years?_____

S.N	Yea	Tons	Value($	Country who imported
1	2004			
2	2005			
3	2006			

3. Principal constraints which limit exports:

S.N	Type constraints			Describe problem
1	-Unavailable market information			
2	- Insect problems			
3	- Disease problems			
4	- Climatic problems			
5	- Post harvest handling problems:			
6	Infrastructural problem			
7	Technological problem			
8	Unavailable Technical assistance			
9	Unavailable Funds			
10	Other_____			
11	- Transportation problems:			
12	-Insufficient volumes			
13	- Trade barriers			
14	- Delays in payments			
15	- Other			

4. Potential competition:
   a. Which are the principal competing countries for this same market? _____
   b. What actions must be taken to compete favorably with these countries?
   - with respect to quality:_____
   - with respect to supply:_____
   - with respect to price:_____
   - market research and development:_____
5. Which market price attracts you the most to sell your product?

S.N			Describe for whom prices are higher
1	- Exporters	( )	
2	- Government buyers	( )	
3	- Edible oil factory		
4	- Other	( )	

6. Is there reliable information available to you to marketing your product on:

S.N	Markets			
1	Domestic markets			
2	On overseas markets			

7. What are the sources of the marketing related information? _____
8. Does the product meet its specification? Yes ( ) no ( ).
9. Is there any developed a new innovative market channel? Yes ( ) No ( )
10. Kindly furnish the export information for the last five years:

S.N	**Year**	**Export** Quantity	**Export** Value	
1	2002			
2	2003			
3	2004			
4	2005			
5	2006			

11. Describe the major constraints faced in the export market:
    a. _____
    b. _____
12. Describe the major constraints faced from the producer at time of procurement:

    ---
13. Other problems faced with in the country

    ---
14. Are the purchasers of sesame of other countries end users? Yes ( ) No ( )
15. If no is the answer identify the reason ----------
16. Is there any conflict seen between you and growers? Yes ( ) No ( )
17. If Yes is the answer identify the reason ----------

ክፍል ሁለት

ይህ ቃለመጠይቅ በሰሊጥ ምርት ንግድ ለተሰማሩ የተዘጋጀ ሲሆን የዚህ ቃለመጠይቅ ዋና ዓላማው መሰረታዊ የሆኑትን የሰሊጥ ምርትና የምርቱን ግብይት ስርዓት እንቅፋት የሆኑት ነገሮችን ለማወቅ የተዘጋጀ ነው። የመረጃው አስፈላጊነት በችግሩ ዙርያ መስተካከል ያለባቸውን ሁኔታዎች የሚስተካከሉበት ሁኔታ ለመፍጠር እንዲሁም መረጃውን መሰረት በማድረግ ለጥናት እና ምርምር ስራዎችን ተግባር ብቻ የሚውል መሆኑን በማወቅ፣ መረጃው በጥንቃቄ እንዲሞላ ትብብራችሁ እየጠየቅን ለሚደረግልን ትብብር በቅድሚያ እናመሰግናለን።

1. የሰሊጥ የገበያ ሁኔታ ለአደጋ ተጋላጭ ነው ወይ?

ተ.ቁ		አዎ	አይደለም	ማብራርያ
1	በዋጋ ለውጥ	( )	( )	
2	በጥራት ደረጃ	( )	( )	
3	በአቅርቦት መጠን	( )	( )	

2. በድርጅትዎ በኩል ባለፉት ሦስት ዓመታት ውስጥ ምን ያህል የሰሊጥ ምርት ወደ ተለያዩ ሃገሮች ተልኳል?

ተ.ቁ	ዓ.ም	መጠን በክብደት	መጠን በብር	የተላከበት ሃገር
1	1996			
2	1997			
2	1998			

3. ከሚከተሉት ውስጥ ለውጪ የሰሊጥ ንግድ ማነቆ የሆኑት የትኞቹ ናቸው?

ተ.ቁ	የማነቆ ዓትነት
1.	የገበያ መረጃ ፅጥት
2.	የተባይ ችግር
3.	የሰሊጥ በሽታ ችግር

4. የአየር ንብረት ችግር
5. ከምርት መሰብሰብ በኋላ ያለ ችግር
6. የመሰረተ ክማት ችግር
7. የቴክኖሎጂ ችግር ትራንስፖርት
8. የቴክኒክ እገዛ ችግር
9. የገንዘብ አቅም ችግር
10. የምርት መጠን በቂ አለመኖር
11. የንግድ ገደቦች መኖር
12. የክፍያ መዘግየት
13. ሌሎች

4. የተወዳዳሪዎችን ዓቅም በተመለከተ

ሀ. በሰሊጥ ገበያ ላይ ዋና ዋና ተወዳዳሪ ሃገራት እነማን ናቸው?

