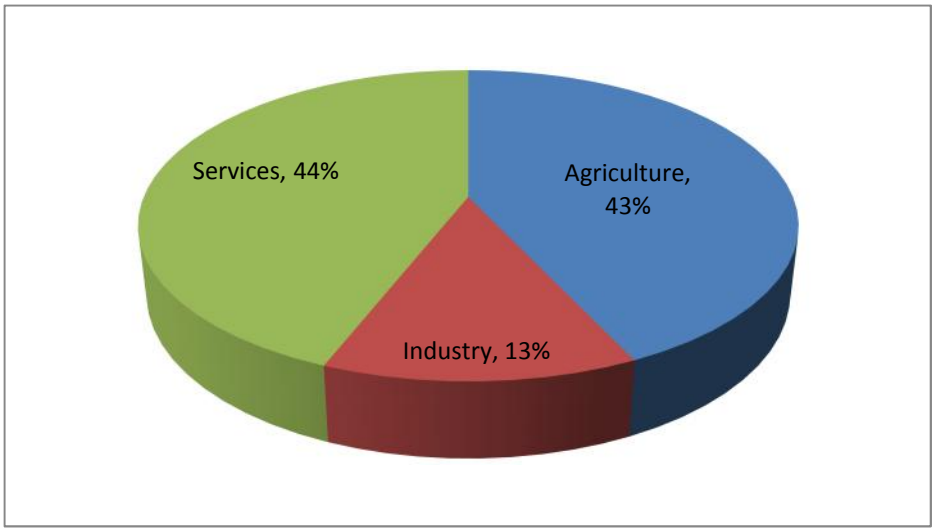
I² Agribusiness Innovation and Incubation Center

Desk Study Report on Ethiopia Sesame Value Chain

1. Ethiopia

Ethiopia is a country with very high potential in the Agriculture Sector, with more than 45 percent of the total 1.13 million km^2 area being arable. The Ethiopian economy has shifted to a higher growth trajectory since 2003/04. During 2005/06-2009/10, overall real GDP has grown rapidly at an average of 11 percent per annum. According to the Ethiopian Ministry of Finance and Economic Development (MoFED), during the period 2006/07 – 2010/11, the contribution of agriculture sector to GDP was recorded at an annual average of 43 percent and employing about 80 percent of the total population which resembles the tremendous role the sector plays.

Chart 1: Average Percentage Contribution of Major Sectors to GDP (2005/06-2010/11)



Source: MoFED

The significant role of Agriculture is expected to continue in the Growth and Transformation Plan (GTP) period (2009/10 - 2014/15). During these five years, agriculture is expected to contribute 38 percent of GDP with annual average growth rate of 8.6 percent, catalyzing the transformation of the Ethiopian economy towards Agriculture Development Led Industrialization. The Agriculture Sector generates about 70 percent of the country's export earnings currently valued at US$2.7 billion. To this end, the GTP has made special emphasis on agricultural and rural development, industry, infrastructure, social and human development, good governance and democratization.

There are about 12.6 million smallholder farmers with an average farm size of only 1.2 hectares whose production accounts for 85 percent of the country's agricultural output, valued at birr 221 billion (13 Billion USD) in 2011 (Access Capital, 2012). In addition to the fact that agricultural productivity among smallholder farmers is as low as 1.25 tonnes per hectare for teff, there is also great variability in productivity across farmers with the most productive farmer producing 3.66 tonnes per hectare compared to the average yield of 1.83 per hectare for cereals (Access capital, 2012).

Ethiopia produced 22.5 million tonnes of crop, of which 95 percent is from smallholder farms and the remaining from commercial farms. Among other sources of calories such as livestock outputs, root crops; cereal is the major source of calories making it critical to both household and national food security in Ethiopia. In 2010/11, over 96 percent of cereals were produced by smallholder farmers and 65 percent (15.5 million tonnes) of this production was consumed within the farm-household and only 16 percent was sold for cash or bartered. Taking the average per-capita calorie requirement of 2.16 quintiles for 2,100 daily calories, the country needs to produce 18.4 million tonnes of cereals to feed its population of about 85 million people.

During the GTP period, government aims to double the production of smallholder farmers by implementing measures to raise and sustain high agricultural productivity. The scope to increase production through area expansion is continuously diminishing as land for agriculture gets exhausted, making this approach less sustainable in the long term. Number of beneficiaries of agricultural extension services is planned to increase to 14.6 million by 2014/15 from the baseline number 5.09 million in 2009/10. The following table depicts some of the major targets for agricultural development during the Growth and Transformation Plan.

Table 1: Target for Agriculture Growth

Description	Baseline 2009/10	Target 2014/15
Cultivated Land		
Production of cereals (mln ha)	9.1	9.6
Cereals productivity (qt/ha)	17	22
Agriculture Input Supply		
Supply of improved seeds (mln qts)	0.56	3.6
Supply of chemical fertilizers(both DAP and Urea) (m/n tons)	0.83	1.66

Agriculture Extension		
Number of beneficiaries of agricultural extension service (mln)	5.09	14.64
Of the beneficiaries of agricultural services proportion of women and youth (%)		40
Improving Soil Fertility		
Areas under Vertisol development (mln ha)	0.6	3
Acidic land treated with lime (ha)	2210	37850
Natural Resource Conservation Program		
Area of land rehabilitated (m/n ha)	3.21	10.21
Land developed under community based water shade development program (mln ha)	3.77	7.78
Total area of land subjected to soil fertility research (mln ha)	0.894	2.82
Small Scale Irrigation Program		
Land developed under small scale irrigation (mln ha)	853	1850
Food Security		
Number of households participate in safery net programs mln)	7.1	1.3
Food reserve (mln tones)	0.41	3
Livestock Production and Productivity		
Number of improved hybrid cattle	390,078	1,493,203
Number of hybrid milk cows	140,428	537,553
Improved animal feeding seed in thousand quintal	50	145
Agricultural Marketing		
At the end of the plan period it has been planned to generate USD 6.58 bln from the agriculture sector export market by exporting 3.81mln ton of agricultural products,5859 mln flower cut abd 2.35 mln live animals		
Agricultural Research		
At the end of the plan period new technologies developed in cereals, livestock, soil, forest development and agricultural mechanization will reach 265,140,41,219, and 836 respectively		
Private Investment in the Agriculture Sector		
Transfer nearly 3.3 mln ha land to commercial farming investors on **transparent and accountable manner**		

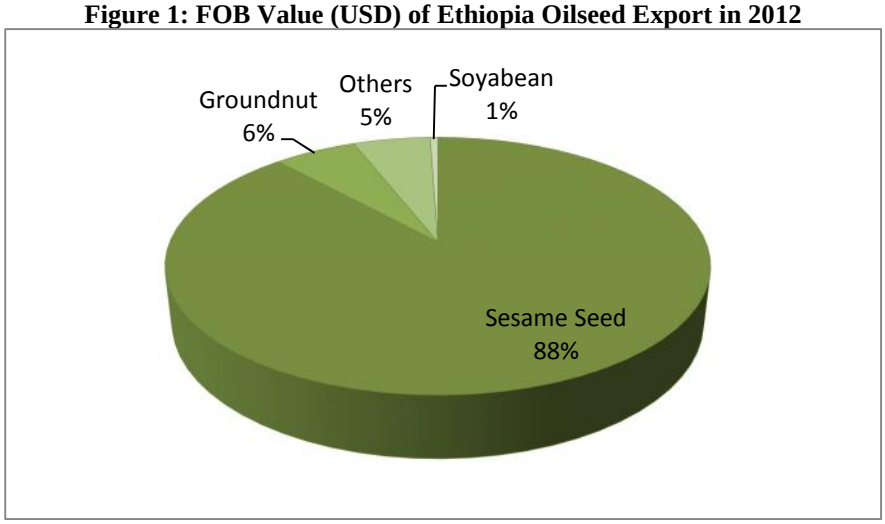
Source: Growth and Transformation Plan

2. Oilseed Subsector

Oilseeds are the mainstay of the rural agrarian community and important players in the national economy in Ethiopia (Ethiopian Institute of Agricultural Research, 2011). There are a large number of oilseeds that are cultivated in Ethiopia, classified into two major categories: Highland and Lowland Oilcrops. Some of these crops include-but not restricted to-Sesame, Linseed, Noug, Groundnut, Rapeseed, Sunflower, Safflower, Soyabean, Mustard Seed, Poppy Seed.

Oilseeds play an integral role in the Ethiopian economy, as a source of foreign currency. In the GTP period, Government of Ethiopia (GoE) will be giving priority to Industry Sector, with special emphasis on export oriented and import substitution products. Among the priority industries, Agro-processing is able to contribute to both of these elements. Additionally, MoFED has identified Oilseeds and Pulses as the most promising export items in the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) published in September, 2006. In 2012 alone Ethiopian Revenue and Customs Authority (ERCA) estimates the FOB value to be more than 27 million USD. The contribution of each Oil crop to this figure is as follows:

Figure 1: FOB Value (USD) of Ethiopia Oilseed Export in 2012



Source: *ERCA*

As can be observed from the graph majority of the earning is attributed to Sesame Seed export, making up for almost 90%. This dominance of Sesame Seed export can also be observed after 2008.

Table 2: Ethiopia Oilseed Export by Net Mass (Ton)

Year	Sesame Seed	Linseed	Groundnut	Rapeseed	Sunflower
2008	131,689	24	98	3,295	7
2009	255,783	650	135	4,468	5
2010	228,039	2,908	144	14,978	83
2011	253,747	3	2,130	219	204
2012	317,653	505	23,450	404	41

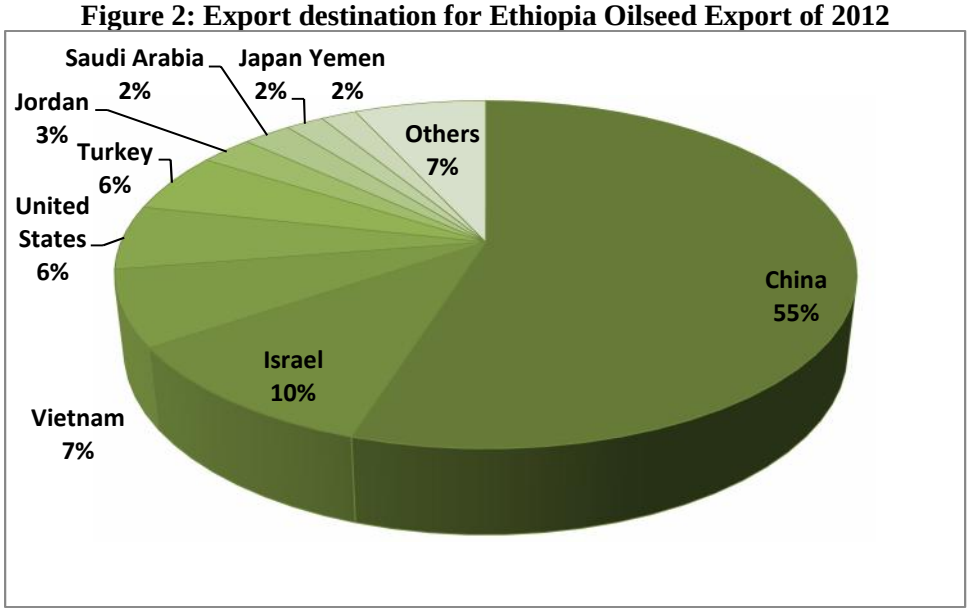
Source: *ERCA*

As can be observed from the table above, the export amount in Sesame Seed is significantly greater than that of the other Oilseeds over the past five years, and has been increasing in amount over this time frame. Taking into consideration the maximum amount of export of each Oilseed, the Sesame Seed export of 2012 is

- 109 times that of Linseed export (2010);
- 14 times that of Groundnut export (2012)
- 21 times that of Rapeseed export (2010); and
- 1,560 times that of Sunflower export (2011).

The major destination for these crops is China, constituting 58%. Other destinations include Vietnam, Turkey, Saudi Arabia, Yemen, and United Arab Emirates.

Figure 2: Export destination for Ethiopia Oilseed Export of 2012



Source: ERCA

The Ethiopian Advantage

- Agro ecology: Ethiopia has suitable climate for annual and perennial oil plants. Ethiopia is endowed with multifaceted micro climates suitable for many types of oil crop cultivation and perennial oil tree plantation; which attracts any level of investment.
- Availability of labor force: The country is the third population in Africa with cheep labor cost; Both oil crop growing or oil tree plantation needs sufficient labor force and that force is easily available in the country.
- Huge demand for food oil: The country imports 80% of its food oil demand. The high demand of food oil is one of the potential business opportunities in the country. The huge oil demand in the country could be an attractive investment.
- Smallholders' dominated subsistence agriculture farming practice. Oil crop cultivation is dependent on smallholders farming subsistence agriculture. There is enough space with less competition for commercial farming practice.

Investment Opportunities

This subsector has huge potential for business in production of oil crops, extraction of food oils and trade. The following disciplines are some of the possible investment opportunities.

- **Commercial oil seed enterprise**s

Improved planting materials are scarce and most of the farmers are sowing last season crop of their own and yield is not satisfactory. The existing private sector and state owned seed agencies could not satisfy the seed demand. Improved planting material multiplication is one of the areas of attraction.

- **Oil Seed cleaning service**

Adulteration of oil seeds is the most critical problem of the subsector. Oil seed cleaning facilities have important role to facilitate the local and exportable oil seed cleaning. Establishing oil seed cleaning is a huge business opportunity to consider.

- **Oil extraction and refinery plant**

Most of the oil mills have got cottage industries which crashes oil seeds and extract crude oils for direct consumption. This is unhealthy and below the standards for human consumption. Oil refineries are very few. As crude oil mills are prohibited not to continue supply of unrefined oils

the need for oil refinery is immense. According to the base line study of the draft document only 15 oil processing plants are annually processing 40,000 tons good quality edible oils; otherwise 850 informal, small and micro scale cottage oil seed processors are extracting crude oil.

- **Fruit oil extraction**

The country has suitable climate for perennial oil trees there is no tree origin oil extraction facility in the country. Oil trees like oleo and palm oil plantation and extraction could be potential areas for investment.

- **Safflower petal production & export**

Ethiopia has suitable agro ecology and farmers growing practice on Safflower. Safflower petal has got potential importers and found to be huge business opportunity.

3. Product Description

a. Sesame

A member of the Tubiflorae order and Pedaliaceae family, Sesame Seed (*Sesamum Indicum L.*) comprises of 16 genera and is considered as one of the oldest Oil crop known to man- with official records dating back to BC 2000 in Harappa, Pakistan and BC 1500 on the Medical Papyrus of Thebes, Egypt (Weiss, Oilseed Crops, 2000). Historians and other researchers have identified various applications of Sesame in ancient times including herbal remedy; to wash clothes before soap was generally available; currency; and loan negotiation instrument. It is also a component of religious ceremonies in India (*Sraddha* and *Pitryana*). In more recent years, Sesame seeds have a number of applications in various forms:

- Whole roasted Sesame seeds (Hulled) are sprinkled on bread, bagels, and top hamburger buns;
- Baked into crackers, often in the form of sticks;
- Used in cakes in Greece;
- Sprinkled on Sushi-type-foods in Japan.

It derives its name from Assyrian name- *segisi*. Other names attributed to this broad leafed Oilseed include:

- *Selit* in Amharic;
- *Sim sim* in Arabic;
- *Sum-sum* or *Sem-sem*- Hebrew;
- *Gengelim*- Brazil;
- *Gingelly*- India;
- *Benne*- Southern states of North America; and
- *Beniseed*- West Africa.

Sesame presents several benefits by being the source of:

- High content of Protein- even dietary protein;
- Vitamin B-complex which helps to improve the nervous system, organs, metabolism, eyes, muscles, skin and hair;

- Magnesium, Calcium, Iron and Copper- useful for red blood cell production, bone mineralization, enzyme synthesis and hormone production;
- High fiber content; and
- High in mono-unsaturated fatty acid, oleic acid- lower bad cholesterol and increase good cholesterol in the blood and prevention of coronary artery disease and strokes.

Sesame Seed Varieties

Ethiopia has a large number of Sesame varieties, the more popular Humera, Gonder and Wollega varieties, which are well known in the international market. However, there is only one institution in Ethiopia that is currently engaged in the research in Sesame Seed for cultivation: Ethiopian Institute of Agricultural Research (EIAR). This institution has many research centers located in different corners of the country that are conducting various studies in order to find/adopt seed varieties that are able to increase productivity with minimal environmental degradation. A full account of the different types of Sesame Seed Varieties that have been developed and/or adapted can be summarized by the table below:

Table 3: Sesame Varieties in Ethiopia

Variety	Year of Release	Breeder/Maintainer	Origin	Seed yield (Quintals/ha)			Oil Content (%)	Rainfall (mm)	Height (m)	Days to Mature	Color	Local Name
				Irrigated	Lab	Farm						
Setit-1	2011	HuARC/ TARI			6.2 - 10	5.5 - 9	54	400 – 650	560 – 1130	80 - 90	White	
Humera-1	2011	HuARC/ TARI			5.9 - 9	5 - 8	52	550 – 750	760 – 1130	760 - 1130	White	
Barsan	2010	GoPARC/ SoRPARI										
Iidan	2010	GoPARC/ SoRPARI										
Obsa	2010	BARC/ OARI										
Dicho	2010	BARC/ OARI										
AHADU	2007	SARC/ ARARI										
BORKENA	2007	SARC/ ARARI										
Argane	1993	WARC/ EIAR	Cross	18	7 - 18		48		350 – 700	90 - 100	Brown	
Adi	1993	WARC/ EIAR	Exotic	17	17		46		750	85 - 90	White	
Sarkamo (*Sercamo)??*	1993	WARC/ EIAR	Ethiopia	18	18		50		360 -750	90 - 100	Brown	
Abasena *(Abe Sina)??*	1990	WARC/ EIAR	Ethiopia	14	4 - 14		43	> 700	500 -1200	103 - 120	White	
Tate	1989	WARC/ EIAR			9	7		600 – 700	< 1650	130	Grey	
Mehado-80	1989	WARC/ EIAR	Ethiopia	17	7		44		300 – 750	100 - 110	White	Wollega
S	1978	WARC/ EIAR	Uganda	12	4 - 12		43		300 -750	100 - 120	Brown	
E	1978	WARC/ EIAR	Uganda	14	4 - 12		43		300 -750	88 - 100	White	
T-85	1976	WARC/ EIAR	India	10	5 - 10		44	400 – 500	< 600	110 - 115	White	Humera
Kelafo 74	1976	WARC/ EIAR	Ethiopia	12	3 - 12		43		< 500	110 - 120	Black	Gonder

Source: Crop Variety Register Issue No. 14, EIAR 2011; Adugna 1993, IAR 1997a Unpublished, Extension package of MoARD

Mehado-80, locally known as Wollega, is characterized by a not so sweet taste and preferred for Sesame Oil extraction. T-85, commonly known as Humera, is recognized for its sweet aroma and taste while having lower oil content-in comparison to Wollega type. It requires intensive management during cultivation as it has high possibility of shattering. Its application is common in bakeries and confectionary. It is this seed variety that is Hulled and further processed into Tahini. Another white Sesame seed is the Kelafo 74-Gonder type-which is known for its uniformity and usually sprinkled on top of bread.

According to Humera Agricultural Research Center (HuARC), the agronomic and morphological characteristics of Setit-1 and Humera-1 are as follows:

Setit-1

- Adaptation area: moisture stressed areas in Humera such as Adebay, Mikadra and similar Sesame growing agro-ecologies.
  - Altitude (m.a.s.l) 560 - 1,130
  - Rainfall (mm) 400 - 650
- Seed rate (kg/ha) Row planting (2 - 3kg/ha)
  Broadcast (3.5 - 4.5kg/ha)
- Planting date End of June- Early July
- Days to flowering 45 - 55
- Days to maturity 80 – 90
- 1000 seeds weight(g) 3 - 3.5
- Plant height (m) 0.90 - 2.1
- Crop pest reaction Resistant to leaf blight

Humera-1

- Adaptation area: high moisture areas areas of Humera such as Mikadra (Dansha) and similar Sesame growing agro-ecologies.
  - Altitude (m.a.s.l) 760 - 1,130
  - Rainfall (mm) 550 - 750
- Seed rate (kg/ha) Row planting (2 - 3kg/ha)
  Broadcast (3.5 - 4.5kg/ha)
- Planting date End of June - Early July
- Days to flowering 50 - 60
- Days to maturity 90 - 100
- 1000 seeds weight(g) 3 - 3.5
- Plant height(m) 0.95 - 2.1
- Crop pest reaction Moderately resistant to leaf blight

HuARC is currently not only engaged in the research aspect of these two varieties. It is also growing the seeds and passing it along to Ethiopian Seeds Enterprise (ESE)- the only commercial Sesame seed distributor in Ethiopia-for circulation.

Another major stakeholder, Ethiopia Commodity Exchange (ECX) has developed its own classification of the varieties that are being traded on its grounds. These classifications of variety is highly dependent on the origin of the harvest. Usually, the White Sesame that originates from Gonder and Humera have higher value in the exchange market as compared to the others. Laboratories are set up in different locations that will classify the Sesame that is deposited by its members in the following varieties/types:

Table 4: Sesame Varieties

No.	Sesame Type	Delivery Location	Symbol	Grade	Origin
1	Whitish Humera/Gonder Sesame Seed	Humera (HM)	WHGS	1,2,3,4,UG	Kafta Humera, Wolkait, Asgede Tsimbila, Tahtay Adiyabo, Tsegedie, West Armachiho (Abderafi, Abreha Jira, Korhumer), and surroundings.
2	Whitish Humera/Gonder Sesame Seed	Metema (MT)	WHGS	1,2,3,4,UG	Metema, Quara and surroundings
3	Whitish Humera/Gonder Sesame Seed	Gonder (GN)	WHGS	1,2,3,4,UG	Tach Armachiho, Tegedie, West Armachiho (Zemene Merik, Meharish) and surroundings.
4	Mixed Humera/Gonder Sesame Seed	Humera (HM)	MHGS	1,2,3,4,UG	Kafta Humera, Wolkait, Asgede Tsimbila, Tahtay Adiyabo, Tsegedie, West Armachiho (Abderafi, Abreha Jira, Korhumer), and surroundings.
5	Mixed Humera/Gonder Sesame Seed	Metema (MT)	MHGS	1,2,3,4,UG	Metema, Quara and surroundings.
6	Mixed Humera/Gonder Sesame Seed –	Gonder (GN)	MHGS	1,2,3,4,UG	Tach Armachiho, Tegedie, West Armachiho (Zemene Merik, Meharish) and surroundings.
7	Whitish Wollega Sesame Seed –	Assossa (AS)	WWSS	1,2,3,4,5,UG	Adabuldeglu, Sirba Abay, Mao Komo, Bambasi, Assossa, Sherkole, Homsha, Mengie, Kumruk, Kamashi, Agelo Meti, Yaso, and surroundings.
8	Whitish Wollega Sesame Seed	Bure (BR)	WWSS	1,2,3,4,5,UG	Bulen, Pawe, Dibatie, Dangur, Mandura, Wonbera, Guba and surroundings.
9	Whitish Wollega Sesame Seed	Nekemte (NK)	WWSS	1,2,3,4,5,UG	Bolodge Genfoy, Kelem Wollega, West Wollega, East Wollega, Horogudru Wollega, Illubabor, Jimma and surroundings.
10	Whitish Wollega Sesame Seed	Addis Ababa (AA)	WWSS	1,2,3,4,5,UG	Southern Nations and Nationalities People Region (SNNP), Gambella Region
11	Mixed Wollega Sesame Seed	Assossa (AS)	MWSS	1,2,3,4,5,UG	Adabuldeglu, Sirba Abay, Mao Komo, Bambasi, Assossa, Sherkole, Homsha, Mengie, Kumruk, Kamashi, Agelo Meti, Yaso, and surroundings.

12	Mixed Wollega Sesame Seed –	Bure (BR)	MWSS	1,2,3,4,5,UG	Bulen, Pawe, Dibate, Dangur, Mandura, Wonbera, Guba and surroundings.
13	Mixed Wollega Sesame Seed –	Nekemte (NK)	MWSS	1,2,3,4,5,UG	Bolodge Genfoy, Kelem Wollega, West Wollega, East Wollega, Horogudru Wollega, Illubabor, Jimma and Surroundings.
14	Mixed Wollega Sesame Seed	Addis Ababa (AA)	MWSS	1,2,3,4,5,UG	Southern Nations and Nationalities People Region (SNNP), Gambella Region
15	Reddish Sesame Seed	Addis Ababa (AA)	RDSS	1,2,3,4,UG	Dessie, Belessa, Kemissie, and Surroundings
16	Mixed Reddish Sesame Seed	Addis Ababa (AA)	MRSS	1,2,3,4,UG	Dessie, Belessa, Kemissie, and Surroundings

Source: ECX

Irrespective of the studies that have been conducted by the research institute, the yield of the farmlands around Humera has been reduced to 2.5 quintals/ha. The reason for low yield is as a result of agronomic practices and shattering seed varieties. Among the most common agronomic practices in the Sesame Sector is the retention of the previous year's harvest to cultivate the current year's harvest. This will decrease the yield and affect the size of the Sesame Seed collected. In addition to retention, the integral problem faced by growers is the shattering**1** characteristic of the varieties that are currently being used. Shattering can attribute for the loss of more than 30% of the produced sesame during threshing. There has not been any supply- via import-of non-shattering Sesame seed, neither has the research so far yielded such as variety.

Outside of the varieties that are developed by EIAR, Sesame varieties have been adopted from neighboring country such as Sudan (previous). 'Hir Hir' is a whitish Sesame Seed that has an oil content ranging from 48 – 50% with application in Bakery, Tahini and Confectionary. This Sesame variety originates from Sudan (previous) and has officially and unofficially crossed the border into the farm lands of the growers in the Northern Region. Ethiopia Seeds Enterprise (ESE) is the only commercial seed supplier in Ethiopia. It supplies the seed varieties supplied to it by EIAR, through MoARD, and imports 'Hir Hir' from Sudan as well.

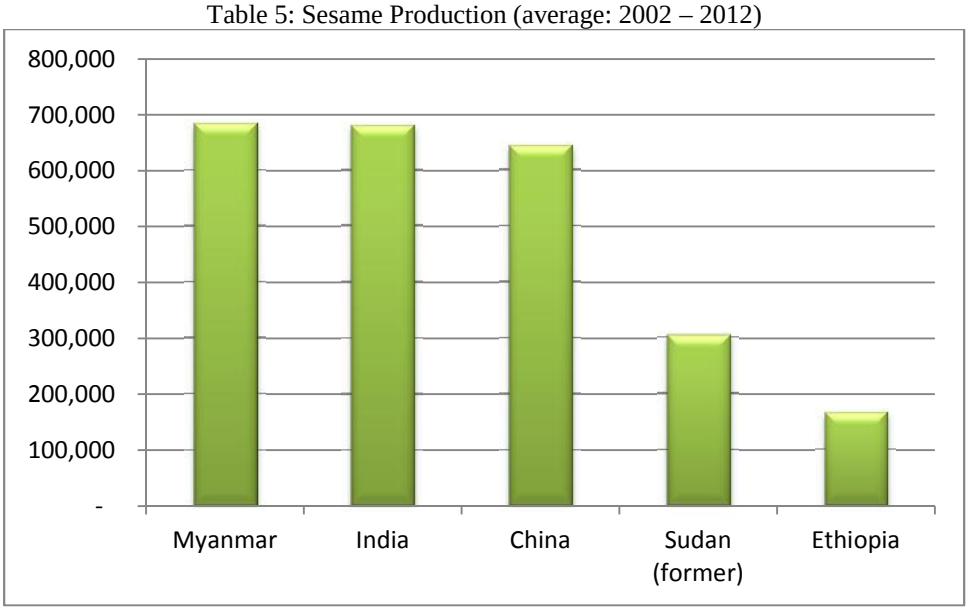
[1] The release of Sesame Seed release when the Sesame capsule splits is called Shattering. This happens during ripening.

Sudan is also home to other varieties with different colors such as Red Sesame- with 85% oil content. This variety is both locally consumed and exported to other countries such as Egypt and Uganda. 'Maryod' is another dominant Sesame variety- a combination of white and red- and is exported to destinations such as Korea and Japan. Other varieties include Zeirra 1, 3, 6, and 7 (white); Horiya 39 (brown); Kenana-K3 and 2; and Promo K.

Sesame Cultivation

According to FAOSTAT (average: 2002 – 2012), Ethiopia's sesame production is considered as fifth highest in the World- after Maynmar, India, China and Sudan (former).

Table 5: Sesame Production (average: 2002 – 2012)



Source: FAOSTAT

The different characteristics and needs of varieties and growth stages withstanding, Sesame cultivation has the following trends

- Cultivated on an altitude ranging from 200 – 1,250m above sea level but it best grows at a height of 500 – 1,600m above sea level and temperature range of 23 - 28^{o}C- making it drought resistant. However, if the temperature is to drop below 18 ^{o}C, it will retard the growth of the crop.
- Attain a height of 10cm on average;

- Suitable Rainfall ranges from 500 – 700mm, on average, but can tolerate 300 – 1200mm; and
- Soil with pH levels of 5.0 to 8.0 and light texture is preferred but can grow with a lower yield at a pH level of 4.0; medium to light well drained and deep non-compacted soils.

There are a number of cropping systems that could be practiced with efficient use of resources, high yield and low environmental pollution. One of these cropping systems is crop rotation. This method of cultivation will counterbalance the side effects of mono cropping such as decrease in nutrient of the soil. It also helps to reduce the accumulation of pests; creates less dependency on chemicals such as fertilizers in order to regulate the soil content- also contributes towards organic certification; and serves as a tool for risk minimization. Sesame is believed to be the ideal rotation crop for Cotton, Sorghum, Corn, Peanuts, Alfalfa, Wheat and/or Soybean.

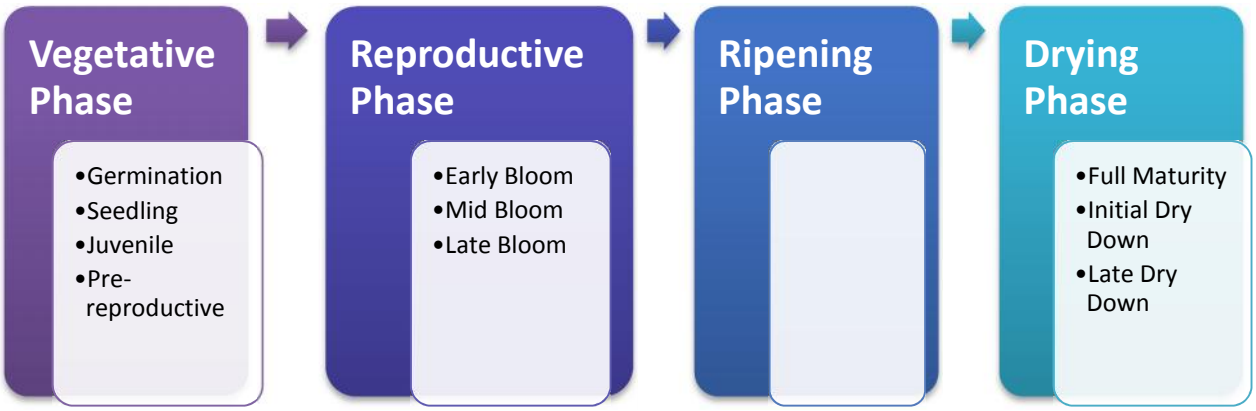
The first step in starting Sesame cultivation is appropriate land preparation. According to the Extension package offered by MoARD, appropriate land preparation should include ploughing and properly watering of the land at-least three times. The earlier this phase is begun the better.

The use of appropriate fertilizer, although debatable in terms of Organic Certification, is encouraged. There are two types of fertilizers that are widely used in Ethiopia: UREA (Carbamide) and DAP (Diammonium phosphate). For the purpose of Sesame cultivation, 50kg of UREA and 100kg of DAP is recommended per ha of land. 50% of this amount will be applied during sowing while the remaining will be applied before the onset of flowering- during the second weeding when there is moisture on the ground. Additionally, an integral part of the Sesame cultivation is irrigation. Although not a common practice in Ethiopia, the use of appropriate irrigation- such as Drip Irrigation- can exponentially increase yield. Additionally, the by-product of Sesame cultivation (hay) can be used as animal feed.

Sowing of Sesame Seed will be carried out from May – July but is dependent on the amount of rain the area encounters. The more traditional method (broadcasting) of sowing in Ethiopia entails the random dispersing of seeds on the farmland- a common practice among the Small Holders which contribute 67 percent of the total Sesame production. This will require 7 – 10kg of Sesame Seed per Ha of land. It has been proven time that this method of cultivation is not as effective as Row planting. A more scientific option, Row planting for Sesame involves rows that

are 3 – 5cm in depth with 30 – 40cm gap in between rows and 5 – 15 cm gap between plants. In this method, the seed requirement is decreased to 5 – 7 kg/ha. Row planting can easily be accomplished by the use of different agricultural machineries such as tractors and agricultural implements (planters).

Although Sesame is an indeterminate species, it has four stages of development: Vegetative, Reproductive, Ripening, and Drying (SESACO, 2012).



The Vegetative Phase consists of 40 days, at the end which half of the crops will have flowers. Rain during Germination, the first 5 days, could create a crust around the seed retarding its ability to grow. Sesame exhibits slow pace of growth during the Seedling stage, 6 - 25 days. The following 11 days mark the Juvenile stage at the end of which development of the first green buds. The last stage of the Vegetative Phase is the Pre-reproductive stage, consisting of three days. It is advisable to apply fertilizers at this stage- the end of which is marked by 50% of the crops developing flowers.

Reproductive Phase consists of 3 stages which take up 40 days. In this phase,

- the white flower petals (corolla) drop off the buds, usually in the evening (early bloom stage);
- the main stem and branches are putting on capsules (mid bloom stage); and
- irrigation will no longer be practiced.

At the end of these 40 days, 90% of the plants have no open white flowers. 81 – 102 days after sowing, the leaves will turn yellowish green and fall off the crop. This marks the Ripening Phase. The end of this phase is marked by physiological maturity (PM)[2].

Drying Phase- the last phase in the development of Sesame crop extends over a period of 32 days. During this period, the crop continues becoming yellow and losing its moisture. It is also in this phase that there is high possibility of shattering- this might be created during the Initial Dry Down when the crop tries to release the moisture and dry the seed by a small opening in the capsule. At the end of this phase, the moisture level will reach 6% at which harvest can commence. The physical manifestation of this stage is when the plants become brittle and capsules can easily be snapped off.

Sesame is gullible to different types of diseases, insects, and storage pests. Some of the major ones are:

Disease:

- **Bacterial blight:**
  - ☞ Humid and high rainfall areas (Karobko and Eshetu, 1987).
  - ☞ Transmitted through infected seed.
  - ☞ Control measure: use disease free seed, removal of infected plants and residue, destroy alternate hosts, weeds and crop rotation. Initial infection can be avoided by treating the seed in hot water (52 – 58^{o}C) for 12 – 14 hours or treating seeds with Streptomycin solution of 250 – 1000 ppm for 30 mins.
- **Phylody**
  - ☞ Transmitted through Jassid (*Orosius albicinctus)*
  - ☞ Control: Controlling vectors particularly Jassid, destroying alternate hosts and infected plants.

Insects:

- **Sesame Leaf Roller or Web Worm** (*Antigastra ctalaunalis)*

[2] Physiological maturity is when the 75% of the capsules on the main stem have seed and have turned into cream/tan color.

- ☞ Controlled by: Dimecron 100 SCW and Malathion 95% ULV at 21lt/ha or Thionex 25% ULV at 31lt/ha and Dimecron 250 ULV at 21lt/ha.

- **Green peach aphid** (*Myzus persicae*):
  - ☞ Controlled by: Dimecron 250 ULV, Deltant 200 EC/ULV, and Marshal 250 ULV at 2 lt/ha.
- **Sesame seed bug** (*Elasmolomus sordidus*):
  - ☞ Controlled: Dimecron 250 ULV at 2 lt/ha or Thionex 25% ULV at 3lt/ha.

Storage Pests:

- **Red flour beetle** (*Tribolium confusum*) and
- **Rice moth** (*Corcyra cephalonica*).
  - ☞ Control: Warehouse fumigation by Phosphine or Methyl bromide. Actelic 2% dust at 3g/kg. Fenitrothion 3% Dust at 300g/100 kg or Baythion 1% DP at 100g/100kg seed. Surface application sacks: Lindane dust at 500g/10-1 m^2.

The major inputs and their respective cost breakdown of the common Sesame production in Ethiopia can be summarized as follows:

Land

According to the Agricultural Investment Support Directorate which has prepared the revised lease price, a rain fed farms lands located 700 kms away from Addis Ababa costs 111 ETB/hectare per annum. As the area gets nearer to the central market Addis Ababa, the price will increase by 4.05 birr per kilometer and as it goes far from 700 kms from Addis Ababa, the price declines by 4.05 birr per kilometer.

When it comes to irrigation farm land, the lease price will be 158 birr per hectare per annum and it will increase or decrease per every kilometer by 4.17 birr based on its distance from Addis Ababa. According to this draft lease term, this lease price is subject to revision in every 10 year. And the investors lease the land for 25 years for annual crops and 45 years for perennial crops.

Seed

In 2003/4 EC, the ESE sold 199 quintals of Sesame Seed (Setit-1 and Humera-1). Since the most common agronomic practice of Ethiopia is retention, it's only fair to consider the ECX trading price for Sesame as the current price of the product- ETB 35.00/kg.

Fertilizers and Pesticides

The fertilizer requirement of Sesame cultivation, i.e. 100kg of DAP and 50kg of UREA per ha are available at a market price of 15 ETB/kg and 12 ETB/kg. These products are supplied by Agricultural Input Supplies Enterprise (AISE- although commonly known as AISCo).

According to the information from Adami Tulu Pesticide Processing Share Company- the only pesticide producer in Ethiopia, there are three types of pesticides prominently used for Sesame-

Ethiolathion (Malathion) is used against armyworm, grasshopper, leaf hopper, sucking insects, crickets and locusts. The per-hectare requirement ranges between 0.7-1 liter, costing ETB 101.4/liter.

Ethiozinon (Diazinon) is used against stock borer, soil dwelling pests, shoot fly, cut worm, grass hoppers and army worm. The per hectare requirement is 1-2 liters costing about 172 ETB per liter.

Ethiothrothion (Fenithrothion) against miner, leaf worm, bollworms, aphids, thrips, caterpillar, leaf roller, the per-hectare requirement is 1-2 liter costing 206.65 ETB per liter.

Machineries & Equipments

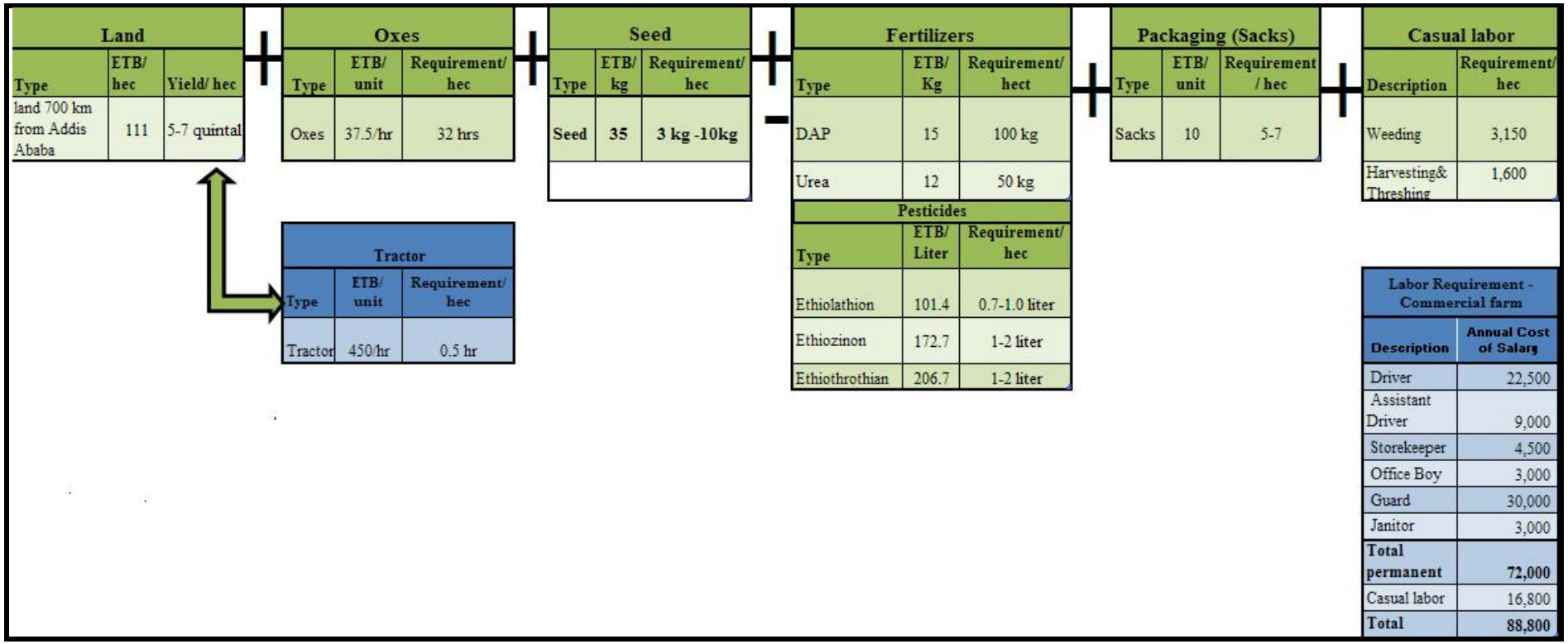
The application of farming machineries and equipments depend on the type of farming practice used. Smallholder farmers mostly use the traditional farming equipment (handle made tools supported by oxes or horses). Based on the market assessment conducted around Humera, the per day rental fee for an oxes with its operator is around 300 ETB and it will take three to four days to plough and prepare one hectare of land for Sesame plantation.

On the other hand, there are three major components in modern farming practice (tractor and implements such as planter and cultivator) which are supported by accessories. The daily rental cost for tractors with its operator, assuming the tractor will work for 8 hours per day, is about 3,600 ETB. Using tractor the estimated time that will take to plough is ½ hour.

Human Power Requirement

Cultivation of Sesame is a labor intensive activity especially during land preparation, weeding and harvesting. These activities need to be carried out very meticulously in order to secure a higher yield and decrease the possibility of shattering. The highest labor demand is observed during weeding and harvesting which falls in the period extending from June to November. According to our estimation based on the information acquired from HuARC, the casual labor cost for weeding and harvesting (reaping and threshing combined) 3,150 ETB and 1,600 ETB per ha respectively.

Table 6: Detailed Cost Breakdown



Land		
Type	ETB/ hec	Yield/ hec
land 700 km from Addis Ababa	111	5-7 quintal

Oxes		
Type	ETB/ unit	Requirement/ hec
Oxes	37.5/hr	32 hrs

Tractor		
Type	ETB/ unit	Requirement/ hec
Tractor	450/hr	0.5 hr

Seed		
Type	ETB/ kg	Requirement/ hec
Seed	35	3 kg -10kg

Fertilizers		
Type	ETB/ Kg	Requirement/ hect
DAP	15	100 kg
Urea	12	50 kg

Pesticides		
Type	ETB/ Liter	Requirement/ hec
Ethiolathion	101.4	0.7-1.0 liter
Ethiozinon	172.7	1-2 liter
Ethiothrothian	206.7	1-2 liter

Packaging (Sacks)		
Type	ETB/ unit	Requirement / hec
Sacks	10	5-7

Casual labor	
Description	Requirement/ hec
Weeding	3,150
Harvesting& Threshing	1,600

Labor Requirement - Commercial farm	
Description	Annual Cost of Salary
Driver	22,500
Assistant Driver	9,000
Storekeeper	4,500
Office Boy	3,000
Guard	30,000
Janitor	3,000
Total permanent	**72,000**
Casual labor	16,800
Total	**88,800**

The most common practice in Ethiopia is the export of Cleaned Raw Sesame. Cleaning is the simple process of removing foreign material from the harvested Sesame seed. Infact, the first step in any value addition related to Sesame is the cleaning process. The harvesting process doesn't emphasize on the removal of foreign matter, therefore the prominent presence of foreign matter in the Sesame Seed supplied by growers is to be expected. Thus, Cleaning is a prerequisite for exporting Raw Sesame Seed, although the percentage to which it has to be cleaned varies for different countries. According to our discussions with various exporters, they have encountered a demand for Sesame seeds that have been cleaned to a percentage of 99% - 99.9%. According to a recent market survey, Cleaned Sesame Seed is available at an average price of USD 2,055.00/ton. A model SYMHK-1 sesame cleaning machine with cleaning capacity of 300-10,000 Kg/hour and 0.75kw power consumption costs around 3,500-4,000 USD.

Major components

Vibration Screener

The Vibration Screener (or "Sifter") is used as a first cleaning step and for the selection (particle size) of seeds or similar products. At the same time, it allows to clean the seeds and to separate dust and foreign materials.

Separation of Stones/ Gravity Separator

This machine is specially designed to separate seeds from granular material like little stones and other heavy impurities according to its specific weight. It works with vibration and an inclined

ramp where the mixture of objects is separated according to their specific gravity (stone or seed). Rest of skin and other light objects are aspirated by a turbine and a depressor cyclone.

b. Hulled Sesame

Hulled Sesame Seeds are considered as very nutritious seeds because of its proteins and valuable minerals. Hulling is a processed of removing the husk/skin from sesame seed after cleaning. The husk consists of about 17% of the weight of a single Sesame Seed and contains oxalic acid and indigestive fibre- which in-turn reduces biological utilization ratio and affects the taste of seed. Hulled sesame seeds are relatively softer and delicious as compared to natural sesame seeds. There are only three operational Sesame Hulling plants that are currently operational in Ethiopia. With the exception of one, the organizations employ the Out-grower Scheme and collect Humera/Gonder type (according to ECX) Sesame Seeds in order to Hull and export. In the international market, Hulled Sesame seeds are available at a price ranging from USD 2,089 – 2,500/ ton.

There are two methods of hulling: dry (in which the sesame seeds are dried and pounded to crack the husks) and wet (which requires soaking the sesame seed in to water, pound, wash and dry it.) The wet-hulling process minimizes seed breakage while water consumption is high in this process.

Figure 3: Process involved in Wet & Dry Hulling

A **JPFQ-120 model** full set of Hulling machine, with the functions of soaking, hull removing and separation of hull and production capacity of 4-5 tons/day, costs around 12,800-16,800 USD.

Major components

Husker (Peeling)

This machine allows peeling through rubbing or abrasion (releases the skin attached to the grain) of seeds that have gone through a previous cleaning process. It is used in the dry hulling process.

Separation of Skin/ Tumbler Screener

The Tumbler Screener (or "Circular, Oscillating Sifter") performs the selection (particle size) of seeds and similar products. This way, it allows separating the seeds from other foreign materials of different size. It's also used to separate the skin of the sesame seeds after the husking (peeling) process. Due to its configuration and special oscillating movements it offers an excellent control of size and quality during the separation process.

Washing/ Blanching Unit

The sesame washing machine is used after the peeling process and works by washing the seeds with pressurized water through rubbing pipes. This machine is considered essential to improve the aspect and quality of peeled sesame. The process takes place by immersing the sesame in water and producing a friction of the water against the seeds, using a high pressure, high flow motor pump.

c. Tahini

Tahini is a paste made of roasted hulled sesame seeds that is used in dressing, hummus, sauces and traditional foods of Middle East. Tahini is a rich source of essential fatty acids, minerals vitamins and valuable antioxidants. There are several packages at which the paste is made available on shelves in foreign markets. The price will vary depending on the package that it is presented in. For instance, 500gm of Tahini in a plastic container can be available at a price of USD 7.00, while the same amount can cost USD 10 in a glass jar. In order to better explain the Tahini production process, please refer to the figure below:

Figure 4: Tahini Production Process

A full set of Tahini processing machine can be acquired at an FOB price between 10,000-50,000 USD. The following section gives description of the major components.

Major Components

Moisturing/Homogenizing

This system prepares the product prior to entering in the toasting process adding to the product the necessary humidity- by soaking it in salted water. This process is completed by homogenizing process of the seeds' humidity before entering the drying process.

Drying

This drying machine adjusts the humidity of the product acquired in previous steps like peeling and washing.

Roasting/Modular Oven

This Modular Oven is used to continuously toast the seeds until the required quality is obtained and to achieve a homogeneous product's roasting of great taste and flavour.

Cooling

This cooling machine is designed to reduce the temperature of the product acquired in previous steps of drying and toasting.

Grinding

This machine is used to grind the roasted sesame in to Tahini.

d. Sesame Oil

The oil that is extracted from Sesame, has a number of benefits:

- Lower blood glucose level;

- Lowering effects on blood pressure;
- Lowering level of sodium in the blood stream; and
- Antioxidants in Sesame Oil have skin benefits.

Despite such benefits, Sesame Oil is not a common commodity in Ethiopia. Infact, there are currently no commercial production and supply of Sesame Oil. A coulple of years ago, Cooperatives in Assosa had started extracting Oil in order to solve the oil shortage. Unfortunately the high production cost has resulted in high price of Sesame Oil. As a result, the practice was discontinued. There is a practice of extracting Sesame Oil in small amounts for home-use. According to the current market survey, 300ml of Sesame Oil can be found on shelves at a price of USD 4.00.

Extracted Sesame Oil is liquid at room temperature and can be extracted either through mechanical pressing and solvent extraction. Mechanical presses, using oil pressing machine, has the advantage of reduced capital cost, no danger of fire from combustible solvent, simpler process control and smaller number of skilled staff over solvent extraction process. However, this processing cannot remove every last trace of liquid (usually oil) from the raw material. A significant amount remains trapped inside of the cake leftover after pressing. On the other hand solvent extraction, requires higher capital cost and inputs.

Raw Material Requirements

Cleaned Sesame

The suitable Sesame seed for oil production is the Wollega type Sesame which has a higher oil content of 44%. Cleaned Sesame is the major input in Sesame oil production. Sesame cleaning service costs 20 birr per quintal while, if the cleaning machine is to be acquired, a set with operation capacity of 2.5 tons per hour costs between 3,000 – 8,000 USD.

Hydraulic oil press machine

Hydraulic press is a machine using a hydraulic cylinder to generate a compressive force. A model QYZ-410 hydraulic press machine that can press 8 kg/hour with oil yield capacity of 42-52% costs between 4,900-5,900 USD.

Solvent Extraction Plant

Solvent extraction plants are widely used for extraction of oil from oil seeds like sesame, Soybean, sunflower, cottonseed, other oil seeds and Oil cakes like Mustard Cake, groundnut cake. The process plant comprises of preparatory section, Extraction Section, Conditioning Section, Distillation Section and Recuperation Section. Solvent extracting is the core process for a complete Edible Oil Extraction Production Line, which uses organic solvent through soaking or spraying contact methods to extract oil from oilseeds. A SW08009 model solvent extraction machine with a production capacity of 100 tons per day costs about 100,000 USD.

Auxiliary raw materials

The auxiliary raw materials necessary for refining the oil and packing are phosphoric acid, bleaching earth, caustic soda, barrel, and plastic (PET) bottles. All auxiliary materials except phosphoric acid are locally available.

Packaging

Sesame oil can be packed by glass, plastic or tin can container of different size.