ለ. ለመወዳደር ምን ምን ሁኔታዎች መሟላት እና መደረግ አለባቸው?

I. ጥራትን በተመለከተ
II. አቅርቦትን በተመለከተ
III. ዋጋን በተመለከተ
IV. የገበያ ጥናትና ልማት በተመለከተ

5. ነጋዴው በቅድሚያ ለማን ቢሸጥ ይመርጣል?

- የውጭ ሰሊጥ ነጋዴ
- የመንግስት ልማት ድርጅት
- የምግብ ዘይት ፋብሪካዎች
- ሌሎች

6. የሰሊጥ ምርትን ለመሸጥ ትክክለኛ የሆነ የገበያ መረጃ አለ ወይ?

	አዎ	የለም
በሃገር ውስጥ ገበያ		
በውጪ ሃገር ገበያ		

7. ገበያ ነክ የሆኑ መረጃዎችን ከየት ያገኛሉ / ምንጩ ከየተ ነው?

8. የሰሊጥ ምርት ተፈላጊውን መለያ አግኝቷል ወይ?

9. የንግዱን ሁኔታ ለማመቻቸት አዲስ የገበያ መንገድ የተዘረጋ ካለ?

10. በወጪ ንግድ ገበያ ላይ ያሉ ማነቆዎች ምን ምን ናቸው?

    ሀ.

    ለ.

11. በሰሊጥ ምርት ላይ በአምራቹ በኩል የሚያጋጥሙ ችግሮች ካሉ?

    ሀ.

    ለ.

12. በሌሎች በሃገር ውስጥ ለዚሁ የሰሊጥ ንግድ እንቅፋት የሚሆኑ ካሉ?

    ሀ.

    ለ.

13. በሌሎች ሃገሮች ያሉ የሰሊጥ ገዢዎች / የሚረከብዋቹህ የመጨረሻ ተጠቃሚዎች ናቸው ወይ? ( ) አዎ ( ) አይደለም

14. አይደለም ከሆነ ምክንያቱ ምንድነው?

ቃለ መጠይቅ

1. በአንድ ዓመት ውስጥ የታረሙ መሬትና የምርት መጠን ምን ያህል ነው?

ዓመት	የታረሰ መሬት(በሄክታር)	የምርት መጠን(በኩንታል)
2002		
2003		
2004		
2005		
2006		

2. የሰሊጥ ምርት በአካባቢው የልማት ዕቅድ ውስጥ ትልቅ ቦታ(ቅድሚያ) ተሰጥቶታል?

አዎ ☐ አልተሰጠውም ☐

3. በተራ ቁጥር ሁለት ስተጠየቀው ጥያቄ መልስዎ "አልተሰጠውም" የሚል ከሆነ ለምን?

_____

4. በተራ ቁጥር ሁለት ስተጠየቀው ጥያቄ መልስዎ "አዎ ተሰጥቶታል" የሚል ከሆነ ለምን?

_____

5. በወረዳው ሰሊጥ ለማምረት እንደ ምክንያት የሚጠቀሰው

( ) የምግብ ዋስትና	( ) ለውጪ ንግድ
( ) የገበያ ፍላጐት	( ) ለመሬት አጠቃቀም አመቺነት
( ) ገቢ ማስገኛ	( ) ሌሎች ምክንያቶች (ቢገለፁ)

6.

ሀ) የትራንስፖርት አቅርቦት	ጥሩ	መካከለኛ	መጥፎ
➔ ለግብዓት አቅርቦት ➔ ምርትን ወደ መጋዘን ➔ ምርትን ወደ ገበያ ለመውሰድ ➔ ምርትን ከመጋዘን ወደ ጅምላ ነጋዴዎች			
ለ) የእርሻ (ምርት) ቦታ የትራንስፖርት አመቺነት (የመንገድ ሁኔታ)			

7. በአካባቢው ያለው የዝናብ መጠን

ብዙ ☐ መካከለኛ ☐ ትንሽ ☐

3. የዝናብ መጠኑ በእርሻ መሬት ላይ ያለውን የሰሊጥ ሰብል ይጐዳል?

አዎ ☐ አይጐዳም ☐

9. በእርሻ መሬት ላይ ያለውን የሰሊጥ ሰብል በማንኛውም ጊዜ ያቆረ ውሃ ሊጐዳው የሚችልበት አጋጣሚ ደፈጠራል?