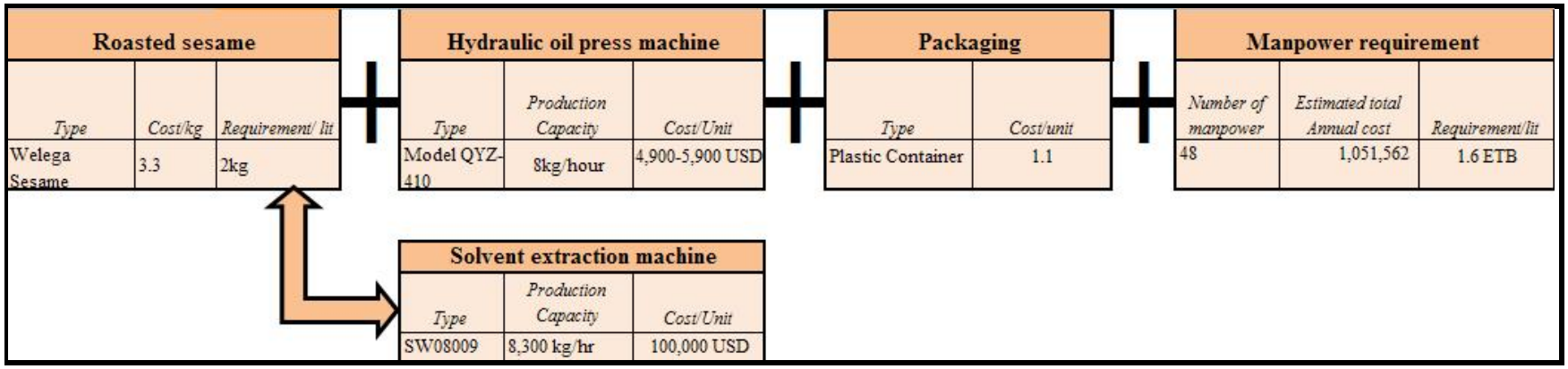
Human Power Requirement

According to the estimation conducted by the Ethiopian Chamber of Commerce, to run oil processing plant with 1,200 tonnes annual production capacity, about 48 human power will be required only for direct production.

Utilities

The basic utilities required for oil processing are electricity, water and fuel oil. The estimated per liter utilities cost is about 2.2 ETB.

Figure 5. Sesame oil: Input Requirements



Other Sesame Products

There are a number of Sesame products that are available in Ethiopia. Confectionary product- in the form of sweetened Sesame-is available in small quantities in Supermarkets.

B. Market Analysis

a. Demand

Even though Sesame is an export-oriented product, there is still a small degree of local consumption. According to the market survey that was conducted, 45% of the individuals interviewed didn't consume Sesame at all. The reasons that were stated for this were taste preference, unavailability, unawareness of the product – specifically on how to use it, and price. The remaining 55% consume it in the raw form, Tahini, Sesame Oil and Confectionaries. On average, these individuals will spend ETB 55 per month on Raw Sesame Seed and for the purpose of sprinkling on bread. According to this study, individuals spend an average of ETB 77 on the purchase of Tahini and ETB 50 on Sesame Oil per month. The reason for selecting these products rests among three reasons- taste preference and health benefits. The preferred types of Sesame for such purposes are the Humera and Gonder Sesame. In fact, 100% of the individual raw Sesame consumers, prefer local varities rather than imported ones. The reasons stated for such a preference include accessibility, health benefits, and quality. Although, 11% of the raw Sesame consumers seem ambivalent toward the decision between Import and Local Sesame Seed variety. Additionally, the Sesame seed that is imported from Sudan, Yemen, and Saudi Arabia is also mentioned as the source countries that are preferred for Tahini. Majority of the Tahini consumers prefer imported brands in comparison to locally supplied one. Such a preference is made as a result of quality preference and local brand un-availability.

A survey was conducted among Bakeries in Addis Ababa in order to have a better understanding of their demand. 60% of the respondents sprinkle Sesame on the bread, while the remaining 40% don't use Sesame because it is expensive and unawareness of the product. There is, however, a high degree of unawareness of the type of Sesame seed being used while 33% use Humera type Sesame. 67% of these purchases are made on a monthly basis while 33% purchase it on a weekly basis. On average 6kg of Sesame is purchased per month at a price of ETB 63/kg. A majority of

these purchases are made from Merkato. Generally, the bakeries in Addis Ababa believe that Sesame is:

- Expensive;
- High quality; and
- Fairly available.

With regard to the supply of Sesame seed for cultivation- as in seed supply in other types of Seed as well- is carried out in a series of steps. There are a number of entities that mediate between small holders and MoARD. The movement of information regarding the amount of demand is as follows:

Figure 6: Flow of Seed demand

According to the data provided by MoARD, the Sesame seed demand for 2004/05 EC was 5,843 quintal. The contribution of the different regions towards this amount can be clearly observed in the table below.

Table 7: Demand of different Regions

Region	Amount (Quintal)
SNNP	2,280
Oromia	3
Benishangul Gumz	150
Afar	50

Somali	840
Amhara	1,170
Tigray	1,350
Total	**5,843**

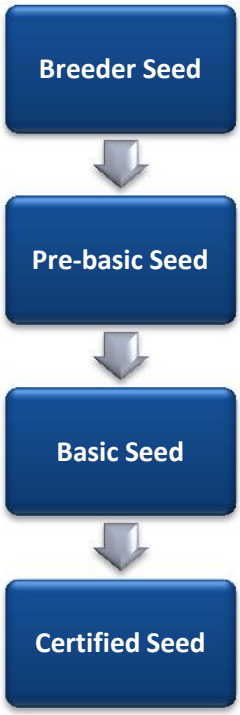
Source: MoARD

b. Supply

Sesame Seed Variety Supply

MoARD will issue a bid for interested and qualified organization that will be able to supply this amount. But the only organization that is able to supply Sesame Seed in Ethiopia is ESE. The maintainer of Sesame Seed variety has custody of Breeder and Pre-basic Seed. The basic seed is the progeny of the Breeder/Pre-basic Seed that is grown on Basic Seed production fields under the supervision of seed agencies. These seeds will in turn be used in order to grow Certified Seed on farmlands. It is the Certified Seed that is distributed to Small Holder and/or Commercial farmers for cultivation.

Figure 7: General Seed Types



Although the demand for the period, 2004/05 EC was 5,843 Quintal, ESE was only able to supply 199 Quintals of Setit-1 and Humera-1.

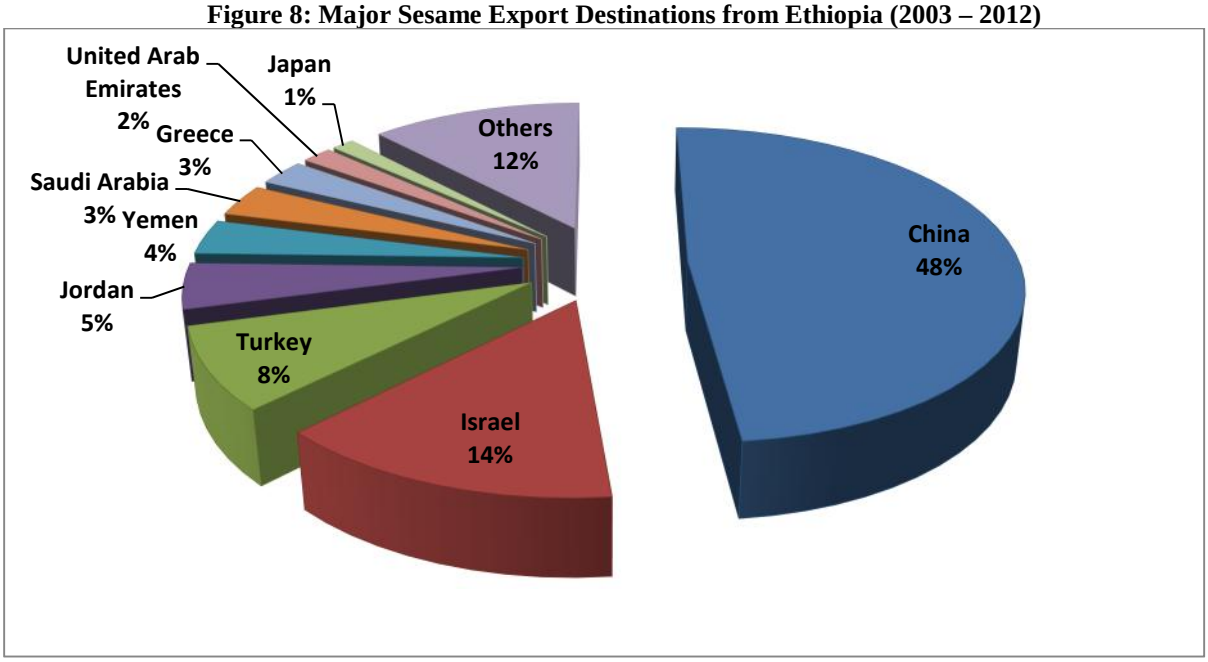
Sesame Production in Ethiopia

Together with other Oilseed products, Sesame forms part of agricultural commodities that are vastly produced in Ethiopia. According to CSA report, around 893,883 small holder farmers are engaged in sesame production in the year 2011/12 with total annual production of around 2.5 million quintals. Although dominated by small holders, the cultivation of Sesame in Ethiopia is also accomplished by Commercial farms- creating a direct and indirect employment opportunities for around 1.5 million people.

The four major Sesame producing regions in Ethiopia are Amhara, Tigray, Oromia and Benishangul-Gumuz-each respectively holding a share of 39%, 29%, 23% and 9% to the total production volume in 2011/12.

Ethiopia has been significantly increasing its supply to world markets. The main importers of Ethiopian Sesame are China; which is also a major sesame exporter, Israel, and Turkey.

Figure 8: Major Sesame Export Destinations from Ethiopia (2003 – 2012)



Source: ERCA

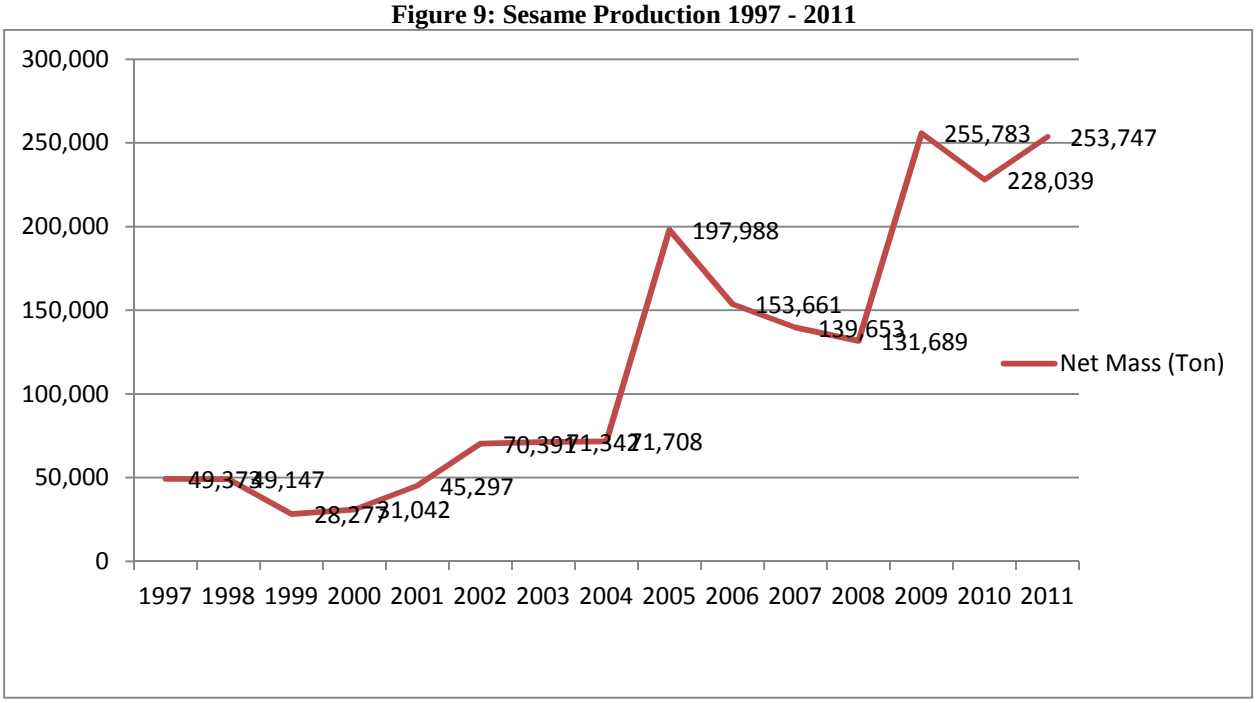
In the long term, there is high potential for increasing the Ethiopian export of Sesame to the European market. Europe is a major user of sesame seed for bakery applications and confectioneries. Currently, the main suppliers to European Union countries are India and Sudan. Like China, India could well reduce its sesame supply to the world market as it focuses

increasingly on industrialization instead of agriculture. Therefore, the European market presents Ethiopia with a good opportunity to complement existing suppliers and even replace them should their supply decline. The only requirement Ethiopian farmers and traders need to meet is to adequately prevent the adulteration of seeds of different varieties and clean sesame up to 99-99.5% (Wijnands 2007).

In addition, local investment in value-adding activities for the crop is expected to increase the benefits the country derives from Sesame production, processing and marketing. The first and most important investment needs to be directed at cleaning and grading equipment, which will significantly contribute to achieving a level of purity of the crop that meets European Union standards. However, as the Sesame market in Ethiopia is highly linked with the international market, it is very volatile following changes in demand and supply trends at the international arena.

The Sesame production for the period 1997 – 2011 is as follows:

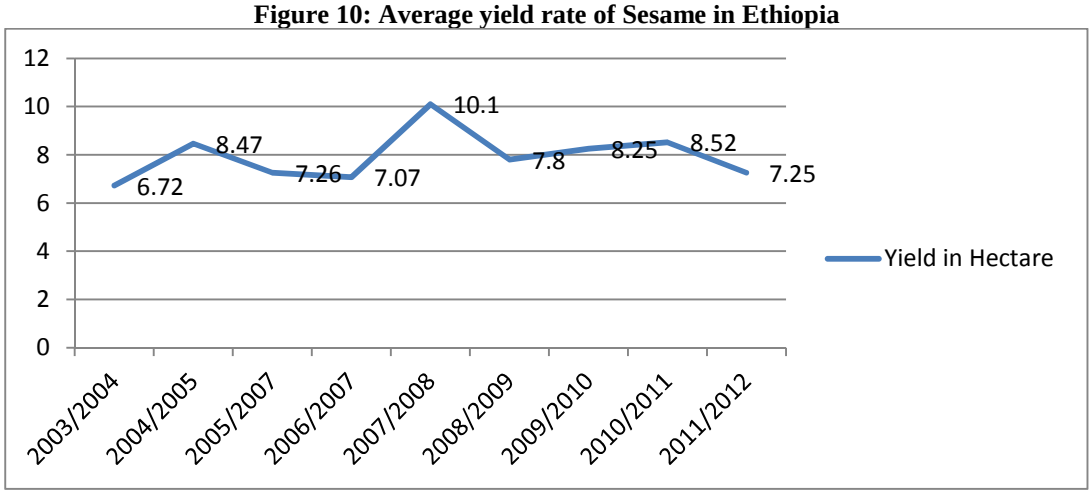
Figure 9: Sesame Production 1997 - 2011



Source: CSA

However, despite the growth of sesame production in the past years, the average annual yield per hectare has not improved in any significant amount.

Figure 10: Average yield rate of Sesame in Ethiopia

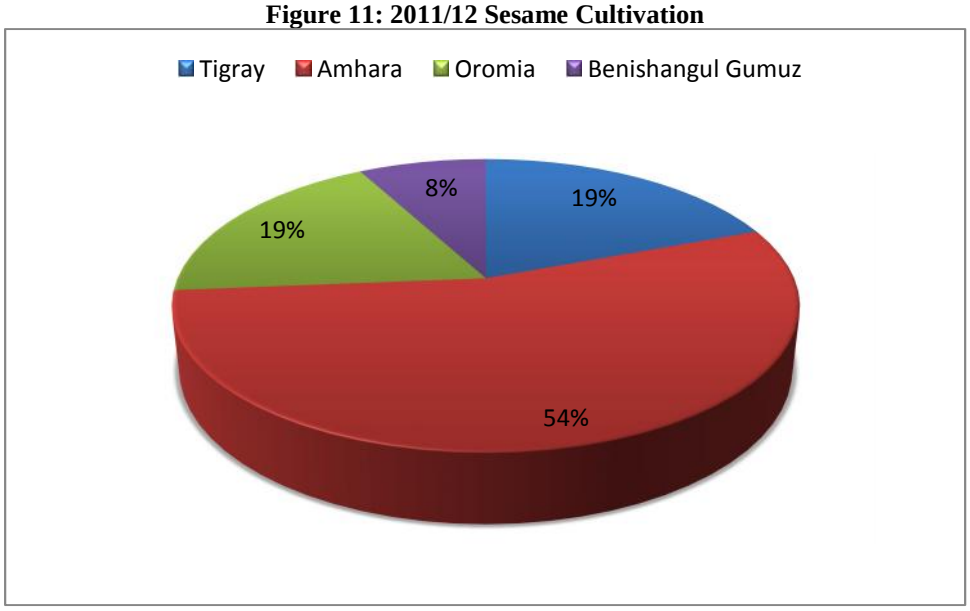


Source: CSA

As clearly shown in the above graph, the average yield rate of sesame seed in Ethiopia has not been well above 10qt/ha, which is quite a small figure compared to for instance the average yield rate of 36qt/ha in India.

Around 384,683 Ha of land in Ethiopia is devoted for the production of Sesame in 2011/12. Out of this land, the majority is located in Amhara (54%), Tigray (19%), Oromia(19%), and Benishangul Gumz (8%).

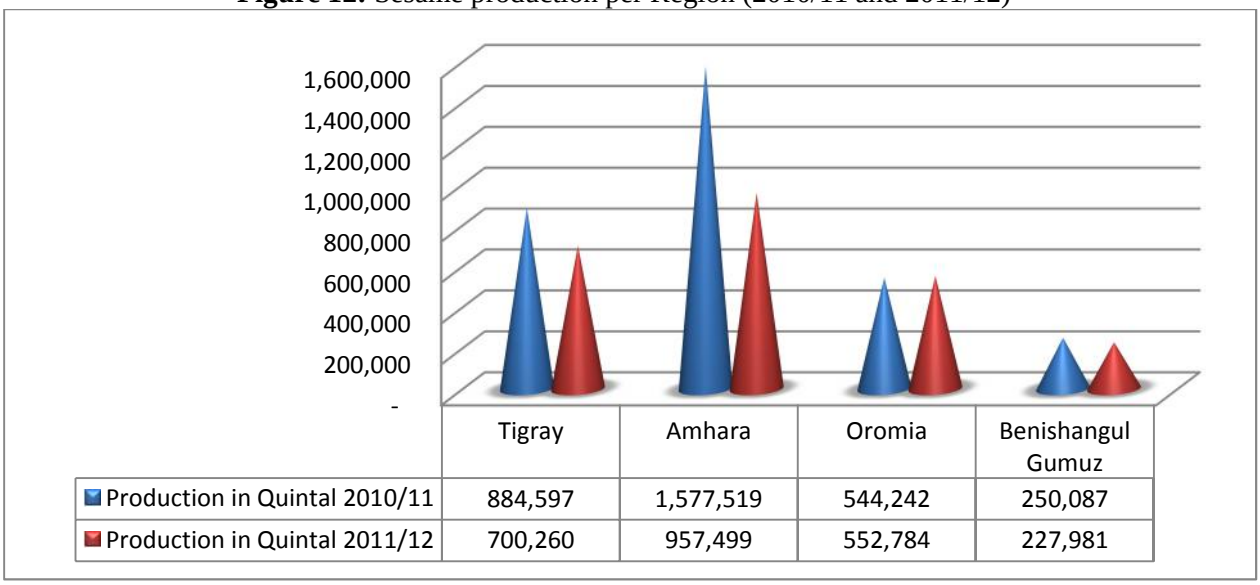
Figure 11: 2011/12 Sesame Cultivation



Source: CSA

The major Sesame producing areas in Ethiopia are located in the North West and South West regions. The North West region has the largest yield per hectare. The four major sesame producing regions in Ethiopia are Amhara (North Gondar), Tigray (West and North Tigray), Oromia (West Wollega) and Benishangul Gumuz.

Figure 12: Sesame production per Region (2010/11 and 2011/12)



	Tigray	Amhara	Oromia	Benishangul Gumuz
Production in Quintal 2010/11	884,597	1,577,519	544,242	250,087
Production in Quintal 2011/12	700,260	957,499	552,784	227,981

Source: CSA

The area under cultivation for this period for the major Sesame growing regions in Ethiopia has been increasing.

According to a market survey conducted earlier on, 60% of the Supermarkets supplied Sesame products while the remaining 40% state the following reasons for not supplying Sesame:

- Unavailability of the product;
- Low demand as a result of unawareness of the product among customers; and
- Expensive.

On average, 34 kg of Redish-brown and White Sesame seeds are sold at a price of ETB 64 per month. These products are supplied to them by other traders. These institutions perceive this product to be of higher quality and packaging. However, the surveyed supermarkets didn't supply processed Sesame as a result of:

- Unavailability;
- Low demand as a result of unawareness of the products; and
- No supply of these products.

Merkato- the largest open market place in Africa- also plays house to Sesame traders. These traders supply Sesame from three locations- Humera, Wollega, Selale, and Gojjam- however unevenly. The White Sesame from these locations is perceived to be of higher quality and costs more. For instance, White Humera Sesame costs ETB 3,600/ quintal while the white Sesame from Wollega costs ETB 2,800. The Redish Sesame, on the other hand, costs ETB 1,800/quintal and ETB 2,000/quintal when it comes from Wollega and Selale, respectively. According to the informal interview conducted, a trader had informed us that the selling price of White Humera Sesame Seeds can reach upto ETB 5,000 per quintal.

These traders are supplied by brokers who charge a high commission charge for the supply of Sesame- is currently three times that of the commission they charge for supplying Teff. The customers of these traders include bakeries, sweet sesame producers, spice suppliers and end users.

Majority of the seed traders, however, don't supply Sesame because its expensive, has a low oil content, low demand that stems from unawareness of the product's application, and lack of access to suppliers.

Sesame Processing

Currently there are only three companies in Ethiopia that are operating in Sesame Processing. Not only are there a small number companies engaged in sesame processing in Ethiopia, but also the operation of these companies is quite limited to sesame Hulling, apart from one company (Ambasel Tading House PLC)that is also engaged in Tahini production. Accordingly, no company in Ethiopia has stepped into commercial oil processing or other industrial utilization of sesame as of yet.

One key challenge commonly shared among existing Sesame processing companies is access to traceable and homogeneous raw sesame seed. This has mainly to do with ECX sourcing which, according to most processors, reduces access to traceable, homogeneous and high quality raw

sesame seed for processing. Indeed, one of the main factors that determine the export price of Sesame, especially for Hulled Sesame, is homogeneity in terms of size, color and origin. Even if the strict regulation that requires processors to get raw sesame only through the ECX is getting more relaxed through negotiations and waivers, the alternative option of getting sesame through a contract farming scheme with small producers and/or cooperatives is also proved of being not so easy.

Under contract farming scheme, processors avail several services to farmers or their cooperatives including pre-finance for cultivation and harvesting, as well as extension services on modern harvesting techniques. Availing pre-finance is considered highly beneficial by many farmers and their respective cooperatives. This is because farmers normally seek loans to cover their farming costs, especially the high cost of seasonal labor for weeding, which they mostly get from local lenders either for a very high interest rate (ranging between 25-40%) or in return for a promise to sell part of their sesame output for a very cheap price – a practice locally known as 'Shale'.

Despite its advantageous features for farmers, main challenge with the contract farming scheme is enforceability of contracts or lack of guarantee on the part of processors to get the agreed quality and quantity of sesame after harvest. According to some processors, the volatile or spiking nature of sesame pricing creates an incentive on the part of farmers and/or cooperatives to breach their sales contact with processors and supply to the market (including ECX) for a better price. As a solution to that, farmers and their cooperatives suggest for the conclusion of two level contracts, having two different pricing mechanisms. Accordingly, while the first level contract, which will be of a value equivalent to the pre-finance extended, will have a fixed date for pricing, the second level contract will be open in its price. That way, farmers will lose out from increasing market price only to the extent of pre-finance they have received. Yet, this might compromise certainty of the contract or even more its very existence as price is a fundamental term in any sales contract which needs to be explicitly defined.

The other challenge faced by sesame processors, especially in Tahini processing, is access to export standard packaging materials. According to Amabsel Trading House (only Tahin processor in the country) use of food grade and vacuum packaging is largely being required by many importing countries, access to which materials from foreign markets is noted as another key challenge.

Related challenge sesame processors are facing in Ethiopia is lack of spare-parts and skilled manpower for the maintenance of processing machineries in the country. According to processors, operation can at times be interrupted for a month or more due to minor problems in the machineries which however necessitates the bringing of spare-parts and skilled man-power from abroad.

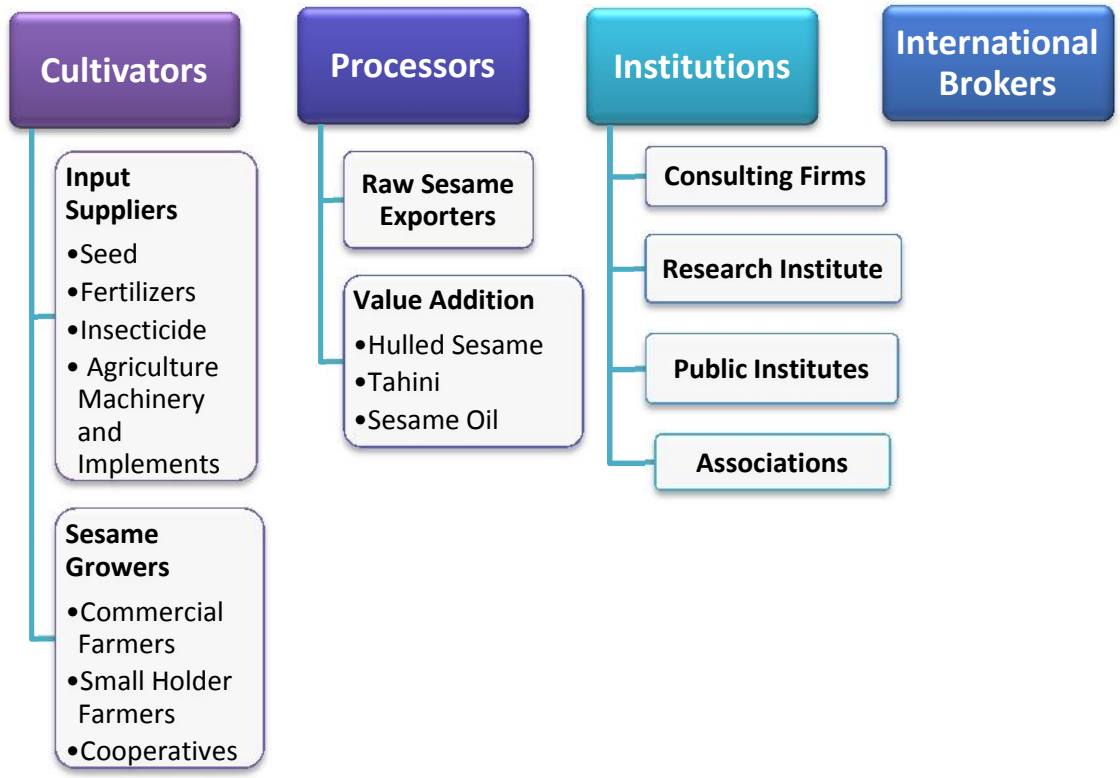
Another bottleneck noted by most processors is winning consumers' test or preference in foreign markets, especially for sesame products like that of Tahini and oil that go straight into supermarket shelf. This indeed is a common problem in the export of almost all agro-processed products, as foreign consumers are averse to buying processed food products from developing countries for reasons including health and safety.

On the part of farmers' cooperatives, key challenge to enter into value addition activities is access to finance and technology to get hold of processing machineries and warehousing. As such most cooperatives are limited to basic cleaning activity required under ECX even which they mostly carry out through hiring cleaning machineries for an average service fee of 20 Eth birr per quintal. Cognizant of these challenges, development projects on sesame cooperatives are underway both under ATA and ACDI/VOCA, aiming to support the processing and marketing capacity of cooperatives through facilitation of access to finance, building of modern warehouses and creation of market linkage.

Like that of processors, cooperatives also are lately facing a severe challenge in falling short of collecting a sufficient volume of sesame from farmers so as to kick start processing. This is due to the escalating price of sesame at the ECX and thus preference of farmers to supply to the ECX rather than their cooperatives. According to some cooperatives, recent escalation of sesame price at the ECX has mainly to do with the involvement of some importers in the business of buying sesame from ECX for a very high price and exporting it with lesser or no profit margin, only aiming to access foreign exchange for their import, and thus artificially inflating or distorting ECX price. Unless there is some way of stabilizing sesame price at the ECX, most cooperatives fear of being unable to collect any meaningful amount of sesame from farmers for processing and export.

C. Actors Mapping

The key actors of the Sector are categorized in one of the following groups:



Cultivators

1. Seed Suppliers

There is only one organization that is currently engaged in Sesame Seed distribution in Ethiopia: Ethiopian Seeds Enterprise (ESE). Otherwise known as Ethiopian Grain Trade Enterprise, ESE was established in 1949- and reorganized in 1999. In addition to Sesame, this institution supplies Wheat, Maize, Barley, Sorghum, Teff, Haricot bean, Oilseeds (Soybean, Linseed, Rapeseed, etc) and so on to the different regions in Ethiopia. Additionally, it is also engaged in the Arabica Green Coffee Bean, Oilseed and Pulses.

As mentioned above, the Basic Seed is supplied by EIAR and via import. By using its own land and renting the land of Small Holder and Commercial farmers, ESE is able to produce Certified Seed for the use of Growers all over the country. There are two Sesame Seed varieties that are

supplied to it by EIAR- Humera-1 and Setit-1. Additionally, the organization also imports 'Hir Hir' from Sudan.

The reason why there is low private sector involvement in the supply of Sesame Seed is because it can be re-sown for up to three times after the seed is released. And this is for those Commercial Farmers/Small Holder Farmers that don't practice rentention.

2. Fertilizers

According to the Proclamation No. 137/1998, Fertilizer is defined as any man made substance organic or inorganic including mixture of fertilizer physical mixture of fertilizer and granulated mixture of fertilizer that is added to the soil or to the plant to supply those elements required in the nutrition of plants manure, compost, ash, gypsum, or refuse are not considered as fertilizer materials when they are used for commercial purpose in their original condition and under these names. In order to be able to trade Fertilizers in Ethiopia at any capacity, a Competence Assurance Certificate is necessary.

The current supply of Fertilizer is completely dependent on import from destinations such as Russia, Turkey, Qatar, China, India, and so on. The types of fertilizer types that are being imported are:

- DAP (Diammonium Phosphate)
- UREA
- Ammonium Sulphate
- Sodium Nitrate

This year has witnessed the signing of a contract between Metal Engineering Corporation and Privatization and Public Enterprises Agency of Ethiopia in order to construct 5 UREA and 3 DAP Fertilizer manufacturing plants. These construction of these facilities are expected to be completed starting from 3 years from now. Upon completion, the UREA factories will be able to produce 300,000 Tons while the DAP factory will be able to supply 250,000 Tons annually. Agricultural Input Supplies Enterprise is the major supplier of Fertilizer in Ethiopia.

Agricultural Input Supply Enterprise is a company established in 1984 GC and is currently operating with 455 employees. Over the years, the capital has increased to reach its current value of ETB 22,432,000.

It is the major supplier of Fertilizer in Ethiopia. Upon receipt of demand from the Ministry of Agriculture, the organization will import fertilizers (DAP and UREA) to fulfill the demand of Farmers Cooperatives. Additionally, the organization also supplies to private organizations and commercial farmers who are not incorporated in Farmer Cooperatives.

The organization is also engaged in the supply of Chemicals such as Maritine, Diaznone, Endosulphane and 24D. The organization is currently supplying 379,416 Quintal of DAP; 344,105 Quintal of UREA; and 59,542 Liter of chemicals.

Structure

Agricultural Input Supply Enterprise has three main distribution centers, namely Centeral Main Sales and Distribution Center, East Main Sales and Distribution Center, and North East Main Sales and Distribution Center which are located in Addis Ababa, Nazereth and Kombolcha, respectively. There are four additional sub-distribution centers located in Bahirdar, Nekemt, Hawassa and Tigray intended to cater to North Western, Western, Southern and Northern parts of Ethiopia. The main responsibility of these offices to manage and monitor the distribution of the different materials that are supplied by the 20 stations/stores located in the vicinity of their vicinity. It is these stores that are doing the actual sale to customers. Some of these stores are closed and re-opened or sometimes relocated depending on the demand for the company's products.

Price

The price is determined by the Ministry of Agriculture and a different price is set for the different locations based on their distance. For comparison reasons here are the prices of DAP and UREA in 3 different cities: Addis Ababa, Nekemete, and Adama.

Fertilizer	Addis Ababa	Adama	Nekemete
DAP (Quintal)	1,447.75	1,439.40	1,487.60
UREA (Quintal)	1,176.00	1,167.65	1,215.85

The chemicals on the other hand are supplied at the following prices:

- Maritine – ETB 98.00/ Liter
- Diazinone – ETB 160.00/Liter
- Endolsulphane – ETB 127.00/Liter
- 24D - ETB 66.85/ Liter in Addis Ababa and ETB 67.35/Liter outside of Addis Ababa.

3. Pesticide

Pesticide is a very controlled substance in Ethiopia. Proclamation No. 674/2010 defines Pesticide as any substances or a living organism intended for preventing, destroying, or controlling-

- any pest, including vectors of human or animal disease
- unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products of animal feed stuffs; or
- insects or other pests on bodies of animals

and includes substances intended for use as a plant growth regulator, defoliant, desiccant, or agent for thinning fruit or preventing the premature fall of fruit, and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport. The only organizations, Pesticide Dealers3, which are allowed to trade Pesticides are the ones that have a valid Certificate of Competence from the Ministry of Agriculture and Rural Development. The requirements for the successful completion of the registration include complete and accurate completion of the application; efficiency of the pesticide for the purpose imported; no human and animal health hazards; the Pesticide is not persistent of toxic when metabolized; benefits outweigh the risks of use under local socio-economic conditions; pesticide is not banned or severely restricted by an international convention or in another country with an

[3] Pesticide dealer means any person engaged in the formulation, manufacture, packing, re-packing, labeling, import, export, storage, sale, distribution, transport or pesticide application service.

equivalent registration scheme; and so on. A registration is valid for five years from the date of issuance of certificate of registration. An application for the renewal of the registration, including all the documents required, must be submitted 90 days prior to the expiry of the registration. Given that all the documents are in order, the registration can be renewed for a period of 5 years. The Pesticide Dealers that are currently operational in Ethiopia are 40.

Table 8: List of Pesticide Dealers in Ethiopia

No	Company Name
1	Filbert & Company
2	Chemtex Private limited Corporation
3	FS Private Limited Company
4	HEARTS P.L.C.
5	General Chemical & Trading Pvt. Co
6	Syngenta Agroservices Agriculture Ethiopia
7	Marubeni Corporation
8	Makobu Enterprises
9	Chemtrade International
10	T.M. Global Business Services PLC.
11	BYSWM P.L.C
12	Tensae International Business Ent.
13	Shell Ethiopia Limited
14	Mobil Oil East Africa Limited
15	Lions International Trading (Pvt) Co.
16	Afro German Chemicals Est. PLC.
17	MITSUI & Co. Ltd. Liason Office
18	Adami-Tulu Pesticides Processing Factory
19	Tadi Zerhin General Trading PLC
20	Hagos legesse
21	Magbanz Pvt. Ltd. Co.
22	Markos Private Limited Company
23	Alem Business Center PLC
24	Rangvet Pvt. Ltd. Co.
25	Omer Haji Woday Import and Export PLC
26	K.M.S.EGGA Trade and Industrial PLC
27	Axum Green Line Trading PLC
28	Girma Teferi General Importer
29	BASF Trade Representative Office
30	D.Get. Pest Infestation Control PLC
31	Beker General Business PLC

32	Mekamba PLC
33	Tropical Pharma Trading
34	Kaleb Service Farmers House PLC
35	Tiret Chemicals PLC
36	GAWT International Business PLC
37	Agrisher trading PLC
38	B-Nyse General Trading PLC
39	Agrisco Commercial & Industrial PLC
40	T.N.M. Business PLC.

Source: *Ministry of Agriculture and Rural Development*

The information of the pesticides that are imported by each of the Pesticide Dealers are as follows:

List of Registered Pesticides (Insecticides)

No	Trade Name	Common Name	Approved uses	Registrant
1	ACE 750 SP	Acephate	For the control of aphids, thrips and caterpillars on flowers.	27
2	Actara 25 WG	Thiamethoxam 250g/kg	For the control of aphids, white fly & caterpillar on flowers.	6
3	Actellic 2% dust*	Pirimiphos-methyl	For the control of storage pests on cereals and pulses.	6
4	Actellic 50 EC*	Pirimiphos – methyl	For the control of aphids in cotton.	6
5	Actellic 50 EC	Primiphos methyl 50% EC	For the control of mosquitoes (Anopheles arabiensis).	6
6	Adonis 12.5 UL*	fipronil 12.5% ULV	For the control of locusts.	3
7	Agro-Lambacin Super 315 EC	Profenfos 30% + Lambda-Cyhalothrin 1.5%	For the control of African Bollworm (Helicoverpa armigera) cotton.	9
8	Agro-Thoate 40% EC*	Dimethoate 40% EC	1. For the control of beanfly (*Ophiomiya phaseoli*); Bean aphid (*Aphis fabae);* Thrips (*Taenothrips spp*.) ABW (*Helicoverpa armigera*) on french beans. 2. For the control of aphids (*Myzus persicae*) and ABW (*Helicoverpa armigera*) on tomato. 3. For the control of cabbage Aphid and various aphids on cabbage and potato, respectively.	9
9	Akito 2.5% EC	Beta cypermethrin	For the control of stalk borer on Maize	5
10	Alphahock 7.5% ULV	Alphacypermethrin 7.5% ULV	For the control of sweet potato butterfly on sweet potato	5
11	Alphos 56% Tab.	Aluminium Phosphide 560 gm/kg	Insecticide (Fumigant) for the control of maize weevil on maize.	33
12	Apron Star 42 WS	thiamethoxam 20% + metalaxyl - 20% + difenoconazole 2%	For the control of Russian wheat aphid on barley (To be used as seed treatment pesticide)	6
13	Avaunt 150 SC	Indoxacarb	For the control of stalk borer on maize, sweet potato butter fly on sweet potato, caterpillars on flowers & African boll worm on cotton.	5
14	Basudin 600 EW****	Diazinon	For the control of armyworm and other pests on cereals.	6
15	Baythroid 050 EC*	Cyfluthrin	For the control of shoot fly, aphids, fleas and stock borer on sorghum.	11
16	Bestox 7.5 ULV*	Alphacypermethrin	For the control of African bollworm on cotton.	3
17	Celphos	Aluminium phosphide 56% table	for the control of maize weevil (sitophillus spp) and flour beetle (Tribolium spp) on stored maize.	24

* Re-registered pesticide

** Canceled from registration upon receipt of a notification, in writing, from the registrant of the pesticide that this specific formulation has been that phased out from their production line.

*** Canceled from registration upon receipt of a notification, in writing, from the registrant of the pesticide, it has been with drawn from sale.

. **** Registration expire

List of Registered Pesticides (Insecticides)

No.	Trade Name	Common Name	Approved uses	Registrant
18	Confidor SL 200	Imidacloprid 200 gm/lt	For the control of Aphids, thrips whitefly & termites on flowers.	4
19	Coragen 200 SC	Chlorantraniliprole	For the control of African bollworm (*Helicoverpa armigera*) on cotton.	5
20	Cruiser 350 FS	thiamethoxam 35% FS	For the control of Russian wheat aphid on barley (To be used as seed treatment pesticide).	6
21	Cruiser 70 WS****	thiamethoxam 70% WS	For the control of Russian wheat aphid on barley (To be used as seed treatment pesticide).	6
22	Cybolt 2.5 ULV*	Flucythrinate 2.5% ULV	For the control of whitefly in cotton.	8

23	Curacron 250 EC/ULV****	Profenofos	For the control of white fly on cotton.	6
24	Cymbush 1% Granule****	Cypermethrin	For the control of stalk borer in maize and sorghum	6
25	Cymbush 25% EC***	Cypermethrin	For the control of cotton pests on large scale farms	6
26	Danadin 40% EC	Dimethoate 400 gm/lt	For the control of cotton Russian wheat aphids (Diuraphis Noxia)on barley.	5
27	Danitol 10% EC	Fenopropathrin	For the control of African bollworm on cotton	1
28	Decis 0.5 EC/ULV*	Deltamethrin	For the control of African bollworm and leafhoppers on cotton	4
29	Decis 0.6 ULV*	Deltamethrin	For the control of African bollworm and leafhoppers on cotton	4
30	Decis 2.5 EC*	Deltamethrin	For the control of African bollworm and leafhoppers on cotton.	4
31	Decis EC 025	Deltamethrin 25 gm/lt	For the control of aphids, thrips & caterpillar on flowers.	4
32	Degesch Plates/Strips	Magnesium Phosphide 56%	For the control of maize weevil on maizegrain/seeds.	2
33	Delicia *	aluminium phosphide 56.7%	For the control of storage pests on cereals and pulses.	15
34	Deltacal 0.2DP*	deltamethrin 0.2%DP	For the control of maize weevil on stored maize	12
35	Deltahock 0.6% ULV	Deltamethrin 0.6% ULV	For the control of sweet potato butterfly on sweet potato	5
36	Deltanet 200 EC****	Furathiocarb	For the control of aphids on cotton	6
37	Detia Gas-Ex-T*	aluminium phosphide 56.7%	For the control of storage weevils and beetles on cereals and pulses.	16
38	Devicyprin 25	cypermetrin	For the control of stalk borer on maize	4
39	Diazinon 10%G	Diazinon	For the control of stalk borers on maize and sorghum	7
40	Diazinon 60% EC	Diazinon	For the control of armyworm on cereals	7
41	Diazol 10G*	Diazinon	For the control of stalk borer on maize and sorghum	5

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List of Registered Pesticides (Insecticides)

No.	Trade Name	Common Name	Approved uses	Registrant
42	Diazol 60 EC*	Diazinon 60% EC	For the control of pests of cereals, vegetables and oil crop & aphids, caterpillars, whiteflies, nematodes, termites & cutworms on flowers.	5
43	Dimeto 40% EC	Dimethoate	For the control of cow pea aphids on cow pea.	28
44	Diptrex SP 95****	Trichlorofon 95%	For the control of shoot fly on cereals.	2
45	Dursban 240 ULV*	Chlorpyrifos-ethyl	For the control of armyworm, locusts and grasshoppers on cereals and pastures.	2
46	Dursban 48% EC*	Chlorpyrifos-ethyl	For the control of armyworm, locusts and grasshoppers on cereals and pastures & to control termites.	6
47	Dynamec 1.8 EC	Abamectin 18 gm/lt	For the control of aphides, spider mites on flowers.	6
48	Dynamic 400 FS	Thiram + Carbofuran	For the control of snout beetle on maize.	15
49	Ethiodemethrin 2.5% EC	Deltamethrin 25 gm/lt	For the control of mealy cabbage aphids on cabbage.	18
50	Ethiodemethrin 2.5% WDP	Deltamethrin 25 gm/lt	For the control of maize stock borer (Buseolla fusca) on maize.	18
51	Ethiolathion 5% Dust	Malathion	For the control of maize Weevil (*Sitophilus zeamays*) on stored maize.	18
52	Ethiolathion 50% EC	Malathion	For the cotrol of sweet potato butterfly (*Acraea acerata*) on sweet potato.	18

53	Ethiosulfan 25% ULV	Endosulfan	For the control of African bollworm (*Helicoverpa armigera*) on cotton.	18
54	Ethiothoate 40% E.C	Dimethoate	1. For the control of Aphids on field pea. 2. For the control of Russian Wheat Aphid (Diuraphis Noxia) on Barley.	18
55	Ethiotrothion 50% EC	Fenithrothion	For the control of sweet potato butterfly (*Acraea acerata*) on sweet potato.	18
56	Ethiozinon 60% EC****	Diazinon	-For the control of termite damage in hot pepper.	18
57	Ethiozinon 60% EC	Diazinon	For the control of maize stalk borer (*Busseola fusca*) and sweet potato butterfly (*Acraea acerate*) on maize and sweet potato respecitviely.	18
58	Fastac 10% EC	Alphacypermetrin	For the control of caterpillar, aphids, thrips & whitefly on flowers.	29
59	Fastac 7.5 g/l ULV*	Alphacypermethrin	For the control of African bollworm in cotton.	29
60	Fullongphos	Aluminium phosphide	For the control of maize weevil and other storage pests on stored maize.	26
61	Fyfanon 50% EC*	Malathion	For the control of armyworm, locusts and grasshoppers on cereals.	5
62	Gain 20 SL	Imidacloprid	For the control of aphids (Macrosiphum euphorbiae) on potatoes.	9
63	Gastoxin	aluminium phosphide 57% tablet	For the control of maize weevil and other storage pests on stored maize.	22
64	Gaucho 70 WS	Imidacloprid	For the control of Russian wheat aphid (*diuraphis noxia*) on barley.	4

* Re-registered pesticide

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**** Registration expired

List of Registered Pesticides (Insecticides)

No.	Trade Name	Common Name	Approved uses	Registrant
65	Golan 20% SL	Acetamiprid	For the control of aphids, thrips, leaf minor & flea beetle on flowers.	39
66	Hanclopa 48% EC	Chlorpyrifos	For the control of termites on hot pepper.	28
67	Helerat 5% EC	lamda cyhlothrin	For the control of bollworm on cotton.	15
68	Helmathion 50 Ec	malathion 50% EC	1. For the control of Aphids and leaf hoppers on maize. 2. For the control of storage insect pests in storage structures.	15
69	Highway 50 EC	Lambda-cyhalothrin	For the control ofAfrican boll worm on chick pea	15
70	ICONET (Icon 2.5 EC)	Lambda-cyhalothrin 2.5 CS	For the control of mosquitoes (Anopheles arabiensis) as a bed net impregnation.	6
71	ICON 10 WP	Lambda – cyhalothrin	For the control of mosquitoes (Anopheles arabiensis).	6
72	K-O Tab.*	deltamethrin 25% m/m	For the control of mosquitoes as a bed net impregnation.	8
73	K-Othrine Moustiquare* SC 1%	deltamethrin 1%	For the control of mosquitoes as a bed nets impregnation.	8
74	Karate 0.8 ULV****	lambda-cyhalothrin	For the control of cotton pests on large scale farms.	6
75	Karate 5 EC*	Lambda-cyhalotrin	For the control of cotton pests on large scale farms.	6
76	Lambdahock 5% EC	Lambda-cyhalotrin	For the control of maize stock borer on maize.	5
77	Lamdex 5% EC	Lambda-cyhalothrin 5% EC	For the control of maize stalk borer (Busseola fusca Fuller) on maize and aphids, thrips, Leafhoppers, caterpillars & leaf minors on flowers.	5

78	Litphos 56 TB	Aluminium Phosphide 56% TB	For the control of maize weevil in maize store.	15
79	Malathion 50% EC****	Malathion	For the control of armyworm, locusts and grasshoppers on cereals and pastures.	1
80	Malt 50% EC	Malathion 500 gm/lt	Insecticide for the control of sweet potato butterfly on sweet potato.	33
81	Marshal 20 UL	Carbosulfan	For the control of locust and grasshoppers.	3
82	Marshal 25% EC*	Carbosulfan	For the control of aphids on cotton.	3
83	Marshal 25% ULV*	Carbosulfan	For the control of aphids on cotton.	3
84	Marshal/Suscon	Carbosulfan	For the control of termites of Eucalyptus trees (*Eucalyptus camaldulensis; E. citriodora and E. saligna*) and Leucena trees (*Laucena leucocephala*).	3
85	Medopaz*	white oil	for the control of red scale (*Aonidiella aurantii*); Orange scale (*Chrysomphalus dictyospermi*); Purple scale (*chrysomphalus aonidum*) and Black scale (*Parlatoria zizyphus*) on citrus alone or in combination with some organophosphate insecticides.	5
86	Megaban Plus	Chlorpyriphos-Ethyl 48% EC	For the control of termites on pepper.	26
87	Metasystox R 250 EC*	oxydemethon-methyl	For the control of shoot fly, aphids, fleas, and stalk borer on sorghum.	5
88	Neoron 500 EC ****	Bromopropylate	For the control of spider mite on cotton.	6
89	Nimbicidine	Neem	For the control of thrips on onion.	34

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List of Registered Pesticides (Insecticides)

No.	*Trade Name*	Common Name	Approved uses	Registrant
90	Nuvacron 40 SCW ****	Monocrotofos	For the control of spider mite on cotton.	6
91	Oscar 20% EC	Tebufenpyrad	For the control of Spider mites on flowers.	29
92	Oxymatrin 2.4 SL	Oxymatrin 2.4% SL	For the control of spider mites, aphids, thrips, caterpillar and leafhoppers on flowers.	27
93	Phostoxin *	aluminium phosphide	For the control of storage pests in warehouses.	2
94	Polo 500 SC	Diafenthiuron 500 SC	For the control of Aphids (Aphis gossypii) on cotton.	6
95	Polytrin C 220 ULV***	profenofos + cypermethrin	For the control of locust and grasshoppers.	6
96	Polytrin Ka 315 EC/ULV	Profenofos 300 gm/lt + Lambdacyhalothrin 15 gm/lt	For the control of African bollworm on cotton.	6
97	Profit 72% EC	Profenofos	For the control of pea aphids (Acyrtosiphon pisum) on field pea.	15
98	Pyriban 48% EC	Chlorpyrifos	For the control of African boll worm in cotton.	22
99	Pyrinex 24 ULV*	chlorphyrifos-ethyl	For the control of armyworm on cereal and pasture	5
100	Pyrinex 48 EC	chlorpyrifos-ethyl	For the control of armyworm on cereals and pasture	5
101	Pyrinex	Chlorpyrifos 48% EC	For the control of Termites on hot pepper	5
102	Quickphos*	aluminium phosphide 56% W/W Tablets	For the control of storage pests	5
103	Rimon	Novaluron	Insect Growth Regulator (IGR) to control stalk borer on maize	5
104	Rimon Star ULV	Novaluron + Bifenthrin	For the control of African boll worm on cotton.	5
105	Ripcord 5% ULV****	Cypermethrin	For the control of African bollworm, leaf worm and thrips in cotton	8
106	Rufast 75% EW	Acrinathrin	For the control of spider mites, aphids & thrips on flowers.	5
107	Runner 240 SC	Methoxyfenozide	For the control of false codling moth on citrus.	2
108	SD-Toxin	Aluminium Phosphide	For the control of storage insect pests on maize	30

109	Secure 36% SC	Chlorfenapyr	For the control of red spider mites & caterpillars on flowers.	29
110	Selecron 720 EC*	Profenofos "Q" 720g/l	For the control of maize stalk borer on maize	6
111	Sevin 85% WP*	Carbaryl	For the control of armyworm, grasshoppers Wellobush cricket on cereals & pasture	4
112	Shenphos 57% Tablet	Aluminium Phosphide	For the control of maize weevil (Sitophilus spp.) & flour beetle (Tribolium spp.) on stored maize.	36
113	Success Bait	Spinosad	For the control of Fruit fly on guava.	2
114	Sumithion 50% EC****	Fenitrothion	For the control of armyworm & locusts on cereals & pastures, Grasshoppers under the supervision of extension agents	1

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*** Canceled from registration upon receipt of a notification, in writing, from the registrant of the pesticide that it has been with drawn from s