አዎ ☐ አይፈጠርም ☐

10. በሰሊጥ ሰብል ምርት ወቅት የአየሩ ሁኔታ (የሙቀት መጠን) እንዴት ያለ ነው?

ከፍተኛ ☐ መካከለኛ ☐ ዝቅተኛ ☐

11. የተሻሉ ምርጥ የሰሊጥ ዘሮች በገበያ ላይ ይገኛሉ?

አዎ ☐ አይገኙም ☐

12. በተራ ቁጥር 11 ለተጠየቀው ጠያቄ መልስዎ "አዎ" የሚል ከሆነ በገበያ ላይ የሚገኙትን ምርጥ የተሻሉ ዘሮች ስም ቢጠቅሱ

ተ.ቁ	የዘሩ ስም	የተገኘበት ቦታ(ድርጅት)

13. ከዘር አካያ የሚነሱ ቅሬታዎች

➔ ከጥራት አንፃር _____

➔ ከዋጋ አንፃር_____

➔ ከአቅርቦት አንፃር _____

14. በእርሻ ቦታዎ ላይ የሚጠቀሙት የአመራረት (የአስተራረስ) ዘይቤ ምን ይመስላል?

15. እርሻዎችን ለማረስ የሚጠቀሙበት ዘይቤ

( ) በትራክተር ማረስ

( ) በእንስሳት በበሬዎች ማረስ

( ) በእጅ በሰው ኃይል ማረስ

በሌላ መንገድ _____

16. የሰሊጥ ምርትዎን ለማሳደግ ማዳበሪያ ይጠቀማሉ?

አዎ ☐ አልጠቀምም ☐

17. ከላይ ለተጠየቀው ጥያቄ "አዎ" ወይንም "አልጠቀምም" ለሚለው መልስ ምክንያት ቢያስቀምጡ _

_____

18. የሰሊጥ ምርትዎን ለማሳደግ መስኖ ይጠቀማሉ?

አዎ ☐ አልጠቀምም ☐

19. ከላይ ለተጠየቀው ጥያቄ "አዎ" ወይንም "አልጠቀምም" ለሚለው መልስ ምክንያት ቢያስቀምጡ

_____

_____

20. ፀረ-ተባይ እና ሌሎች ለእርሻ ምርት የሚያገለግሉ መድሃኒቶችን ይጠቀማሉ?

አዎ ☐ አይጠቀሙም ☐

21. ገበሬዎች ከውሀ አጠቃቀም ጋር በተያያዘ የማስተንፈስና የቅየሳ ስራ ያከናውናሉ?

አዎ ☐ አያከናውኑም ☐

22. ገበሬዎች በምርት ወቅት የግርዘት እና የአረም ማረም ስራ ያከናውናሉ?

አዎ ☐ አያከናውኑም ☐

23. የሚመረተው ምርት ማሟላት ያለበት የጥራት ደረጃ እና ብዛት ያሳካል ወይ?

አዎ ☐ አያሳካም ☐

24. በሰሊጥ ምርት ወቅት የሰው ኃይል አቅርቦት እጥረት ይገጥማል ወይ?

አዎ ☐ አይገጥምም ☐

25. በሰሊጥ ምርት መሠብሠብ ወቅት የሰው ኃይል እጥረት ይከሠታል?

አዎ ☐ አይከሰትም ☐

26. በምርት ወቅት የሚሠሩት ሠራተኞች

ዕውቀቱ ያላቸው ☐

እምብዛም ዕውቀቱ የሌላቸው ☐

ዕውቀቱ የሌላቸው ☐

27. የሰሊጥ ምርቱን የሚሠበስቡበትን ወቅት የሚወስኑት ምንን መሠት በማድረግ ነው?

የሰብል ዕድገቱን ☐ ስርቆት ስመከላከል ☐

የገበያ ዋጋን ☐ ሌላ ምክንያት _____

28. ከሰብል (ምርት) መሠብሰብ በኋላ የሚያጋጥሙ የጊዜ መዛባት ወይም መዘግየት ችግሮች

	አለ	የለም
በእርሻ ላይ	☐	☐
በትራንስፖርት ጉዞ ላይ	☐	☐
በመጋዘን ውስጥ	☐	☐
በገበያ ላይ	☐	☐
በሌላ ሂደት ላይ	☐	☐

29. ምርቱን ለመሸጥ ሌሎች የገበያ መንገዶች (ሌሎች ገበያዎችን) የማየት ወይንም የመፈለግ ስራ ትሠራላችሁ?