**** Registration expired

List of Registered Pesticides (Insecticides)

No.	Trade Name	Common Name	Approved uses	Registrant
115	Sumithion 96% ULV****	Fenitrothion	For the control of armyworm and locusts on cereals and pastures	1
116	Sumithion 95% ULV****	Fenitrothion	For the control of armyworm and locusts on cereals and pastures	1
117	Suprathion 40 EC*	methidathion 400 g/l	For the control of scale insects on citrus.	5
118	Talic 2% Dust	Pirimiphos-methyl	For the control of storage pests (Sitophilus spp.) on stored maize.	9
119	Talstar 20 ULV*	Bifenthrin	For the control of whitefly and red spider mite on cotton	3
120	Thiodan 25% ULV*	Endosulfan	For the control of bollworm on cotton, maize and sorghum	4
121	Thiodan 35% EC*	Endosulfan	For the control of African bollworm on cotton, maize and sorghum.	4
122	Thionex 25% EC/ULV*	Endosulfan	For the control of African bollworm on cotton maize, sorghum & tobacco	5
123	Thionex 25% ULV*	Endosulfan	For the control of African bollworm on cotton, maize and sorghum.	5
124	Thionex 35% EC*	Endosulfan	For the control of African bollworm on cotton, maize, sorghum and tobacco.	5
125	Torque 550 SC	Fenbutatin	For the control of Spider mites on flowers.	29
126	Tracer 480 SC	Spinosad (a mixture of spinosyn A & spinosyn B) 480 gm/lt	For the control of thrips and leaf miners on flowers & African bollworm on cotton.	2
127	Ultracide 40 EC ****	Methidathion	For the control of scale insects on citrus.	6
128	Winner 0.8 ULV	Lambda cyhalothrin	For the control of African boll worm on cotton.	5

* Re-registered pesticide

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List of Registered pesticides (Herbicides)

No.	Trade Name	Common name	Approved Uses	Registrant
1	Agriherba	2,4-Damine salt 720 gm/lt	For the control of broad leaf weeds on wheat.	37
2	Agrocide 72 SL	2,4-D Dimethyl- amine Salt 720g/lt	For the control of post emergency annual and perennial broad leaf weeds on wheat.	35
3	Agro-sate 48 SC*	Glyphosate 360 g/l A.E	For the control of broad spectrum of weeds in coffee and citrus.	9
4	Agro- 2,4-D amine 720g/l A.E*	2,4-D 720 g/l A.E	For the control of broadleaf weeds in wheat, barley, teff, maize and sorghum	9
5	Alanex 48% EC*	alachlor 480 g/l	For the control of annual grass and some broadleaf weeds in maize and soybeans.	5
6	Alazine 350/200 SE*	alachlor 350 + alazine 200	For the control of grass and some broadleaf weeds in maize	5
7	Ametrazine 500 SC	Atrazine 250 gm/lt + Ametryn 250 gm/lt	Herbicide for the control of annual and perennial grasses and broad leaf weeds in sugar cane.	2
8	Atramet combi 50 SC*	atrazine 25% + ametryne 25%	For the control of grass weeds in sugarcane	5
9	Banvel P	dicamba + mecoprop	For the control of broadleaf weeds in wheat and barley	10
10	Brittox 52.5 EC ****	bromoxynil + ioxynil + mecoprop	For the control of broadleaf weeds in wheat and barley	8
11	Calliherbe Super*	2,4-D 720 g/l A.E	For the control of broadleaf weeds in cereal crops and sugarcane	12
12	Chivad	2,4-D Amine 720 gm/lt SL	For the control of broad leaf weeds on wheat.	28
13	Chob Amine 720 SL	2,2-D	For the control of grass weeds in wheat and Sugar cane.	38
14	Codal Gold 412.5 DC	S-Metolachlor 162.5 gm/lt + Prometryn 250 gm/lt	For the control of annual grass & broad leaf weeds on cotton.	6
15	Codal 400 EC**	Prometryn + metolachlor	For the control of broadleaf weeds and grass weeds in cotton	6
16	Clodinamex 10% EC	Clodinafop-propargyl 8% + Cloquintocet-methyl 2%	For the control of grass weeds in wheat.	28
17	Current 8%EC	Clodinafop-propargyl	For the control of grass weeds in wheat.	5
18	Desormone liquid*	2,4-D 720 g/l A.E	For the control of broadleaf weeds in cereals (wheat, barley, teff, maize & sorghum)	5
19	Derby 175 SC	Flurasulam 75 G/L + flumetsulam 100 G/L SC	For the control of broadleaf weeds in cereals	2
20	Dical	2,4-D 720 gm/lt SL	For the control of broad leaf weeds on wheat.	32
21	Dicopur 720 SL*	2,4-D 720 g/l A.E	For the control of broadleaf weeds in cereal crops	5

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**** Registration expired

List of Registered pesticides (Herbicides)

No.	Trade Name	Common name	Approved Uses	Registrant
22	Dicopur pp 600 SL	Mecoprop 600 G/L Aqueous concentrate	For the control of broad leaf weeds in cereals (wheat, barely and teff).	5
23	Dual Gold 960 EC	S-metolachlor	For the control of broad leaf weeds in haricot bean.	6

24	Ethio 2,4-D 720 SL	2,4-D dimethylamine salt	For the control of broad leaved weeds in Tef, wheat. And Sugar Cane.	18
25	Folar 525 FW**	terbuthylazine + glyphostate	For the control of broad leaf weeds in coffee.	6
26	Fuca 75 EW	Phenoxaprop-p-ethyl	For the control of Avena Spp. And Phalaris paradoxa in wheat.	15
27	Fusilade Forte 150 EC	Fluaxifop-P-butyl	For the control of grass weeds in cotton.	6
28	"Fusilade" Super 12.5% EC****	fluzifop-p-butyl	For the control of grass weeds in cotton and faba bean.	6
29	Gallant Super	Haloxyfop-R-methyl ester	For the control of annual & perennial grass in rape seed /Brassica napus/	2
30	Gesapax combi 500 FW*	ametryne + atrazine	For the control of various weed spp. in sugarcane.	6
31	Gesaprim 500 FW****	atrazine 500g/l	For the control of complex weeds in maize and sorghum.	6
32	Glycel 41% SL	Glyphosate 360 G/L SL	For the control of broad leaf weeds on coffee and wasteland.	24
33	Glyphos 48% SL	Glyphosate 480G/L SL	For the control of grass and broad leaf weeds in coffee.	33
34	Glyfos 360 SL	Glyphosate 36 SL	For the control of sedges and perennial grass weeds in coffee.	5
35	Gramaxone 20% EC*	Paraquate	For the control of complex weeds in coffee plantation.	6
36	Granstar 75 DF *	Tribenuron methyl	For the control of broadleaf weeds in wheat.	5
37	Glyphogan T	Glyphosate + terbuthylazine	For the control of broad-leaved weeds in coffee.	5
38	Glyphogan 480 SL	Glyphosate 480 G/L SL	For the control of coffee weeds such as Cyprus spp, cynodon spp, Digitaria spp, Hydrocotyle American, Echnocloa spp, Bidens pilosa, Ageratum conyzoides, Galinsoga parviflora and conyza albida	5
39	Hellosate 48 SL	Glyphosate 48 SL	For the control of annual and perennial weeds in citrus plantations.	15
40	Herb-Kill	2,4-D 720 gm/lt SL	For the control of broad leaf weeds in wheat.	31
41	Herbknock	2,4-D Amine Salt 720 G/L	For the control of annual & perennial broad leaf weeds on wheat.	33
42	Hond 72% SL	2,4-D Amine 720 gm/lt	For the control of broad leaf weeds in wheat.	28
43	Illoxan 28% EC*	Diclofop-methyl	For the control of wild oat and grass weeds in wheat and barley.	4
44	Kalach 360 SL*	Glyphosate 36% SL	For the control of perennial grasses, sedges and broad leaf weeds in coffee.	12

* Re-registered pesticide

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**** Registration expired

List of Registered pesticides (Herbicides)

No.	Trade Name	Common name	Approved Uses	Registrant
45	Ken-amine 720 SL	2,4-D Amine 72% W/V SL	For the control of post emergence broad leaved weeds in wheat.	40
46	Lancelot 450 WG	Aminopyralid 30% + Florasulem 15%	For the control of broad leaf weeds in wheat.	2
47	Lasso 480 EC	alachlor 480 G/L EC	For the control of broad leaf weeds in haricot bean.	8
48	Lasso/Atrazine 55% SC*	alachlor 35% + atrazine 20%	For the control of annual weeds in maize, soybean and sugarcane.	8
49	Litamine 72 SL	2,4-D	For the control of broad leaf weeds in wheat.	15
50	Lumax 537.5 SE	Mesotrione + S-metolachlor +Terbutilazine	For the control of pre and early post emergency grass and broad leaf	6

			weeds on maize.	
51	Mamba 360 SL	Glyphosate	For the control of citrus and coffee weeds.	2
52	Mamba Super 480 SL	Glyphosate	For the control of grass and broad leaf weeds on coffee.	2
53	Mustang	(XDF 6.25 G/L + 2,4-D 300 G/L) Suspo-Emulsion (S.E)	For the control of broadleaf weeds in cereals.	2
54	Pallas 45 OD	Pyroxsulam	For the control of grass weeds (wild oat, downy brome /Bromus Spp./ and annual broad leaf weeds on wheat.	2
55	Primagram 500 FW ****	metolachlor + Atrazine	For the control of broad spectrum broadleaf and grass weeds in maize	6
56	Puma super 75 EW*	Fenoxaprop-p-ethyl 6.9%	For the control of grass weeds in wheat	4
57	Primagram Gold 660 SC	(s-metolachlor 290 g/l + Atrazine 370 g/l) SC	For the control of broadleaf and grass weeds in maize and sugarcane.	6
58	QISH- Fordat	2,4-D	For the control of broadleaf weeds in wheat.	38
59	Richway 750 WDG	Tribenuron Methyl	For the control of broadleaf weeds in wheat.	15
60	Roundup 36 SL*	Glyphosate 360 g/l	For the control of complex weeds in coffee	8
61	Sanaphen D 720 SL	2,4-D 720g/l SL A.E	For the control of Broad leaf weeds in wheat	2
62	Starane M 64% EC*	Fluroxypyr + MCPA	For the control of broadleaf weeds in wheat	2
63	Stomp CS	Pendimethalin	For the control of rooboelia weed in maize	29
64	Stomp 500 E*	Pendimethalin	For the control of rooboelia weed in maize	29
65	Sugar cane Hoe 500 SC	Ametryn 250 gm/lt + Atrazine 250 gm/lt	For the control of complex weeds (Broad leaf weeds, Grass weeds & Sages	38
66	Terminator 480 G/L SL	Glyphosate	For the control of annual & perennial grasses & broad leaved weeds in citrus orchards.	32
67	Topik 080 EC*	Clodinafop-propargyl	For the control of grass weeds in wheat.	6
68	Traxos 045 EC	Clodinafop- propargyl + Pinoxade	For the control of grass weeds in wheat.	6

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List of Registered pesticides (Herbicides)

No.	Trade Name	Common name	Approved Uses	Registrant
69	Trust-Sate 360SL	Glyphosate	For the control of annual & perennial grasses & broad leaved weeds in coffee.	15
70	U-46 KV fluid 600***	Mecoprop	For the control of broadleaf weeds in wheat and barley	3
71	U-46 KV fluid 72%*	2,4-D 720g/l A.E	For the control of broadleaf weeds on cereals (tef, wheat, barly, maize, sorghum) and sugarcane.	5
72	Velpar 75 DF*	hexazinone 75% DF	For the control of broadleaf and grass weeds in sugarcane.	2
73	2,4-D PA****	2,4-D 720 g/l A.E.	For the control of broad leaf weeds in wheat and teff	17
74	Weedkiller	2,4-D 72 Acid Equivalent	For the control of broadleaved weeds in teff and wheat	24
75	Zura Herbicide	2,4-D 720 g/l A.E	For the control of broad leaf weeds on maize.	26

List of Registered pesticides (Fungicides)

No.	Trade Name	Common name	Approved Uses	Registrant
1	Acrobat WG	Dimethomorph + Mancozeb	For the control of downy mildew on flowers.	29
2	Agri-Fos 400 SL	Potassium Phosphite	For the control of downy mildew on flowers.	27
3	Agro-Laxyl MZ 63.5 WP	mancozeb + metalaxyl	For the control of Early blight on tomato and Late blight on potato.	9
4	Aliette 80 WG	Fosetyl Aluminium 800 gm/kg	For the control of downy mildew, pythium & phytophthora on flowers	4

5	Ardent 50 SC	Kresoxim	For the control of powdery mildew on pepper.	5
6	Bayleton 25 WP*	triadimefon 250 g/l	For the control of rust diseases on wheat and barley.	4
7	Benlate 50 WP****	benomyl 50% WP	For the control of bean anthracnose on haricot beans	2
8	Bumper 25 EC*	propiconazole 25%	For the control of leaf and stem rust on wheat.	5
9	Chob Manzeb 80 WP	Mancozeb	For the control of late blight on tomato.	38
10	Collis 20% SC	Kresoxim-methyl + Boscalid	For the control of Powdery mildew on flowers.	29
11	CURZATE R WP	cymoxinil + copper oxychloride	For the control of late blight on potato and downy mildew on grape.	2
12	Daconil 2787 W 75 ****	chlorothalonil 75% WP	For the control of coffee berry disease on coffee.	6
13	Delan 500 SC	Dithianon 500 gm/lt	For the control of Downey mildew on flowers.	29
14	Electis 75% WG	Zoxamide 8.3% + Mancozeb 66.7%	For the control of late blight on potato.	2
15	Equation Pro WDG	Famoxadone 22.5% + Cymoxanil 30%	For the control of downy mildew on flowers & grape & also for the control of potato late blight on potato.	5
16	Ethiozeb 80% WP	Mancozeb	For the control of late blight on tomato.	18
17	Flint WG 50	Trifloxystrobin 500 gm/kg	For the control of powdery mildew & rust on flowers.	4
18	Fostonic 80 WP	Fosetyl	For the control of downy mildew & botrytis on flowers.	5

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**** Registration expire

List of Registered pesticides (Fungicides)

No.	Trade Name	Common name	Approved Uses	Registrant
19	Flowsan FS	Thiram	For the control of root rot diseases on wheat.	10
20	Folio Gold 537.5 SC	Metalaxyl-M 37.5 gm/l + 500 gm/l Chlorothalonil	For the control of botrytis and downy mildew on flowers.	6
21	Folpan 80 WDG	Folpet	For the control of anthracnose on papaya.	5
22	Fungozeb 80 WP	Mancozeb	For the control of late blight on potato.	15
23	Goldazim 500 SC	Carbendazim	For the control of powdery mildew botrytis on flowers.	5
24	Helcozeb 80 WP*	mancozeb 80% W/W	For the control of cercospora leaf spot on statice flowers.	15
25	Imidalm T 450 WS	Imidaclopride 250 gm/kg + Thiram 200 gm/kg	For the control of seed and seedling diseaseson wheat (Seed treatment)	2
26	Impulse EC 500	Spiroxamine 500gm/lt	Fungicide for the control of powdery mildew on flowers.	4
27	Indofil M-45	mancozeb 80% WP	For the control of late blight on potato.	22
28	Ippon	Iprodione 500 gm/lt SC	For the control of botrytis on flowers.	5
29	Iprodione 500 SC	Iprodione 500 gm/lt	For the control of botrytis and alternaria on flowers.	27
30	Kocide 101*	copper-hydroxide	For the control of late blight on potato.	5
31	Kumulus DF	Sulfur	For the control of Powdery mildew on Flowers.	29
32	Mancolaxyl 72 % WP	Mancozeb + metalaxyl WP	For the control of late blight on tomato.	5
33	Mancotan 80 WP	Mancozeb	For the control of late blight (Phytophthora infestans) on potato	33
34	Mancozeb 80 WP	Mancozeb	For the control of Downey mildew, Botrytes, Black spot and rust on Flowers.	27
35	Manoxyl 72% WP	Mancozeb 64%+ metalaxyl 8%	For the control of late blight on potato.	33

36	Matco	Metalaxyl 8% + Mancozeb 64%WP	For the control of late blight disease (*phytophtora infestans*) on potato and tomato and downy mildew (*pernospora destructor*) on onion.	22
37	Maxitan 72% WP	Mancozeb 64% + Metalaxyl 8%	For the control of late blight (Phytophttora infestans) on potato.	33
38	Meltatox 40% EC	Dodemorf acetate	For the control of Powdery mildew on flowers.	29
39	Melody Duo WG	Iprovalcarp 90 gm/kg + Propineb 600 gm/kg	For the control of Powdery mildew on flowers.	4
40	Nimrod 25 EC	Buprimate	For the control of powdery mildew on pepper.	5
41	Noble 25 WP*	Triadimefon	For the control of smut (Ustilago Scitaminea Syd.) on sugar cane	15
42	Odeon 82.5 WDG	Chlorothalonil	For the control of Late blight on Potato.	5
43	Orius 25 EW	Tebuconazole	For the control of rust on flowers.	5
44	Ortiva 250 SC	Azoxystrobin 250 g/l	For the control of rust, botrytis & downy mildew on flowers.	6

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List of Registered pesticides (Fungicides)

No.	Trade Name	Common name	Approved Uses	Registrant
45	Penncozeb 80 WP*	mancozeb 80% WP	For the control of late blight on tomato.	5
46	Polar 50% SG	Polyoxin AL	For the control of powdery mildew on straw berry &Powdery mildew & botrytis on flowers.	27
47	Polyram DF	Metiram	For the control of Downy mildew on flower.	29
48	Privicur Energy SL 840	Propamocarb hydrochloride	For the control of downy mildew on flowers.	4
49	Privicur N	Propamocarb hydrochloride 722 gm/lt	For the control of botrytis, pythium & phytophthora on flowers.	4
50	Proplant SL	Propamocarb Hydrochloride 722 gm/lt	For the control of downy mildew on flowers.	5
51	Rex Duo	Epoxiconazole + Thiophanate-methyl	For the control of yellow/stripe rust on wheat.	29
52	Revus 250 SC	Mandipropamid	For the control of late blight on potato	6
53	Ridom 80% WP	Mancozeb 80% WP	For the control of late blight on potato.	33
54	Ridomil 5G ****	Metelaxyl	For the control of fungus spp. on pepper, tomato, orange & apples.	6
55	Ridomil MZ 63.5 WP ****	metalaxyl/mancozeb	For the control of fungus spp. on potato, tomato, pepper & onion.	6
56	Ridomil Gold MZ 68 WG	Metalaxyl-M 68% WG	For the control of downy mildew on grape.	6
57	Ridomil Gold MZ 68 WP ****	metalaxyl - M 4% + mancozeb 64%	For the control of downy mildew on grape.	6
58	Rova 500 FW*	chlorothalonil 50% FW	For the control of coffee berry disease on coffee.	5
59	Rova 75 WP*	chlorothalonil 50% FW	For the control of coffee berry disease on coffee.	5
60	Rovral Aquaflo 500 SC	Iprodione	For the control of Botrytis & Alternaria on Flowers.	4
61	Sancozeb 80% WP*	mancozeb 800 g/kg WP	For the control of chocolate sport and rust on faba bean.	2
62	Scala SC 400	Pyrimethanil 400 gm/lt	For the control of Botrytis on flowers.	4
63	Score 250 EC	Difenoconazole 250 g/l	For the control of powdery mildew, botrytis & alternaria on flowers.	6
64	Stroby 50 WG	Kresoxin-Methyl	For the control of Powdery mildew on flowers.	29
65	Systhane 20 EW	Myclobutanil	For the control of rust on green bean (Snap bean).	2
66	Teldor WG 50	Fenhexamid 500 gm/kg	For the control of Botrytis on flowers.	4

67	Thiram Granuflo 80 WP*	thiram 80% WP	For the control of seed decay and damping off disease; on maize and sorghum.	10
68	Tilt*	Propiconazole	For the control of fungus spp. on teff wheat and barley.	6
69	Thiovet Jet 80 WG	Sulfur	For the control of powdery mildew, downy mildew & botrytis on flowers and Powdery mildew on grapevine.	6
70	Topzol 250 EC	Propiconazol 25% EC	For the control of yellow rust or strip rust on wheat.	15
71	Unizeb 80 % WP	Mancozeb	For the control of late blight on potato.	5
72	Verita WG	Femamidone 44.4 gm/lt + Fosetyl 667 gm/kg	For the control of downy mildew on flowers	4
73	Victory 72 WP	Metalaxyl 80 gm/kg + Mancozeb640 gm/kg	For the control of downy mildew, phytophthora and phythium on flowers.	37

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List of Registered pesticides (Rodenticides, miticides, avicides, adjuvants, PGL, sticker, Nematodes and house hold pesticides)

No.	Trade Name	Common name	Approved Uses	Re.
		Rodenticides		
1	Klerat pellets ****	**brodifacoum**	For the control of rats in large stores and in the field for out breaks control under the supervision of an expert.	6
2	Lanirat Bait 0.005%****	bromadiolone	For the control of field and storage rodents	6
3	Storm*	flocoumafen 0.005% pellet	For the control of storage and field rodents	3
4	Zinc phosphide	Zinc phosphide 80% Technical	For the control of field rats as a finished bait 4% zinc phosphide. Zinc phospdide 80% technical can not be sold to the user unless it is formulated to 4% zinc phosphide by the registrant	30
5	Ratol*	Zinc phosphide 80% Techical	For the control of field rats as a finished bait 4% zinc phosphide. Zinc phospdide 80% technical can not be sold to the user unless it is formulated to 4% zinc phosphide by the registrant	5
Avicides				
1	Queletox UL 600****	fenthion	For the control of weaver birds (Quelea quelea)	4
		Nematicides		
1	Mocap GR 10	ethoprophos	For the control of Nematodes on Flowers	4
		Miticides		
1	Abalone 18 EC	Abamectin	For the control of spider mites on flowers	5
2	Akrimactin 1.8 EC	Abamectin 18 gm/lt	For the control of spider mites on flowers and strawberry.	27
3	Apollo 50 SC	Clofentezine	For the control of different stages of mites on flowers and tomatoes.	5
4	Calypso SC 480	Thiacloprid	For the control of spider mite, aphids and thrips on Flowers	4
5	Cascade 10 DC	Flufenoxuron	For the control of Red spider mites on flowers.	29
6	Floramite 240 SC	Bifentazine	For the control of red spider mites on flowers strawberry.	27
7	Mercur 500 SC	diafenthuron	For the control of spider mite on Flowers	27
8	Mitac*	amitraz	For the control of red spider mite and whitefly on cotton	4
9	Mitigan 18.5EC*	dicofol	For the control of red spider mite in cotton	5
10	Oberon SC 240	spiromesifen	For the control of spider mite on flowers	4
11	Floramite 240 SC	Bifentazate	For the control of red spider mites on flowers.	27
		Adjuvants, stickers and plant growth regulators		

1	Citowett****	alkylarylpolyglycol 100%	For reducing surface tension and increasing the adherence of pesticides.	3
2	Green Miracle	Fatty alcohol	Anti transpirant	34
3	Pix 50 EC*	mepiquat chloride 50 g/l or 5%	For plant growth regulation of cotton	3

* Re-registered pesticide

** Canceled from registration upon receipt of a notification, in writing, from the registrant of the pesticide that the manufacturer, Shell, has internationally withdrawn from the business of pesticides. *** Canceled from registration upon receipt of a notification, in writing, from the registrant of the pesticide that, the manufacturer has decide to phase out the product . **** Registration expired

List of Registered Pesticides (House hold)

No.	Trade Name	Common name	Approved Uses	Re.
1	Baygon****	Propoxur 1% + Cyfluthrin 0.04% + Dichlorvos 0.5%) Aerosol	For the control of cockroaches and Mosquitoes	23
2	Hardy****	Cypermethrin 0.03% + Dichlorvos 0.99%	For the control of common housefly (Musca domestica aerosol)	25
3	Kilit****	dichlorvos 0.7% + tetramethrin 0.14%	For the control of cockroaches, mosquitoes and house flies	20
4	Knoxout 2 FM	Diazinon 23% W/W	For the control of cockroaches	5
5	Mobil insecticide****	tetramethrin = neopnamin 0.20%+ pynamin forte = d -allethrin 0.250% + Sumithrin = d-phenothrin 0.120%	For the control of flying household insects	14
6	Roach killer*	fenithrothion + cypermethrin+bioallethrin 2.3%	For the control of cockroaches, mosquitoes and ants	21
7	Super shelltox F.I.K****	d-phenothrin 0.05% + teramethrin 0.25%	For the control of flies, mosquitoes and other flying insects	13
8	Super shelltox C.I.K****	cypermethrin 0.25% + teramethrin 0.15%	For the control of cockroaches, ants and other insects in kitchens, rooms offices, etc.	13

* Re-registered pesticide

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*** Canceled from registration upon receipt of a notification, in writing, from the registrant of the pesticide that, the manufacturer has decide to phase out the product by the year 2002

**** Registration expired

If the original applicant of a registered pesticide wishes to change the trade name, formulation, active ingredient concentration or use of the pesticide or is replaced by another person, then an application for registration shall be submitted to the Ministry in order to import, formulate, manufacture, pack, repack, distribute, sell or label that pesticide. According the data presented by Ministry of Agriculture, General Chemicals and Trading PLC is the only Pesticide Dealer that supplies products intended for the use of oilseeds.

Case Study: General Chemicals and Trading PLC

General Chemicals and Trading PLC was established in 1980 EC and formerly working as a country office of a multinational company called Imperial Chemicals Industries (ICI) in Ethiopia with a start-up capital of ETB 142,000- an amount that has been maintained over the years. It was established to engage as an importer, distributor and commission agent of many companies in multifarious business. It is the only organization that is recognized by Ministry of Agriculture as a supplier of Pesticide for Oilseeds. It has an annual turnover of USD 15 million.

Offices

GCT operates out of its head quarter, based in Addis Ababa, and seven major branches located in:

- Mekelle;
- Nazereth;
- Zeway;
- Shashemene;
- Hawassa; and
- Addis Ababa (Merkato and Teklehaymanot)

Product Lines:

The organization imports various agrochemicals, flower fertilizers, vegetable seeds and sprayers from international companies such as Makhteshim Agan of Israel, Cerexagri of France, Nufarm

of Austria, Dupont of France, Agriphar of Belgium, United phosphorus of India and other European Companies. The full product line:

No.	TRADE NAME	COMMON NAME	CROP	Pests to be controlled	RATE/HA (Product in LT or kg)	REMARKS	Manufacturer, Origin
I. Insecticides							
1	Thionex 25% ULV Thionex 25% EC/ULV Thionex 35% EC	Endosulfan	Cotton, Maize/Sorghum Vegetables, Oil Crops, Pluses, Tobacco & Onion	African bollworm (Heliothis SPP).	2.5 – 3 lt/ha 2-2.5lt/ha	Specially good for Heliothis without affecting the natural prediators	Makhteshim Chemical Works, Israel
1.	Pyrinex 24% ULV	Chloropyrifos	Cotton, Cereals and Pastures	Leaf worm, army worm, locust, wollo bush crickets & grasshoppers	4.5lts(1080 AI)	Specially effective against cotton leaf worm	Makhteshim Chemical Works, Israel
2.	Pyrinex 48%EC	Chloropyrifos	Cereals, Maize, citrus, coffee, vegetables, pastures, teff, beans & pulses	Army worm, cut worm, teff red worm, Grasshoppers stalkborers, locust, aphids, scales, termites & soil born insect Pests	0.5-1Lts(240-480AI) 2-3lts(960-1440 AI)	Specially effective on stalk borer, grasshoppers, cutworms, termites and other soil born insect pests	Makhteshim Chemical Works, Israel
3.	Diazol 60% EC/ULV	**Diazinon**	Maize, Sorghum, cereals, rape-seed, sesame, citus, sunflower, teff.	Lepidopterus complex Insect Pests,Red teff worm	1-2lts (600-122g a.i.)	Exactly same activity as pyrinex 48% EC	Makhteshim Chemical Works, Israel
4.	Lamdex 5%EC	Lambda Cyhalothrin	Cotton, Beans, Soyabean Crucifrae,Maize, Onion, Potatoes, Tomatoes, Wheat, Barley, Grape vine, Rice, Ornamentals, Flowers	American bollworm, Aphid, Spiny or spotted balloworm, Pink bollworm, Thrips, Mireid, Leaf miner, Aphids, Cutworms, Diamond backmoth, Stalk borer, white flies, Leaf miner, Tuber moth, Leaf eaters, midge, Grape midge, Tortix, Flea beetle, Spidermite	200 - 400ML/HA	Specially effective against cotton leaf worm and bollworm	Makhteshim Chemical Works, Israel
5.	**Diazol 10G**	Diazinon	Maize, sorghum	Stalk borers, cutworms, thrips, flea beetles, wireworms	5 –10kgs (500-1000A.I)	Specially good & easy for hand application for stalk borers of all spp. And cutworm	Makhteshim Chemical Works, Israel

No.	TRADE NAME	COMMON NAME	CROP	Pests to be controlled	RATE/HA (Product in LT or kg)	REMARKS	Manufacturer, Origin
6.	Fyfanon 50%EC/ULV	Malathion	Wheat, Barley, Teff, Maize, Sorghum, Oil Crop, Pulses, Beans, Vegetables, Stored grain products, Plantation Crops, Public Health	Armyworm, locusts, Grasshoppers, stalk Brorers, Teffred worm shootfly heliothis SPP., Leaf Hoppers, Weevils, Flea Beetls, Aphids	1 – 2lts(0.5-1kg AI)	Wide activity and well known by Ethiopian Farmers for Armyworm control	Cheminova A/S, Denmark
7.	Suprathion 40% EC	Methidathion	Citrus	Scale insects (all scale spps)	**150** CC/100Lts of **spray mixture**		Makhteshim Chemical Works, Israel
8.	Medopaz	White Oil	Citrus	Red Scale, Orange Scale, Purple Scale, and Black Scale.	1.75% to 2% of the Sprayed Volume (1750 ml. to 2000ml. Oil in 100 litres of water.)	**Safe for natural enemies**	Almadine Corporation SA, Israel
9.	Mitigan 18.5%EC	Dicofol	Cotton, citrus, mangoes, tea ornamentals, tomatoes, Cucumbers etc.	All species of spider mites soft bodied mites & others	2 – 3 Lts (370 – 555) A.I	Specially effective against red spidermite in cotton, orchards, Vegetables, other Crops.	Agan Chemical Manufacturer Ltd, Israel
10.	Akito 2.5 EC	Beta Cypermethrin	Maize, Vegetables, cotton, pulses	Stalk borer, African bollworm, Jasids, Leafworm, Whitefly, Thrips	1.2 -2lts/ha (30-50 gai/ha)		Cerexagri S.A, France
11.	Diptrex SP 95	Trichlorofon	Teff, Wheat, Srghum, Millet oil crops, Vegetables	Shoot fly, Cutworm, Betles, Fruti fy, Bollwoerm,	0.75-1kg/ha	Specially effective against shoot fly	United Phosphors Ltd, India
12.	Rimon 10% EC	Novaluron	Maize, Cotton, Vegetables, pulses	African bollworm, Stalk borer, whitefly, leafworm	0.75 – 1lt/ha	IGR-Safe for natural enemies	Makhteshim Chemical Works, Israel
13.	Knox out	Diazinon	House hold	House hold pests (bedbug, flea, cockroach…)	42ml/lt/2om^2	Long lasting effect	Cerexagri S.A, France
14.	Metasystox 250 R	Dimeton-S-Methyl	Cotton, Cereals Pulses, Vegetables	Aphids, Thrips, Jassids, White fly	1-1.5lt/ha	Specially effective on Jassid and Aphids	United Phosphors Ltd, India
15.	Winner 0.8%ULV	Lambda Cyhalothrine	Cotton, vegetables, Maize	African bollworm, stalk borer	2.5 lt/ha	Effective on ABW	Hockley International Ltd, UK

No.	TRADE NAME	COMMON NAME	CROP	Pests to be controlled	RATE/HA (Product in LT or kg)	REMARKS	Manufacturer, Origin
16.	Danadim	Dimethoate400 gm/lit	Barley	Russian wheat aphid (Diuraphis noxia)	1lit/ha	Two times per season on weekly interval	Cheminova A/S , Denmark
17.	Coragen 200 SC	Chlorantranilip role	Cotton	ABW	125ml/ha		Dupont de Nemours S.A.S ,France
II. Fungicides							
18.	Kocide 101	Copper hydroxide	Potato, tomato, pepper onion & other vegetables, coffee, tea, citrus, etc.	Early & late blight, leaf spot, bacterial - blight, brown spot, leafrust, coffee berry disease, scab.	2-2.5 kg for all diseases CBD and rust on coffee.	Extremely good for pepper, potato, tomato and other vegetables well known by Ethiopian Farmers. Contact action	Dupont de Nemours S.A.S, France
19.	Penncozeb 80WP	Mancozeb	Citrus, mangoes, banana, papaya, beans, pea, groundnut, onions, ornamentals, vegetables, wheat, Grapevine, Cucurbits.	Leafspot, fusarium, scab, early, and late blights, downy and Powdery mildew, rust, anthracnose, cercospora leafspots, Sigatoka	2.5 - 3kg (800 – 2400a.i.)	Effective to control a number of fungus diseases on crops listed. Contact action with curative property	Cerexagri S.A, France
20.	Unizeb 80% WP	Mancozeb	Potato/Tomato	Early and late blight*l* downy mildew	**2.5 – 3kg/ha**	Contact action with curative property	United Phosphors Ltd, India
21.	Mancolaxyl 72% WP	Mancozeb 64% + Metalaxyl 8%	Potato/Tomato, Onion	Early and late blight*l* downy mildew	**3kg/ha**	Contact and systemic action with curative and preventive property	United Phosphors Ltd, India
22.	Rova 75WP or Rova 500SC	Chlorothalonil	Coffee, vegetables flowers, and ornamentals	Coffee beerry disease and various other fungal diseases, leaf rusts	**3 – 4kgs** 5 lts	Specially to control coffee berry disease.	Almadine Corporation SA, Israel

No.	TRADE NAME	COMMON NAME	CROP	Pests to be controlled	RATE/HA (Product in LT or kg)	REMARKS	Manufacturer, Origin
23.	Bumper 25% EC	Propiconazole	Wheat, Barley, vegetables, ornamentals	Leaf and Stem rusts and other Fungal diseases.	0.5lt.	Systemic fungicide with curative property	Irvita Plant Protection, Israel
24.	Nimrod 25% EC	Buprimate	Fruits and vegetables	Powdery mildew	0.5 – 1lt/ha	Systemic action	Makhteshim Chemical Works Ltd, Israel
25.	Odeon 82.5WDG	Chlorthalonil	Coffee, Vegetables, fruits, ornamentals	CBD, Botrytis/Grey Mold, Downy mildew, Late blight	200g/100lt 3kg (Coffee)	Non systemic with protective and curative action	Makhteshim Chemical Works Ltd, Israel
26.	Ardent 50% SC	Kresoxim - Methyl	Vegetables, fruits and ornamentals	Powdery Mildew, Fusarium, Eye-Spot, Blotch, Rust, Septoria	50ml/100lt	Pyrimidine fungicide Non systemic with systemic action Strobilurine fungicide	Makhteshim Chemical Works Ltd, Israel
27.	Orius 25% EW	Tebuconazole	Cereals, Vegetables, fruits, ornamentals	Rusts, Alternaria, Cercospora, Fusarium, Late blight, Powdery mildew	50ml/100lt	Systemic action with curative and preventive property Triazole fungicide	Makhteshim Chemical Works Ltd, Israel
III. Herbicides							
28.	Glyfos 36 SL	Glyphosate	Sugar cane, Coffee, Citrus	Perennial or Annual weeds	3-4 lts 0.5-1.5lts	Specially effective on couch grass known in Ethiopia	Cheminova A/S, Denmark
29.	Glyhogan 48SL	Glyphosate	Coffee, Citrus	Perennial and Annual weeds	3-4 lts 0.5-1.5lts	Non selective with systemic action. Specially effective on couch grass known in Ethiopia	Agan Chemical Manufacturer Ltd, Israel
30.	Glyphogan T	Glyphosate+ Terbuthylazine	Coffee, Citrus	Perennial and Annual Grass & Broadleaved weeds	2-3.5lts	Residual Herbicide in Plantation Crops.	Agan Chemical Manufacturer Ltd, Israel
31.	Dicopur 720 SL	2,4-D	Wheat, Barley Maize, Sorghum, Grass & sugar cane, Coffee, Tea & Citrus	Annual and perennial broadleaved weed.	1lt	Effective for post emergency control of annual and most perennial broad-leaved weeds in the crops listed well known to Ethiopian Farmers.	Nufarm S.A.S, Austria
32.	Dicopur PP 600 SL	Mecoprop	Wheat, Barley, Teff	Broad-leaf weeds	2lts/ha	Specially effective against Gallium spp.	Nufarm S.A.S, Austria

No.	TRADE NAME	COMMON NAME	CROP	Pests to be controlled	RATE/HA (Product in LT or kg)	REMARKS	Manufacturer, Origin
33.	Desormone Liquid 720 A.E	"	"	"	"	"	Nufarm S.A.S, Austria
34.	U-46 D Fluid	"	"	"	"	"	Nufarm S.A.S, Austria
35.	Quish Fordat	"	"	"	"	"	Zhuhai Qiaoji Overseas Trading Co, China
36.	Alazine 350/200SE	Alachlor 35% + Atrazine 20%	Maize and Sugar cane	Complex weeds(various broad leaves and annual grasses)	4 –5 lts	Pre or early post emergence Recommended to control complex weeds in the crops mentioned.	Agan Chemical Manufacturer Ltd, Israel
37.	Atramet combi 50 SC	Ametryne 250 g/l + Atrazine 250 g/l	Sugar cane and pineapples	Various weed spp.	5 – 10 lts.	Selective pre and post emergence herbicideto control various weed spp.	Agan Chemical Manufacturer Ltd, Israel
38.	Granstar 75 DF	Tribenuron Methyl	Wheat, Teff, Barley	Broad leaf weeds	15-20gm/ha		Dupont de Nemours S.A.S, France
39.	Alanex 48EC	Alachlor	Maize, cotton, groundnuts, sugar cane, soybeans, Haricot beans, Sesame. & Others	Complex weeds (annual grass and boad leaf weeds)	3 –4lt 1-2.25 (Maize and Cotton)	Selective pre plant & pre emergence herbicide to control complex weeds.	Agan Chemical Manufacturer Ltd, Israel
40.	Current 8 EC	Clodinafop Propargyl	Wheat	Grass weeds	1 lit	Post emergence	United Phosphors Ltd, India
IV. Storage Pests							
41.	Quickphos	Aluminum Phosphide	Stored product fumigation	Insect pests of stored products	2 tablets per ton or 1tab. per m3	Fumigant	United Phosphors Ltd, India

No.	TRADE NAME	COMMON NAME	CROP	Pests to be controlled	RATE/HA (Product in LT or kg)	REMARKS	Manufacturer, Origin
42.	Ratol 2.5% bait	Zinc phosphide	Field and store	Rodent (all rat spp)	10kg/ha		United Phosphors Ltd, India

+ Registered Products

+ NA - Not Available

SPRAYERS
Brand: Hardi & Cooper Pegler (CP-15, K-15)

Name of Sprayer	Capacity (lts)
Knapsack Sprayer	15 – 20
Motorized Knapsack Sprayer	12
Tractor Mounted Sprayer	400 - 600
Tractor Pulled or Trailed	1000 – 2500
Tractor Pulled or Trailed	1000- 3000
Self Propelled Sprayer	3000
Citrus & Wheel Barrow	1000- 3000
ULV Sprayer Micron ULVA	-

Vegetable Seeds

- Tomato Roma VF
- Onion Red Bombay
- Cabbage Copenhagen
- Swiss Chard Ford Hook Giant
- Carrot –Nantes
- Beet Root Detroit

Case Study: Adami Tulu Pesticides Processing S.C.

In addition to the above organization, there is one organization that is currently producing and supplying pesticides: Adami Tulu Persticides Processing S.C. It was established in 1987 EC with a start-up capital of ETB 40,566,000. It is currently operating out of two offices with 375 temporary and permanent employees and a current capital of average ETB 50,000,000. Its product line includes pesticides and mosquito nets. The full list of products is as follows:

Name	Description/ direction for use
I/ Plant Protection Products	
1. Ethiosulfan (Endosulfan) 35% EC	Cotton for African Bollworm 2.1-2.5 lts/ha; for flea beetle 2.5 lts/ha; vegetables, oil crops, pulses against bollworm and thrips 2.0-2.5
2. Ethiosulfan (Endosulfan) 25% ULV	Cotton African Bollworm 2.5-3 lts/ha Flea beetle 3 lts/ha. Calibrate spray air craft or ULV sprayer before spray
3. Ethiolathion (Malathion) 50% EC	cereals, oil-crops, pulses, vegetables and fruits against armyworm, grass hopper, leaf hopper, sucking insects, crickets, locusts 1-2 lts/ha. To spray storage surface area 0.002 lts/m.sq
4. Ethiozinon (Diazinon) 60% EC	cereals (maize, sorghum, wheat, barely, tef) pulse and vgetables aginst stock borer, soil dwelling pests, shoot fly, cut worm, grass hoppers, army worm 1-2 lts/ha, citrus against scale insects 200 ml/ 100 liter water (8-9 lt/ha), sugar cane black beetle 3 lt/ha and termites 4/5 lt/ha.
5. Ethiothoate (Dimethoate) 40% EC	wheat, barley, pulses, vegetables and fruits spraying for thrips 1.5 lts/ha, aphids and other sucking insects 1-2 lts/ha
6. Ethiothoate (Dimethoate) 40% ULV	For cotton spraying against thrips 1.5 lt/ha, aphids and other sucking insects 1-2 lts/ha. Calibrate spray air craft or ULV sprayer before spray.
7. Ethiothrothion (Fenithrothion) 50% EC	cereals, pulses, and oilcrops against armyworm, locusts, grass hoppers crickets 1-2 lts/ha. Coffee against leaf miner, Anthestia bug 1-2 lts/ha. Pulses, vegetables and fruits against leaf miner, leaf worm bollwrms, aphids, thrips, aterpillar, leaf roller 1-2 lts/ha. tef against red tef worm 1 lt/ha.
8. EThiolathion (Malathion) 5% Dust	cereals, pulses and oil crops against army worm, locusts, grass hoppers, crickets 1-2 lts/ha. Coffee against leaf miner, Anthestia bug 1-2 lt/ha. Pulses, vegetables and fruits against leaf miner, leaf worm, bollworms, Aphids, thrips, caterpillar, leaf roller, 1-2 lt/ha. tef against red tef worm 1 lt/ha
9. EThiolathion (Malathion) 5% Dust	cereals, oil crops and pulses, against storage pests (Weevil, Moths etc...) mixing 25-50 gm/quintal.

10. Ethiodemethrin (Deltamethrin) 2.5% EC and WDP	Field crops:- stock borer, leaf miners, sorghum midge, grass hopper, cut worm, army worm, cereal bug and boll worm0.75-1 liter/hectar
	vegetables:- cutworm, thrips, white fly, aphids, leaf miners, plant bug, cabbage moths and other sucking insects 0.5-1 liter/hectare
	Flower farms:- Aphid, leaf miner, white fly and thrips 1 liter/hectare.
	Citrus fruits:- fruit fly, aphids, scales insects, leaf miner and other sucking insects 20-50 ml/tree
	Storage structure:- for disinfection of storage bins, bags, containers, pits and ware houses1.5 ml diluted in 1 lt of water , for 5 m2 area.
11. Ethiozeb (Mancozeb) 80% WP	used as preventive and immediately at the diseases prvalence stage to control:-
	# early and late blight, downy mildew, anthracnose, rust on tomato, potato carrot and flower plants at the rate of 1.7-2.2 kg on 14 days intervals,
	# downy mildew, purple blotch, on onion plants 2.2-3.5 on 7 days interval,
	# downy mildew, alternaria anthracnose, leaf mold, on vegetables, cucurbits, peanuts, soya bean plants 1.7-2.2 kg on 7-14 days interval,
	# downy mildew, anthracnose, black spot, on citrus, mango, grapes plants 150 -200 gm on 15-17 days interval
	# rust and blight on cereals, pulses 1.25-2 kg on 15-17 days interval,
	Against broad leaf. Post emergencies selective and systematic broad leavedweed killer. Tef, wheat, barley, oat 1 liter whole farm. Maize, sorghum 0.5-1 liter between rows. Sugar cane 2-3 lts between rows. Coffee plant 2-3 lts between trees
II/ For animal Ecto parasite	
12. Vetazion (Diazinon) 60% EC	it is used for treatment and control of lice, mange mite, keds in domestic animals except chickens dilute 1;1000 ratio to spray or dip animals

13. Ethiomiraz (Amitiraz) 12.5% EC	it is used for treatment and control of sarcoptic mange and lice in pigs; ticks and mange mite and ice in cattle; ticks, keds and lice in sheep and goats dilute 2 ml with one liter water to spray or dip animals.
III/ for malaria vector control	
14. LLTIN (Long lasting isecticides treated mosquito nets)	3 years protection from malaria and other vector born diseases without chemical treatment. Avoid frequent wash, if required, wash gently and not bleaching. Avoid exposure to sun.
15. Ethiodemetrin (Deltamethrin) 2.5% WDP	1 gram of the product (WDP) for 1 meter square area diluted in 40 ml water for indoor spray
16. Ethiotrothion (Fenetrothion) 40% WP	is recommended for spray at a rate 5 gram/meter square are diluted in 40 ml water for indoor spray against malaria vetor control (mosquito)
17. Ethiopoxure (Propoxure) 50% WP	It is recommended for spray at a dosage of 5 gram/ square meter diluted in 40 ml water for indoor spray against malaria vector control (mosquito).
IV/ Products on pipe line	
18. Ethiopyrifos (Chloropyrifos) 48% EC	
19. Ethioconazole (Propiconzole) 25% EC	
20. Ethiodemethrin (Deltamethrin) 0.6 ULV	

The products have an estimated shelf life of 2 years. Factors that affect the shelf life include:

- Appropriate air conditioning
- Warehouse conditions
- Quality of raw materials.

The organization uses three different types of packaging materials:

1. Cartoon that is supplied to them from a local company called Burayu.
2. Plastic Bottles are imported from Egypt and Israel.

Adami Tulu Persticides Processing S.C. has received certification from Quality Management System (Ethiopia) while the Environmental Management System is still in progress.

4. Agriculture Machinery and Implements

The use of agriculture machinery has not yet been adopted into the agronomic practice of Ethiopia. There are however a number of organizations that import and supply such machineries such as tractors and agricultural implements such as planters, harvesters, and so on. A major distributor of these machineries is Kaleb Service Farmers House PLC.

Kaleb Service Farmers House PLC is a private limited company legally established in 1993 EC and registered under Ministry of Trade as an importer of agricultural and construction machineries and implements. The organization imports these machineries and implements from countries such as Germany, Brazil, South Africa, India and Japan. Currently the activities of the organization has expanded to include export of agricultural products such as Sesame, Peanuts, Pulses, Spices and other oil seeds to countries such as Europe, Japan and Israel. Furthermore, it also supplies spare parts for the different machineries imported-agriculture and construction; assembles corn sheller and seed drill in its workshop and provides installation, maintenance, and training services for these machineries.

Product Lines:

The major activity of the organization is importing agricultural and construction machineries and the export of Sesame. The full product line includes:-

- Machineries: Combine Harvester, Tractor, Balers, Excavator, Loader, Greader.
- Generators
- Irrigation System- sprinkler, drip
- Implements: Disk Plough, Disc Harrow, Planter, Leveler, Fertilizer Spreader, Sprayers, Knapsack Sprayers, and Agricultural Tiers.

The brands of the imported machineries include Claas and Amazone from Germany; Baldan and Jacto from Brazil; Bell from South Africa; B.K.T. from India; Hitachi from Japan and ROME from USA. The imported Generators are assembled and imported from Egypt while the brand name of the Irrigation system is Jain and is imported from India.

The products that are currently being exported are:

- Sesame- Japan, Middle East, Holland, Germany, Israel, Philistines.
- Peanut- China,
- Pulses- Japan- not that much. Searching for a market for china and Middle East. Spices
- Coffee- Japan

Additionally, Kaleb also imports and supplies organic chemicals such as T-Stanes Nimbecide and Green Miracle from India.

Sesame Growers

Understanding of the scattered and small-scale nature of the Ethiopian production system, the role of aggregation in improving the agricultural marketing system is given due emphasis in the national agricultural marketing strategy and this is sought to be achieved through Primary Cooperatives and Cooperative Unions. Normally, Cooperative Unions get support for regional cooperative promotion offices in the form of technical advice and provision of market information.

While some Sesame farmers sell their product to different sesame collectors, others sell to the same collectors. Those who sell to the same sesame collectors indicated that the reasons for doing so are mainly due to the following: there are always the same buyers in the market long-established relations exist with those buyers, the farmers trust them and they give them good prices.

The reasons behind why farmers sell their sesame to different buyers are fact that they come at different times, they sell to those who offer them better prices, it doesn’t matter to which collector they sell, and farmers are not in a position to choose buyers. These responses clearly

indicate that price is the most important factor influencing farmers' selling behaviour, and this, in turn, shapes their market relations and governance.

Cooperatives play an integral role in the Sesame Sector in Ethiopia. According to Cooperative Societies Proclamation Number 147/1998, Cooperatives are defined as a society established by individuals on voluntary basis to collectively solve their economic and social problems and to democratically manage the same. In line with this definition the Cooperative Societies are divided into:

- Agricultural Cooperative Societies,
- Housing Cooperative Societies,
- Industrial and Artisans Producers' Cooperative Societies,
- Consumers Cooperative Societies,
- Saving and Credit Cooperative Societies,
- Fishery Cooperative Societies, and
- Mining Cooperative Societies.

These different Cooperative societies are established in order to solve problems such as input supplies shortage, finance problems, marketing problems and other problems faced by small holder farmers, commercial farmers, and other investors located in different parts of the country. As per the level of the problem faced, there are three different cooperative types.

Primary Cooperative will attend to the different needs of small holder and commercial farmers. This will include supplying

- inputs such as seeds, fertilizers and insecticide/pesticides/fungicides,
- Selling harvested products, and
- Provide loans.

According to the information provided by Federal Cooperative Agency, there are 43,255 Primary Cooperatives operational in 2004 EC.

Table 9: Number of Primary Cooperatives located in the different parts of Ethiopia

Parameters	Amhara	SNNPR	Oromiya	Tigray	Benishangul Gumz	Diredawa	Harrar	Gambella	Somali	Afar	Addis Ababa	Total
Total Number	7,050	7,905	11,321	3,746	308	1,060	448	238	1,332	365	9,482	**43,255**
Members	2,445,401	1,209,337	1,718,845	612,631	23,959	37,337	14,564	8,812	42,261	16,517	437,030	**6,566,694**
Male	2,006,785	1,016,313	1,414,436	441,647	18,068	23,328	9,902	4,782	24,203	10,638	183,169	**5,153,271**
Female	438,616	193,024	304,409	170,984	5,891	14,009	4,662	4,030	18,058	5,879	253,861	**1,413,423**
Capital	377,000,000	381,000,000	1,020,000,000	204,000,000	76,270,993	9,298,801	18,744,071	14,187,653	24,888,528	14,345,480	786,029,226	**2,925,764,752**

Source: *Federal Cooperative Agency*

Case Study: Kafta-Humera Sesame Production and Sales Cooperative

Kafta-Humera Sesame Production and Sales Cooperative was established in 2012 GC with a start-up capital of ETB 979,500. The capital was raised from the sale of shares at ETB 10,000/share & ETB 100 for registration fee. As a result of the commission earned during operation, the current capital of the Cooperative is ETB 1,435,500. It currently has 95 investors as members.