አዎ ☐ አይሰራም ☐

30. በእናንተ (በገበሬዎች) እና በላኪዎች መካከል ለመግባባት ይከሠታል?

አዎ ☐ አይከሰትም ☐

31. ከላይ ለተጠየቀው ጠያቂ መልስዎ አዎ የሚል ከሆነ ምክንያቶቹን ቢጠቅሱ?

_____

_____

32. በገበሬዎችና በአስተዳደር ላይ ባሉ ሰዎች (በአስተዳደሩ) መካከል ለመግባባት ይከሰታል?

አዎ ☐ አይከሰትም ☐

33. ከላይ ለተጠየቀው ጥያቄ መልስዎ አዎ የሚል ከሆነ ምክንያቶቹን ቢጠቅሱ?

_____

_____

34. ከሰሊጥ ምርት ገበያ ጋር በተያያዘ ተጨማሪ የሚሉት ነገር ካለ

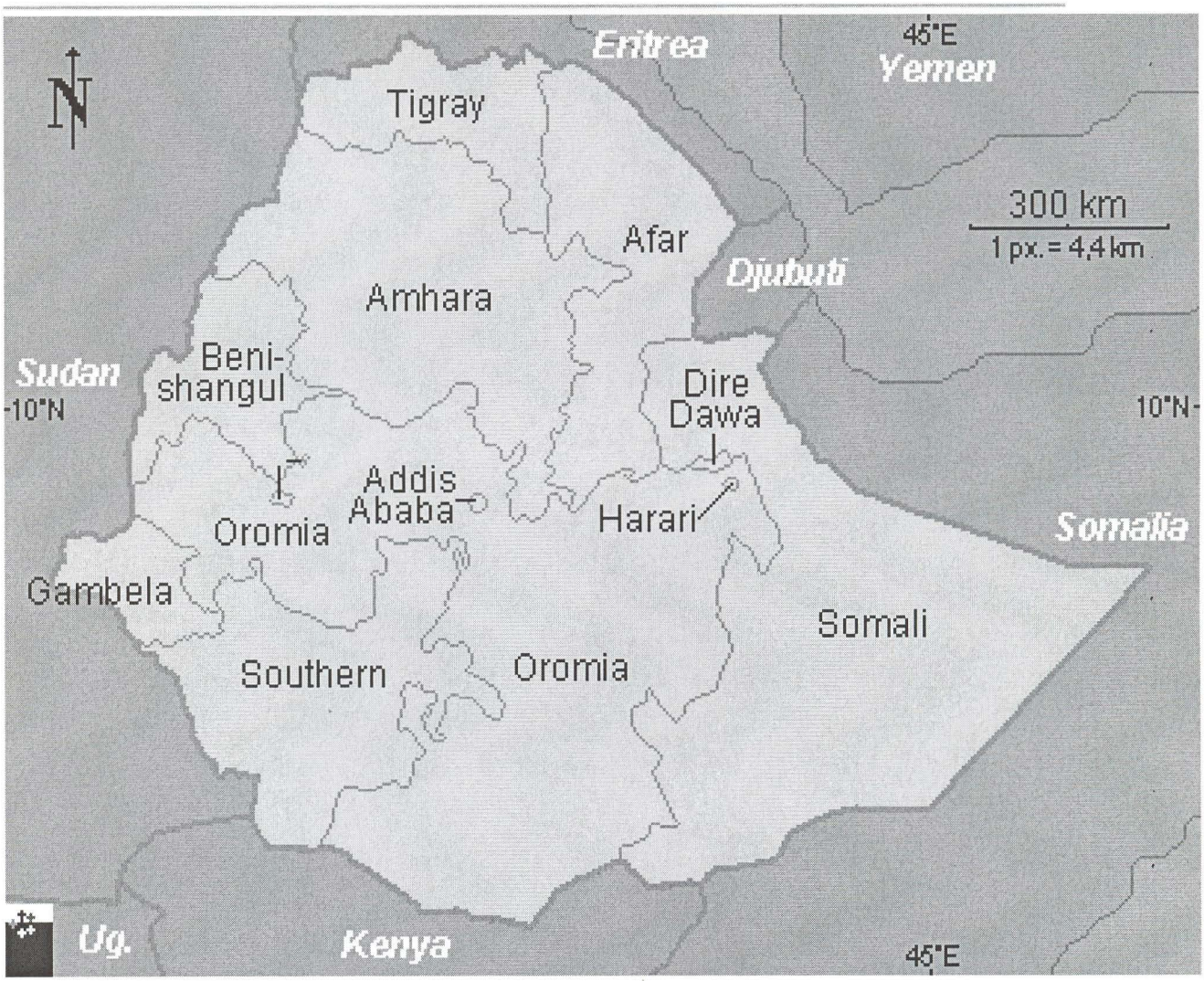
_____

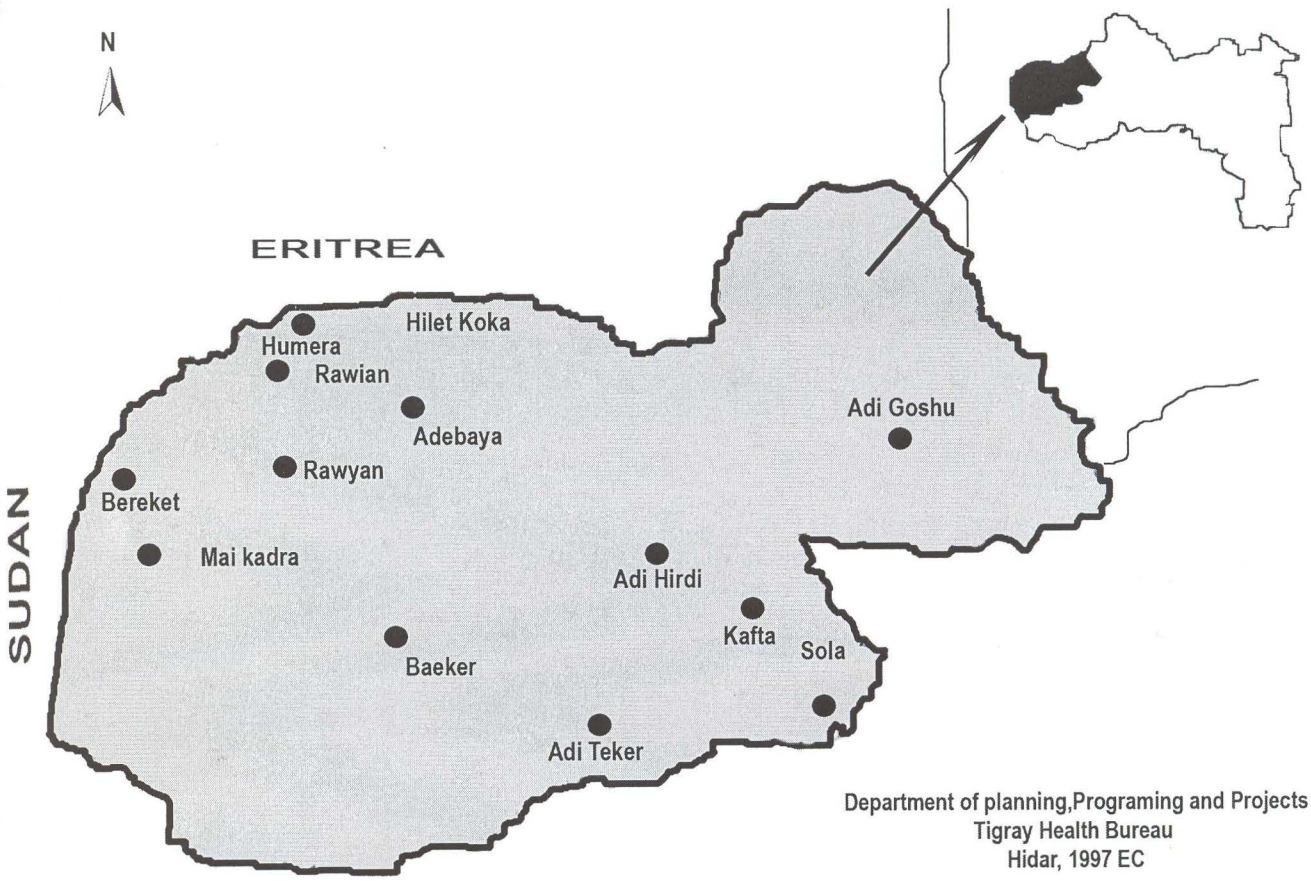
_____

35. ከከሊጥ ምርቱና ከገበያው ጋር በተያያዘ እርካታዎትን እንዴት ይገልፁታል?

_____

_____





Department of planning,Programing and Projects
Tigray Health Bureau
Hidar, 1997 EC