No	Name of Member	Male	Female
1	Mamay Beza Abreha	M	
2	Tsegay Girmay Gidey	M	
3	Teklay Kidanu Tesfay	M	
4	Alem Gebrehanese Berhe	M	
5	Belay Tadele Weldemichael	M	
6	Gebrehiwot Hailu Teklegergis	M	
7	Shimuye Mesele Gashe	M	
8	Tesfay Belay Yifter	M	
9	Guesh Asegahegn	M	
10	Fisiha W/Aregay Hagos	M	
11	Asmelash Abreha G/Medhin	M	
12	Risqu Birara Lema	M	
13	Kahsay Berhe Abreha	M	
14	Alem G/tsadiq Weldemichael		F
15	Asmare Mesfin Tasew	M	
16	Yohanese tega Abitew	M	
17	Almitu Asres Yemataye		F
18	Teshager Aregay tekie	M	
19	Abebe Lewte Getaw	M	
20	Haile Shekole Beyene	M	
21	G/Hiwot G/Medhin W/Michael	M	
22	G/Silasie G/Tsadiq Genzbu	M	
23	Zebib Abrha T/Medhin	M	
24	Desta Berhe Welu	M	
25	Zewdu Asgedom Haile	M	
26	Asgedom Haile Desu	M	
27	Mamay G/Mariam Mesfin	M	
28	Hailemariam Gebeyehu Yigzaw	M	
29	Mamu Serebe Lema	M	
30	Gebehu Eshete Lema	M	
31	Berhe Tekalign Weldesilasie	M	
32	Enquayeneh Fantay Takele	M	
33	Gultie Alemayehu Berhe	M	
34	Tetemqe Tsegay Hagos	M	
35	Kinfe Araya Meche	M	
36	Yenehun Tadese Reda	M	

37	Tafere Alemayehu Berhe	M	
38	Tiru Lewte Getaw	M	
39	Fantaye Takele Eshetu	M	
40	Yibrah Gebresilasie Yihdego	M	
41	Amna Negash Mehamedzen		F
42	Berhje Weldu Gezahegn	M	
43	Haji Nueayni Tahir Yasin	M	
44	Salih Ebrahim Wubneh	M	
45	Mulualem Gebretsadiq	M	
46	Abreha Gebremedhin Kidane	M	
47	Birhane Bahta Hagos	M	
48	Tekeste Kifle Weldegebriel	M	
49	Shimuye Gebru Weldemichael	M	
50	Zenebe Belay Tafere	M	
51	Gebremesqel Mengistu	M	
52	Melese Reda Getaw	M	
53	Birey Hiruy Gola		F
54	Gezahegn Alemayehu Berhe	M	
55	Amare Tiruneh Lemlem	M	
56	Asgedom Beyene warsew	M	
57	Aziza Tahir Fitwi		F
58	Teweldemedhin Tadese Maru	M	
59	Haregeweini Tela Weldetinsae	M	
60	Gebremichael Gebrehiwot Abay	M	
61	Kesete Bahta Hagos	M	
62	Gebresilasie Gebru Desta	M	
63	Azeb Kahsay Weldemariam	M	
64	Weldetatyos Kidanu Hagos	M	
65	Guesh Abreha Gebremedhin	M	
66	Tsegay, Amsal & Rute P.L.C	M	
67	Fantu Gezahegn Zeleqe	M	
68	G/Medhin G/Hiwot G/Mariam	M	
69	Fantahun Bahta Kassa	M	
70	Ayenew Sereqebirhan G/Mariam	M	
71	Abadi Teweldemedhin	M	
72	Getachew Mamo Reda	M	
73	Berihun Mekonen Belay	M	
74	Tewelde Hailu Fotien	M	

75	Dagnew Kebede Mola	M	
76	Gebremesqel Kidane Yaynishet	M	
77	Sharew Gebretinsae Abitew	M	
78	Tesfu Bahire Kebedew	M	
79	Tekie Bahta Debesu	M	
80	Migibnesh Belay Gebresilasie		F
81	Beshir Mehamed Mekonen	M	
82	Yibrah Kinfe Teklu	M	
83	Abay Kinfe Teklu	M	
84	Hailesilasie G/Giorgis Abreha	M	
85	Belay Hayelom Baynesagn	M	
86	G/Mesqel G/kidan Teklegergis	M	
87	Asmelash G/Giorgis	M	
88	Teklay Hagos Desta	M	
89	Kebede Yihdego Gebru	M	
90	G/her Abera Berhe	M	
91	Weldu G/her Yihdego	M	
92	Tsegay Asmelash Abunu	M	
93	Tesfay Medhaniye G/her	M	
94	Adisey G/yesus Alemshet	M	
95	G/Libanos Mebrahtu	M	

Number of Employees: 5

Inputs

- Seed- Sesame; Hirhir type is the dominant seed
- Fertilizer- UREA and DAP
- Insecticide/Herbicides/Fungicide: Malathine, Carathe, Endosulphan, Manchozeb, & Ridomal mainly supplied by office of Agriculture

Product

The members of the Cooperative have a total of 240,000 Hectar land while the yield is estimated at 3 – 4 Quintal/Hectar. The Cooperative collects the Humera Type Sesame harvested by members which is exported to destinations such as China and Holland at an estimated price of USD 1,950/Tonne and has so far exported 2,190 Tonnes. The Cooperative Union is using the

Cleaning Machine owned by Tilahun Mesafint capacity being 5 Tonne/Hour and costs, on average, ETB 24.00.

The office in Addis Ababa is solely specializes on Marketing. The shelf life of the Cleaned Sesame is estimated at 1 year, which is affected by insects, dust, and moisture during the storage time in a warehouse. The products are packed in PP bags (50KGs) that is supplied by Damot Industrial PLC at a price of 7.48/Pcs.

Warehouse

The institution uses different warehouses located in different locations in Humera with capacity ranging from 5,000 – 50,000 Quintal.

Transportation

The Cooperative employs the services of the transportation service providers. The type of trucks usually used are Euro Trackers and N_3 with capacity of 400 – 450 Quintal and 250 Quintal respectively.

Cooperative Unions is an entity comprised of two or more Primary Cooperatives which is established with the intension of solving problems that couldn't be solved at the level of Primary Cooperatives. According to the information provided by Federal Cooperative Agency, there are 278 Cooperative Unions in Ethiopia.

Table 10: Number of Secondary Cooperatives/Cooperative Unions located in the different parts of Ethiopia

Parameters	Amhara	SNNPR	Oromiya	Tigray	Benishangul Gumz	Diredawa	Harrar	Addis Ababa	Total
Total Number	47	44	113	44	14	2	1	13	**278**
Members	1,549	1,102	3,938	734	115	59	7	339	**7,843**
Capital	178,624,657	124,999,516	975,689,818	57,488,828	8,025,070	2,143,000	3,000,000	23,631,740	**1,373,602,629**

Source: *Federal Cooperative Agency*

Case Study: Setit Humera Cooperative Union

Setit Humera Cooperatives Union was established in 1994 consisting of 4 Basic Cooperatives, which amounted to 2,222 Small Scale Farmers, and a start-up capital of ETB 100,000. The mission was to solve the major problems faced by the Basic Cooperatives and small scale farmers with regard to issues related to input supply-seed, fertilizer, insecticide, and farming machinery. The concern of the Cooperative Union also extended to includes providing financing schemes to access these inputs especially relating to providing loans. Throughout the years, the institution has also engaged in capacity building activities in the form of training and facilitation.

The major product of the Cooperative Union is Sesame. Setit Humera Cooperative Union is currently operating out of an office in Humera with 8 employees and a capital of ETB 1,419,925.01. On average, a small holder farmer is expected to own a land with an area of 8 Hectar with a total estimated yield of 375,136.00 Quintal.

Currently, the Union has 18 Basic Cooperatives with 11,723 members in total (out of which 25% are women), all of which are located in the Kafta Humera Woreda. Taking into consideration the 20 centers currently in existence in Humera, the Union's Basic Cooperatives are operating in an almost one-to-one basis.

S.N	Name of Primary Cooperative	Membership Size			Specific Location	Total Land Holding of Member HH farmers (Hectares)	Average annual Sesame production potential in quintals
		Male	Female	Total	Kebelle		
1	Emba-dirkutan Multipurpose Cooperative	238	32	270	Adi Goshu	2,160.00	8,640.00
2	Hintset Multipurpose Cooperative	193	59	252	May-weyni	2,016.00	8,064.00
3	Hadnet Multipurpose Cooperative	126	48	174	May-Keyih	1,392.00	5,568.00
4	Wuhdet Multipurpose Cooperative	305	66	371	Wuhdet	2,968.00	11,872.00
5	Mussie Multipurpose Cooperative	610	401	1,011	Hagere-Selam	8,088.00	32,352.00
6	Miebale Multipurpose Cooperative	793	268	1,061	Adebay	8,488.00	33,952.00
7	Netsanet Multipurpose Cooperative	493	96	589	Rawyan	4,712.00	18,848.00
8	Maebel Multipurpose Cooperative	1,528	476	2,004	Bereket	16,032.00	64,128.00
9	Fana-Limat Multipurpose Cooperative	652	129	781	May-Kadra	6,248.00	24,992.00
10	Ruwasa Multipurpose Cooperative	160	36	196	Ruwassa	1,568.00	6,272.00
11	Sengede Multipurpose Cooperative	618	189	807	Erob	6,456.00	25,824.00
12	Lemlem Multipurpose				Tirkan	6,456.00	25,824.00

	Cooperative	584	223	807			
13	Maernet Multipurpose Cooperative	690	183	873	Humer-01	6,984.00	27,936.00
14	Shewit Multipurpose Cooperative	595	232	827	Baeker	6,616.00	26,464.00
15	Aditsetser Multipurpose Cooperative	595	232	827	Adi-Tsetser	6,616.00	26,464.00
16	Fana Multipurpose Cooperative	165	82	247	Shiglil	1,976.00	7,904.00
17	Aidola Multipurpose Cooperative	98	42	140	Aidola	1,120.00	4,480.00
18	Selam Multipurpose Cooperative	388	98	486	Adi-Hirdi	3,888.00	15,552.00
Total		8,831	2,892	11,723		93,784.00	375,136.00

Number of Employees: 8

Inputs

- **Seed:** Sesame and Sorghum
- **Pesticide:** Herbicides and pesticides
- **Fertilizer:** DAP and Urea

Products

The Cooperative Union's major product is Sesame although its full product line includes Sorghum, fertilizers, improved seeds, merchandises, and so on. Sesame harvested by the members has two destinations: ECX or export. The Cooperative Union exports the Sesame after cleaning it using its own cleaning machine imported from Denmark: gravity separator. It exports about 1,200 – 1,300 Ton per year to countries such as China, Turkey, Israel, and Jordan. Each country has a different level of cleaned sesame but the Cleaning machine can go up to 99.5%.

Certification

The Cooperative Union by itself is not certified although 2 member Primary Cooperatives have Organic Certificates.

Warehouse

No	Location of Warehouse	Area (M^2)	Capacity (Quintal)	Remark
1	Humera	10,000	5000.00	Operational
2	Humera		50,000	65% Complete. Expected to be completed in June 2013.

There are two types of **Cooperative Federations** that are established in Ethiopia: Saving and Credit Cooperatives and Multipurpose Cooperatives. These Cooperatives are established in order to provide capacity building, training and marketing services. There are only three Cooperative Federations that are operational in Ethiopia and they are located in Oromiya, Tigray and Southern Nations, Nationalities and People's Representative (SNNPR). With the exception of the SNNPR, the Cooperative Federations in the other regions have Cooperative Unions as members. The Cooperative Federation in SNNPR includes Primary Cooperatives as well.

The structure cooperative federation is still a point of argument among two theories. One of these theories states that there should only be one Cooperative Federation that is to be supported by the Federal Cooperative Agency. The other states that Cooperative Federations should be established at regional level and supported by the Regional Cooperative Agencies. Theoretically, they are the Cooperative Federations are to be structured under a 'League' although it has not been established yet.

Case Study: Tigray Multi Purpose Marketing Federation

Tigray Multi Purpose Marketing Federation LTD Cooperative (TMF) was established on Tikimit 22, 2002 EC, in accordance with Cooperative Proclamation 145/2000 with a capital of ETB 7.5 Million incorporating 29 Cooperative Unions and a Primary Cooperative. It was established with the following objectives:

- To involve in those activities, which the primary cooperatives and unions cannot manage independently;
- To improve the bargaining power of members and provide advocacy services;
- To increase the market share of the union and member cooperatives;
- To promote education and training for members, employees and community;
- To involve in natural resource development and management;
- To assist members address their socio-economic challenges;
- Provide technological expertise and training to the farmers, employees and communities to transform their economic welfare and promote modern agricultural practices;
- Facilitate a competitive market for all products, both inputs and crop sales and make the primary cooperatives the prime beneficiaries; and

- To create employment opportunity to youth and women.

It is currently engaged in import, export, and merchandising business. The products and services included in this parameter are:

- Export: Sesame Seeds, Coffee, Sorghum, and Natural gum
- Livestock rearing
- Agricultural input supply such as Seeds, Pesticides, Insecticides, Herbicides, Fertilizers
- Arranging credit facilities to members
- Provision of storage facility for its members free of charge
- Construction materials
- Training and business development services to member farmer organizations
- Assistance in marketing for the harvested products in the local and international market

Tigray Multipurpose Marketing Federation LTD Cooperative currently has 45 members: 31 Cooperative Unions, 1 Primary Cooperative, and 13 Small Holder farmers.

Table 11: Members of the Tigray Multi-purpose Marketing Federation LTD Cooperative

No	Name of Institution	No. of Primary Cooperatives	Number of Members		Size of Farm (Hectar)	Type of Sesame	Quantity Supplied in recent Harvest (Quintal)	Address
			Male	Female				Telephone Number
1	Dansha Awera Cooperative Union	8	6,647	1,676		Whitish	10,000	+251-344-36-0303
2	Lemlem Welqayet Cooperative Union	5	9,110	2,216		Whitish	5,000	+251-914-77-4667
3	Setit Hummera Cooperative Union	18	8,831	2,892	93,784	Whitish		+251-344-48-0244
4	Tekeze Cooperative Union	4	3,262	779		Whitish	1,000	+251-345-50-0098
5	Seyemti Adyabo Cooperative Union	17	6,181	1,330				+251-914-72-0239
6	Feleg Cooperative Union	17	8,168	710		Whitish	250	+251-346-61-0280
7	Medebay Zena Cooperative Union	14	6,988	1,486				+251-347-76-0293
8	Shewit Cooperative Union	12	6,466	915				+251-344-44-2190
9	Selam Cooperative Union	12	7,601	1,470				+251-344-68-0313
10	Hawelti Cooperative Union	13	8,716	1,971				+251-347-75-1874
11	Jira Cooperative Union	17	6,913	1,961				+251-345-57-0129
12	Geter Adwa Cooperative Union	15	10,244	2,827				+251-347-71-2292
13	Ahferom Cooperative Union	22	10,217	3,432				+251-344-49-0666

14	Werie Cooperative Union	20	10,836	2,063				+251-347-75-2585
15	Mereb Cooperative Union	6	7,599	2,075				+251-345-55-0156
16	Debre Ansa Cooperative Union	19	10,157	3,089		Whitish	150	+251-344-46-995
17	Aberglele Cooperative Union	13	7,073	1,614				+251-344-22-0192
18	Welwalo Cooperative Union	11	10,005	3,824				+251-914-10-4532
19	Temesgen Cooperative Union	8	8,478	4,215				+251-345-59-0151
20	Semret Cooperative Union	9	13,556	7,088				+251-344-47-0298
21	Atsegebet Cooperative Union	10	8,980	5,690				+251-344-41-0285
22	Hagere Selam Cooperative Union	10	9,980	2,364				+251-914-74-8719, +251-373-39-0352
23	Enderta Cooperative Union	17	16,896	3,280				+251-344-40-1382
24	Adi Gudem Cooperative Union	11	16,593	6,034				+251-344-37-0045
25	Sahrti Samre Cooperative Union	17	10,562	3,486		Whitish	500	+251-345-54-0088
26	Alaje Cooperative Union	10	11,401	4,166				+251-344-41-0271
27	Bokera Cooperative Union	11	7,156	3,670				+251-348-77-0055
28	Lemlem Raya Cooperative Union	9	14,523	6,561				+251-346-64-0020
29	Hashenge Cooperative Union	16	17,166	6,144				+251-345-51-0367

30	Shewit Alamata Cooperative Union	9	8,875	3,462				+251-347-74-0134
31	Meadi Kelete Awlaelo Cooperative Union	15	10,015	3,731				+251-344-48-0244
32	Nihbi Primary Cooperative		50	15				
33	Desta Kidane				450	Whitish	2,200	
34	Mulualem G/Tsadiq				500	Whitish	800	
35	Ali Mehamed Ferah				1,200	Whitish	2,480	
36	Shewit Alemayoh					Whitish		
37	Mengestu Hadgu				700	Whitish	1,400	
38	Tsegay W/Hiorges				300	Whitish		
39	Tewelde Haile				1,263	Whitish	3,000	
40	Shimye Gebru					Whitish		
41	Berhe Weldu				460	Whitish		
42	Fisseha Gebru				100	Whitish		
43	Temalew Werqu				530	Whitish		
44	Kinfe Araya				525	Whitish	300	
45	G/Wahid Eskeya				200	Whitish	400	

Source: *TMF, FCA*

Inputs

The institution is not directly engaged in the farming/harvesting process but the members are currently using the following inputs:

- Insecticide, pesticides, and herbicides-
  Herbicide brand 2-4D. Last year's consumption in the major sesame cultivating Woredas is 30,000 Ltrs.
- Fertilizer- The fertilizer that is used during the cultivation is DAP and UREA. The total quantity of the fertilizer used in the last harvest season was 180,000 Quintal.
- There are a wide range of farming technologies that are being used, which includes tractors and traditional methods of cultivation.
- Packaging- The organization uses PP Bag that is supplied by Flexible Factory, etc

Processing

Tigray Multi-Purpose Marketing Federation LTD Cooperative has 3 Cleaning Machines (2 in Humera and 1 in Densha) with a capacity of 60 Quintal per hour/machine and can clean up to 99.8%. The total cost of the machinery is estimated at ETB 1,200,000. The Cleaned Sesame is exported to destinations such as China, Japan, and Israel and has a shelf life of a year. The factors that affect shelf life are

- Temperature
- Pests
- Warehouse handling

The institution believes that factors such as color and oil content have made the product unique.

Certification

The organization has no international certification to date.

Transportation

TMF has 4 Euro Tracker trucks that are used for transportation of inputs and the cleaned sesame but it also additionally uses the transportation services provided by member's trucks.

Warehouse

No	Location of Warehouse	Area (M^2)	Capacity (Quintal)
1	Hummera	10,000	100,000
2	Mekelle	4,500	80,000

Sesame Processors

1. **Sesame Seed Exporters**

Case Study: Belayneh Kindie Import and Export

Belayneh Kindie Import and Export is a private limited company legally established in 2005 (GC), and registered under Ministry of Trade as an exporting company with an initial capital of ETB 3 million. The transport enterprise, once a member of the organization, was established as Gerelta Business Private Limited Company with 6 heavy duty trucks in 2008 (GC) in order to provide services such as custom clearing, representing importers and exporters at custom, and port handling for import and export. The organization is engaged in a wide variety of business activities such as import, export, and service provision. On average the organization exports around 300,000 Quintals of cleaned Sesame per year to destinations such as China, Middle East, Israel, and Europe. The buyers in these countries further process it to the level of Tahini, Halawa, Cake, etc. It has plans of expanding its product line to include Hulled Sesame and export to markets in America and Europe.

Product Lines:

1. **Export:** Whitish Humera and Wellega Sesame, Black shinny type Niger Seed, Pea beans, Chick peas, and Lentils.
2. **Services:** Transport and Custom Clearance.
3. **Import:** Palm Oil, Steel bar, Tire, Paper, Roof stone
4. **Affiliated organizations (other organizations owned by the proprietor):** Ethiopia Hotel, Ras Hotel,

Office: Belayneh Kindie Import and Export has a head office in Addis Ababa while there are branch offices in Humera, Metema, Mizan Teferi, Gelan, and Tatek that are actively working on Sesame. Other affiliated organizations are located in Addis Ababa, Nazereth and Bahirdar.

Number of Farms: The organization owns a farm in Mizan Teferi with an area of 3,000 hectars that the organization plans on cultivating Coffee and Sesame. The expected harvest of Sesame from this land is not sufficient for the orders placed on Belayneh Kindie Import and Export and thus the purchase from ECX will continue.

Warehouse:

The organization has five warehouses located in different parts of Ethiopia. While four are fully operational, Tatek warehouse is still under construction.

No	Location of the Warehouse	Capacity (Quintal)
1	Gelan	150,000 – 200,000
2	Tatek	>= 150,000 – 200,000
3	Burayo	100,000 – 150,000
4	Metema	20,000
5	Humera	100,000

Machineries:

There are six cleaning machines (three imported and three locally supplied) that are being used in the export of Sesame Seed that is cleaned at 99%:

No	Location	Quantity	Purpose	Capacity	Origin
1	Gelan	1	Cleaning	350 -360 Tonnes per Hour	
2	Burayo	1	Cleaning		
3	Metema	1	Cleaning		
4	Humera	3	Cleaning		

Transportation:

The organization currently owns 28 Iveco truckers with a loading capacity of 40 Tons each which are transporting export cargo from Ethiopia to Djibouti port and Import cargo from Djibouti port to our warehouses.

No	Type of Vehicle	Quantity	Capacity
1	Iveco Truck	28	40 Tons

Input Types:

Although the organization has not started cultivation on the land located at Mizan Teferi, it is not planning on Fertilizer in order to maintain the organic character of the Harvest. Currently, the only input it is using is the White Humera and Wollega Sesame Seed (usually Grade 1, 2) that is currently being traded at ECX market.

Marketing

The value-add level of Sesame that is supplied by the organization is still at Cleaned Sesame level. It is specified that the origin of the product is Ethiopia on the packaging, PP bag, which is supplied by Damot Industrial and Commercial PLC. They are currently supplying their products to both brokers and directly to factories located in the export destinations.

2. Value Addition

There are only three organizations that are currently engaged in value addition of Sesame: Selet Hulling PLC, Dipasa Agro PLC, and Ambasel Trading House PLC

Case Study: Selet Hulling PLC

Selet Hulling PLC was legally established in 2007 GC as a Joint Venture between Kaleb Service Farmers House PLC and Dutch based holding company called The Organic Cooperation (TOC) B.V. TOC, owned by Sun Opta Inc., specializes in international sourcing and supply of certified organic ingredients for the world food and bakery industry (which includes grains; seeds; pulses; dried fruits and nuts; cocoa and coffee; sugar and sweeteners; juices, purees and concentrates; frozen fruits and vegetables, oils and fats, and animal feed) and draws its input from countries such as Ethiopia, Serbia, China, Thailand, Mexico, Ghana, Bulgaria, Philippines, Vietnam, etc. Selet Hulling was established with the intention of producing organic hulled sesame seeds in a factory that employs the dry/mechanic hulling method of processing and has a capacity of 1,500 – 1,700 Kg per hour.

The major input for the factory is 'Humera type' Sesame Seed/'t-85 variety' which is collected from two sources: the organization's own farm and out-grower scheme. The organization has a 300ha farm on which sesame, cotton, soya bean, sunflower and mung beans are grown. Since the harvest from this farm is not sufficient for the operation capacity that has been planned for the factory, the organization has engaged in an out-grower scheme. In this arrangement, Selet Hulling will be responsible to provide the necessary input for the farmers, through pre-finance, and will purchase the harvest at the current market price of the product at the time of harvest. There are 2 Cooperative Unions, namely Fana and Shewit Cooperative Unions, that are involved in this scheme including 2,000 small holder farmers.

Name of Cooperative Union	**Basic Cooperatives**	**Male**	**Female**	**Region**
Shewit	11	6,542	1,022	Tigray
Fana	13	17,338	1,432	Amhara
Total		**26,334**		

The factory rests on a 6,000 square meter plot of land 20KMs outside of Addis Ababa. Its construction was started in November, 2007. The factory consists of sesame cleaning line, sesame dry-hulling line and two warehouses (one for raw materials and another for finished products). The cleaning line machineries were imported from Denmark while the dry-hulling line was purchased from Spain, USA, Netherlands, and China. The reason behind the preference of dry-hulling method is because of the belief that it is more advantageous over the traditional wet hulling method as a result of lower water consumption and less impact on the environment. The factory is currently using rain water that has been filtered in multiple steps and treated in UV.

Certifications:

- ISO 22.000:2005 (DQS) Certified
- Fully Organic- Control Union Certifications
- Complies fully with organic rules and regulations such as:- EEC 834/2007; 889/2008 (EU), the NOP (US) and JAS (Japan)
- Works according to international quality systems like HACCP and ISO 22000

Case Study: Dipasa Agro PLC

Dipasa Agro PLC was legally established in April 30, 2008 as a JV between Dipasa Europe B.V, Netherlands and Agro Prom International PLC, Ethiopia. Both companies had experience in cultivation, processing, and exporting Sesame before the establishment of the JV.

The company is currently engaged in Cleaning, and Hulling and Roasting of Sesame. The outputs are completely exported. The export destinations include Far East, Middle East, North America and European Countries. The processing plant is located in Burayo, Oromia. The machineries are imported from America and Belgium. On average these machineries have the capacity to produce 20 Tonne of 99.99% Hulled Sesame per day.

The input for this processing plant is supplied from its own farm and three Primary Cooperatives through the Out grower scheme. The farm is located in Humera. On the other hand, the Out-grower Scheme was begun in March, 2012 with three Primary Cooperatives with:-

1. 1,700 Small Holder Farmers
2. 1,600 Small Holder Farmers
3. 1,400 Small Holder Farmers

Product Line:

Dipasa Agro PLC is currently engaged in exporting

- Cleaned natural sesame seeds
- Mechanically hulled sesame seeds, and
- Hulled and roasted sesame seeds

The detailed product description is as follows:

1. Physical Characteristics	
Color of seed	Humera whitish
Taste/smell	Typical sesame taste/smell
Appearance	Oval
FFA	Max 1.5%

Humidity	Max 5%
Purity	Min 99.95%
2. Microbiology	
Total plate count	<300,000 cfu/g
Yeast	<5,000 cfu/g
Mould	<5,000 cfu/g
Enterobacteriaceae	<10,000 cfu/g
Coliforms	<5,000 cfu/g
Salmonella	Neg/25g
Escherichia coli	<10 cfu/g
Staphylococcus aureus	<50 cfu/g
Bacillus cereus	<50 cfu/g
Sulphite reducing anaerobes	<50 cfu/g
Clostridium perfringens	<50 cfu/g
Faecal streptococci	<50 cfu/g
Campylobacter	<10 cfu/g
Listeria monocytogenes	<10 cfu/g
3. Pesticides	
BHC	Nil/g
DDT	Nil/g
ALDRIN	Nil/g
DETECTION LIMIT	0.01 PPM

These products have a shelf life of 18 months. The products are supplied with the following packaging-

- 25 kg net paper bag
- 50 lbs net paper bag
- 50 kg pp bag for cleaned natural sesame seed

- Stabilized big bags 500 – 750 kg net

Certifications:

- Organic Certification from BCS OKO-GARANTIE – the German organic certifier

Warehouse:

The organization has two different types of warehouses at the location of the factory located 20KMS out of Addis Ababa.

Case Study: Ambasel Trading House PLC

Ambasel Trading House PLC is a private limited company legally established in November, 2003 under the commercial law. It had began its processing in partnership with an Israel-based organization known as Sheba. The organization is engaged in various aspects of international trade such as import, export, whole sale distribution and business representation.

Ambasel Trading House PLC owns a factory located in Gonder that is housing the cleaning, hulling and tahini processing machineries that were imported from Turkey. The hulling machine has a size sorter and not a color sorter. In times that this machinery experience mechanical malfunction, the spare parts are being currently imported from Spain while technicians are being invited from all over the world-a very expensive affair. By using these machineries, the organization is currently engaged in export of raw whitish sesame seed (Humera and Metema); Hulled and Pealed Sesame Seed; Crushed Sesame (by-product of hulling) and Tahini to destinations such as USA, Japan, Israel, Turkey, Dubai and Polland. Additionally, Ambasel Trading House is providing cleaning services for cooperative and small holders in the region. This factory has the capacity of supplying 3,000 Quintal of Hulled Sesame and 760 Quintal of Tahini over a period of six months.

Product Lines:

The full product line of the organization includes:

1. Export
    - Coffee;
    - Oilseeds (Sesame Seeds, Niger Seeds, Cotton Seeds);

- Pulses (Haricot Beans, Lentils);
- Gum Olbanium;
- Spices (Ginger); and
- Other agricultural products.

2. Import
    - Agro-chemicals (Herbicides, Pesticides and Animal Medicine)
    - Construction Materials: Reinforcement iron bars; Pipes and fittings; Iron sheets, and so on.
    - Business and Technology: Cash Register Machine
    - Automotive Parts: Tyres, and so on
3. Wholesale Distribution
    - All imported products
    - Domestically produced industrial goods such as Matador Addis tyres, Sugar, Textiles, Blankets, Stationary Items, Agricultural Chemicals, and so on.
4. Business Representation
    - Spanish sickles, matches (La Pajarita)
    - Irrigation Machinery and Equipments (Irripars Reel Machine)
    - Tyres (Addis Tyre Company)
    - England matches and tools (Martindale)
    - Matabi Chemical Sprayers (Goizper)
    - Water pump and power generators (Yanching International)

Ambasel Trading House PLC is a registered member of:

- Ethiopian Oil Seed and Pulses Export Association;
- Addis Ababa Chamber of Commerce and Sectoral Associations;
- Ethiopian Chamber of Commerce; and
- Ethiopian Commodity Exchange.

Office:

The organization has a central office in Addis Ababa but has several branch offices in Bahirdar, Gondar, Debremarkos, Dessie and Debreberhan.

Certifications:

Certified by ISOQAR (UK)

- ISO 22000:2005 (Food Safety Management System)
- ISO 9001:2008 (Quality Management System)

Food and Drug Administration (FDA) Registered- USA

Warehouse:

The organization has three warehouses with a capacity of 45,000 tons.

Marketing

The Sesame products that are being exported (cleaned sesame products, hulled sesame, and Tahini) are still being represented under the brand name of Sheba. The organization is considering changing the brand name to Ambasel, since it already has a strong goodwill in Israel. In addition to the international market, the organization is currently considering supplying Tahini to the local market.

The products are currently being exported in PP Bags and Barrels that are both imported and purchased from local suppliers. The organization would like to use Vacuum bags but they are not available in the market. The local suppliers of PP Bags are Damot and Inova.

The products that are being supplied by Ambasel reach the international market through two tunnels: brokers and directly by the organization.

Institutions
Case Study: Ethiopian Commodity Exchange (ECX)

Ethiopia Commodity Exchange (ECX) was established as 'an autonomous public institution of the Federal Government4' with an authorized capital of ETB 250 million. Its mission statement is 'to connect all buyers and sellers in an efficient, reliable and transparent market by harnessing innovation and technology, and based on continuous learning, fairness and commitment to excellence'. It is currently the trading ground for exchange commodities such as Coffee, Sesame,

[4] Proclamation 550/2007

Haricot Beans, Wheat and Maize via members. There are two types of members: Intermediary and Trading Members. According to Proclamation No. 550/2007 members are engaged in trading of exchange commodities on their own account or for the account of others. There are currently 325 members, out of which 24 are Trading/Full Members.

The ECX gives a number of advantages to exporters such as warehousing, legally binding contracts, prompt payment system and grading services. But not all the actors along the value chain are pleased by the new system due to lack of awareness and misconception of the new system. Buyers had different issues about the ECX such as credibility, grading, handling and storage practices and lack of traceability.

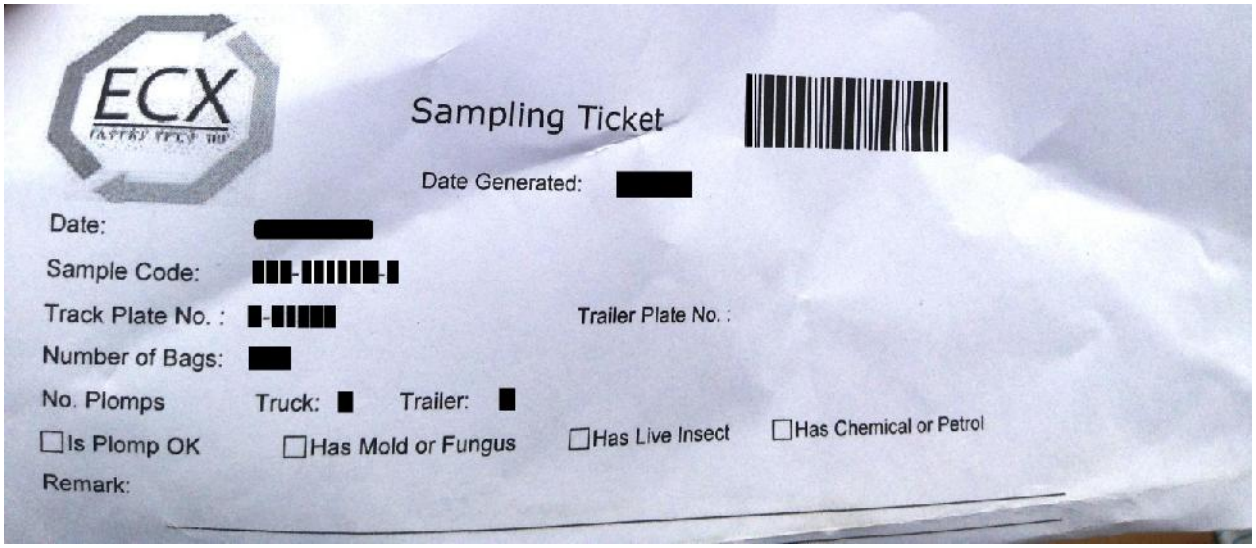
ECX started trading Sesame in 2009. The sesame that has been collected by the Intermediary and Trading Members has to be primarily be graded by Regional Agriculture Bureaus. The grading that is done at this level is basic and as a result of which a Discharge Sheet will be issued. This document includes details such as the origin of the product-in this case Sesame- and the amount of the Consignment[5].

Upon arrival at the ECX Warehouse, the driver ought to be able to present the Discharge Sheet for the Data Clerks that are located near the gate. After checking the validity of the Discharge Sheet, they will encode the data on the Discharge Sheet, assign ID number (referred to as Sample Number) and issue an Elecronic Sampling Ticket. A printed version of this ticket with the afore mentioned Sample Number and date, plate number of the truck and the exact number of plumps that have been used by Regional Agriculture bureaus to secure the consignement will be checked for any errors or discrepancy. Other details of the consignment that can visually be observed will be left open to be market by the warehouse technician. This technician will make a preliminary assessment of the product, in this case Sesame, in a restricted area on the premises but not in the Warehouse. He/She will check to ensure:

1. Uniformity of the capacity of the pp bags (100kg) each.
2. That there is no significant difference in the variety in all the pp bags;
3. There is no adultration being committed

[5] Consignment, in this context, refers to a truck (no model specification) containing the same product. This is the term that is customarily used.

4. That there is no visible presence of insects, chemicals (such as petrol), mold/fungus.



Sample- amounting to 4kg -will be taken from each Consignment from three different points within one PP Bag. This sample and the Sampling Ticket will be transported by runners to the Coding Room-where an unrelated ID will be allocated to the sample. By means of different runners the sample and the new codes will be delivered to the Laboratory. These two coding systems are employed in order to maintain the anonymity of the depositor and avoiding bais.

The first step taken by the Laboratory Technicians is to physically evaluate the sample and evaluate the color, ordor, pest presence, mold presence, and presence of moisture. The sample is

later divided into two- 2kg to be filed in case of complaints and 2kg for further analysis- by means of the Boerner Divider.

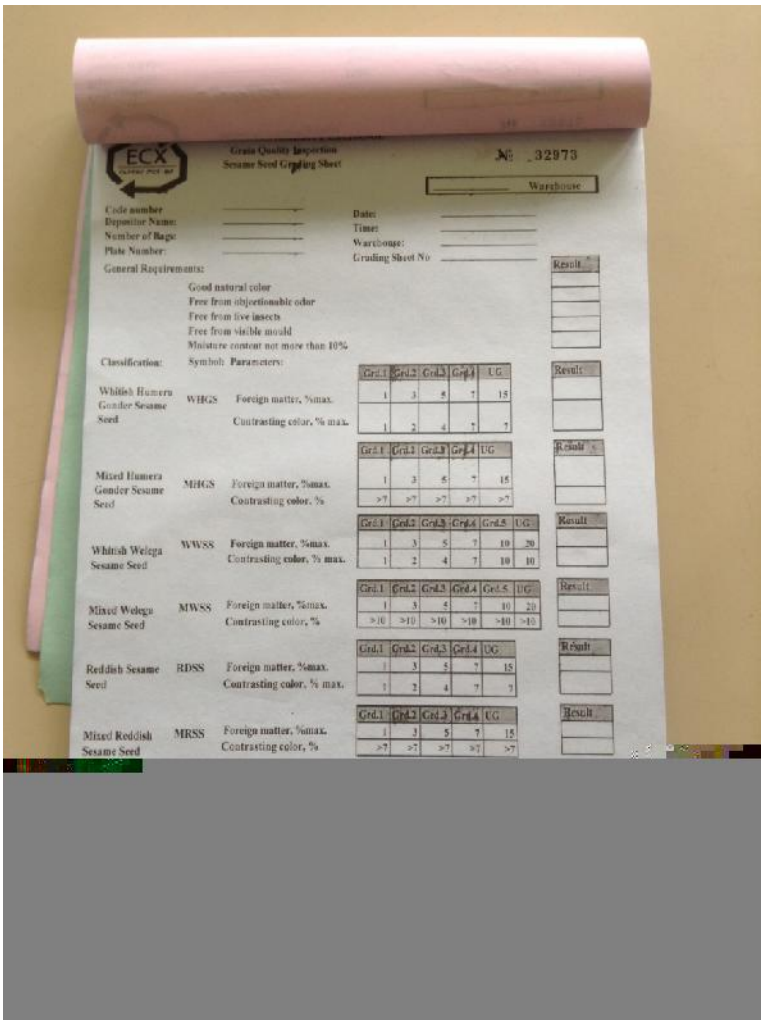
The Sample that is selected for further processing will undergo the grading process. The grading process will rely heavily on foreign matter and color. The calculations being:

Weight of foreign matter / Total weight of the Sample x 100%= Foreign Matter Percentage

Weight of Predominated Color / Total weight of the Sample x 100% = Contrasting Color Percentage

The predominated color in a sample of Seame is the color that is being dominated by the Contrasting color. For instance- when physically sorting the color of the Sesame Sample, if there are more White Sesame seeds rather than Redish. Then the predominated color is Red while the contrasting color is White.

After such analysis, the following form will be filled out and the form will be returned to the coding room.



Grain Quality Inspection
Sesame Seed Grading Sheet

№ 32973

Warehouse

Code number
Depositor Name:
Number of Bags:
Plate Number:
General Requirements:

Date:
Time:
Warehouse:
Grading Sheet No

Result

Good natural color
Free from objectionable odor
Free from live insects
Free from visible mould
Moisture content not more than 10%

Classification:	Symbol	Parameters:	Grd.1	Grd.2	Grd.3	Grd.4	Grd.5	UG	Result
Whitish Humera Gonder Sesame Seed	WHGS	Foreign matter, %max.	1	3	5	7		15	
		Contrasting color, % max.	1	2	4	7		7	
Mixed Humera Gonder Sesame Seed	MHGS	Foreign matter, %max.	1	3	5	7		15	
		Contrasting color, %	>7	>7	>7	>7		>7	
Whitish Welega Sesame Seed	WWSS	Foreign matter, %max.	1	3	5	7	10	20	
		Contrasting color, % max.	1	2	4	7	10	10	
Mixed Welega Sesame Seed	MWSS	Foreign matter, %max.	1	3	5	7	10	20	
		Contrasting color, %	>10	>10	>10	>10	>10	>10	
Reddish Sesame Seed	RDSS	Foreign matter, %max.	1	3	5	7		15	
		Contrasting color, % max.	1	2	4	7		7	
Mixed Reddish Sesame Seed	MRSS	Foreign matter, %max.	1	3	5	7		15	
		Contrasting color, %	>7	>7	>7	>7		>7	

Three copies of the Sesame Grading Sheet will be issued. One copy will remain with the laboratory, while the second copy will be given to customer and the third copy will be transported to warehouse. It is only after the completion of the grading system and issue of the grading sheet that the Consignment is accepted into the ECX Warehouse. Until such time, the Sesame will remain as it arrived.

If the customer believes that the grading was unfair, he/she can present their complaints to the organization and ECX will use the spare 2kg sample that was put aside to re-run the grading test but doesn't use the entire reserve sample. If the customer is still not satisfied with the result, then the Sesame will be transported to Ethiopian Confirmity Assessment Enterprise (ECAE). The customer is required to make a deposit-at this time- which will be used to cover the expenses of the test if the ECX grading is proven to be correct. Otherwise, ECX will have to cover the expense and reissue the grading sheet.

Upon deposit at the warehouse, a ticket will be issued by the warehouse custodian. The Sesame deposited is arranged by stacks based on its type and grade. After the successful deposit of the Sesame, the intermediary members will be able to trade the Sesame on the date their suppliers inform them to. Growers/suppliers of Sesame have the ability to choose the quantity and the price at which they choose to sell their product. Thus the price varies from time to time. In order to get a clearer picture of the price changes, please refer to the table below.

Table 12: Average Price of the Sesame varieties that have high activity from January, 2011 – May, 2013

Month	WHGS1	WHGS2	WHGS3	WHGS4	WHGSUG	WWSS2	WWSS3	WWSS4	WWSS5	WWSSUG
2011	**1,988**	**2,006**	**2,003**	**1,976**	**1,824**	**1,870**	**1,880**	**1,858**	**1,781**	**1,609**
January	1,985	1,972	1,967	1,943	1,791	1,873	1,871	1,848	1,755	1,594
February	1,992	1,984	1,980	1,968	1,848	1,897	1,879	1,853	1,828	1,760
March	1,944	1,944	1,937	1,919	1,797	1,847	1,842	1,824	1,802	1,660
April	2,000	1,991	1,986	1,983	1,826	1,900	1,885	1,854	1,806	1,675
May	2,035	2,057	2,048	2,026	1,906	1,980	1,988	1,965	1,942	1,748
June	2,110	2,076	2,071	2,064	1,908	2,011	2,004	1,990	1,949	1,800
July		2,071	2,066	2,067	1,901	2,012	1,974	1,964	1,956	1,880
August	2,110	2,107	2,107	2,091	1,923	1,983	1,996	1,959	1,871	
September		2,189	2,194	2,198	1,917	2,087	2,070	2,054	2,048	
October		2,132	2,152	2,223	1,905	1,868	1,894	1,876	1,837	
November	1,975	1,962	1,945	1,926	1,738	1,800	1,789	1,749	1,666	1,580
December	1,936	1,908	1,907	1,879	1,759	1,726	1,737	1,703	1,554	1,000
2012	**2,292**	**2,262**	**2,263**	**2,184**	**2,083**	**2,010**	**2,107**	**2,089**	**2,035**	**1,954**
January	1,921	1,914	1,915	1,883	1,776	1,725	1,732	1,703	1,619	1,372
February	1,939	1,924	1,925	1,881	1,784	1,692	1,717	1,683	1,619	1,428
March	2,009	1,986	1,988	1,937	1,822	1,810	1,840	1,812	1,761	1,480
April		2,242	2,237	2,175	2,018	2,093	2,119	2,108	2,069	1,901
May	2,348	2,382	2,380	2,327	2,111	2,231	2,222	2,191	2,134	1,955
June	2,383	2,389	2,392	2,335	2,120	2,171	2,205	2,193	2,159	1,975

July	2,585	2,504	2,503	2,422	2,165	2,292	2,324	2,311	2,256	2,119
August	2,708	2,685	2,667	2,661	2,213	2,635	2,444	2,440	2,346	2,238
September	2,688	2,698	2,689	2,693		2,270	2,327	2,343	2,358	1,913
October	2,620	2,434	2,388	2,148	2,000	2,281	2,305	2,217	2,122	1,955
November	2,497	2,332	2,321	2,253	2,129	2,302	2,273	2,248	2,164	2,017
December	2,648	2,648	2,647	2,589	2,480	2,487	2,489	2,469	2,413	2,334
2013	**3,435**	**3,394**	**3,390**	**3,325**	**3,195**	**3,166**	**3,181**	**3,186**	**3,142**	**3,006**
January	2,900	3,137	3,141	3,050	2,890	3,021	2,952	2,928	2,877	2,634
February	3,420	3,393	3,389	3,337	3,178	3,158	3,173	3,140	3,055	2,890
March	3,453	3,469	3,460	3,416	3,321	3,365	3,348	3,350	3,293	3,165
April	3,600	3,546	3,544	3,485	3,443	3,356	3,371	3,376	3,360	3,265
May	3,615	3,562	3,558	3,498	3,456		3,387	3,412	3,448	3,290

Business Environment

1. Access to Finance

Access to adequate finance is a key driver of progress in a given sector. In Ethiopia finance is one of the major constraints that limit the development of agricultural sector in general and sesame sub sector in particular. Sesame Farmers and businesses are challenged by efficient access to finance. Smallholder sesame farmers and cooperatives often cite challenges obtaining necessary credit and financing as contributing factors to low yields and poor harvests. To purchase the proper sesame seeds, producers require up-front capital; without this capital, farmers are often forced to re-use old seeds or miss the proper planting season while they scramble to get the capital they require. Financing labor costs is also too high for farmers during harvesting and this impose a serious problem on farmers total production and meting contract agreements regarding output.

In addition finance is also a key challenge for farmers to enter into value addition activities and hold processing machineries and warehousing. The Government of Ethiopia and several other NGO's are attempting and implementing key interventions that will help mitigate these financial constraints and its impact The ATA is already engaging with sesame cooperatives, working to improve capacity and strengthen access to finance, markets, and modern farming practices. The ATA is also working on establishing a partnership with other donors to supply smallholder farmers with necessary agricultural machinery, including the tractors and harvesting machinery necessary for efficient sesame production. By so doing the ATA reduces the negative impact of financial constraints (USAID, 2012).

Donor programs such as AGP-AMD (Agricultural Growth Program — Agricultural Marketing Development Project) run by ACDI/VOCA (Agricultural Cooperative Development International / Volunteers in Overseas Cooperative Assistance) focus explicitly on the sesame value chain, training and building capacity of smallholder farmers. Credit unions such as WOCCU (World Council of Credit Unions) bring access to credit and savings programs to rural smallholders to assist with advance purchase of inputs and other production requirements (IBID).

For sesame processors and exporters the major source of external finance are banks (private and/or state owned). Agriculture has been identified as a priority sector for support by the Development

Bank of Ethiopia, which intends to provide 5 billion birr ($290M) in loans for capital expenditures over the next five years. Analysis is being conducted by donors and government agencies to identify mechanisms to simplify the process for obtaining loans (IBID).

Getting Credit; procedures, requirements and incentives

Two types of frameworks can facilitate access to credit and improve its allocation: credit information systems and the legal rights of borrowers and lenders in collateral and bankruptcy laws. Credit information systems enable lenders to view a potential borrower‘s financial history (positive or negative) -valuable information to consider when assessing risk. And they permit borrowers to establish a good credit history that will allow easier access to credit. Sound collateral laws enable businesses to use their assets, especially movable property, as security to generate capital. In most cases strong creditors' rights have been associated with higher ratios of private sector credit to GDP.

Based on the sharing of credit information and legal rights of borrowers World Bank asses the ease of getting credit in Ethiopia and the country stands at 104 in the ranking of 185 economies. This indicates that the credit information system and collateral and bankruptcy laws in Ethiopia are not well systematized to support lending and borrowing at least on the basis of world standard. Absence of effective legal rights of lenders and borrowers under collateral and bankruptcy laws, and limited scope, coverage and accessibility of credit information, strongly limit entrepreneurs' access to credit. In recent years, however, Ethiopia improved access to credit information by establishing an online platform for sharing such information and by guaranteeing borrowers' right to inspect their personal data in banks. In getting loan any business can use movable assets as collateral while keeping possession of the assets and any financial institution accept such assets as collateral.

The Ethiopian Government has identified sesame as a high-priority crop, and is particularly interested in increasing the country's processing capabilities for a wide variety of end-market goods, including hulled sesame, sesame oil, and tahini. Sesame is also a priority crop in the Agricultural Growth Program (AGP), a Government led initiative to sustainably reduce poverty and hunger by improving the productivity and competitiveness of value chains that offer job and income opportunities for rural households (USAID, 2012).

The development bank of Ethiopia set up a project level incentive to attract investors especially in the processing and exporting activities. The bank does not have an incentive specifically arranged for the sesame sector. The reason behind this is that the sesame industry is too small, in terms of employment generation, size of production and number of processing firms involved, to be considered as a sub sector. Instead the Package is offered for businesses that add value and provide their product to the international market in general. Interested investors in the area of processing and exporting are offered a loan scheme at a rate of 8.5% which is lower as compared to the lending rate of 9.5% on other ordinary loans. Special offers are especially available for investor in agro business, commercial farm and export oriented activities that add value to the agricultural outputs.

The recent focus of Development Bank of Ethiopia is to provide medium and long term loans for investment projects, which are engaged in agriculture and agro-processing preferably export focused. With regard to this the economic sub-sectors for which the loanable financial resources availed are listed under priority projects. The Bank undertakes due diligence or KYC assessment to identify the integrity of the borrower, appraises the feasibility study submitted by the applicant and finally makes decision on the approval of a loan. The prospective borrower is required to submit all the required documents as per the check list provided below

A Short Guide to DBE's loans [6]

1. loan application	10.. Commitment Charge
2. marriage certificate/sole proprietorship	11. Maintenance and Provision of Financial & Other Records
3. physical & natural conditions of the project area (for agricultural project only)	12.Engineering Estimation
4.contract agreement	13.Insurance
5.value added tax registration certificate (vat)	14. Application Letter
6. additional requirements for legal entitles/business organization	15.Current Account

[6] www.dbe..et/service/guide.html

7.documents required from applicant desiring to expand existing project	16.Letter of Credit (L/C)
8.Review of past performance of the business (for at least three years	
9.Collateral Requirement	

The private banks (United Bank s.c) are also providing different kinds of loan to sesame processors especially for those that provide their product to the export market. One kind of loan is pre-shipment loan finance. This is a loan given in the form of advance made to export customers of the bank on the strength of sales contract and/or L/C document concluded and/or opened with a well known and internationally recognized buyer. The requirements to get such loan are very much restricted one since advance is very much risky. It's availed for highly reputed customers of the bank with strong financial position and sound export performance. The exporter is also need to have adequate capacity to buy from the local market, transport, store, clean, bag and ship the commodities in the volume for which L/C is opened. The exported commodities should be marketable, non perishable and has stable price in the international market. The amount of advance ranges from 20% to 70% against sales contract depending on the track record and reputation of the customer in the business. The loan doesn't require any collateral asset but the sales contract.

Another form of loan is overdraft facility which intends mainly to alleviate temporary financial constraint. The facility is mainly extended for purchase of exportable commodities. The loan is mainly given by using either exportable goods or export document depending on the cases. For sesame processors both types of loan require ECX qualification certificate. A special loan scheme is arranged for sesame processors that add value in cases they faced financial constraints to get the row sesame they processed and export from farmers and cooperatives. Another form loan is what is called working loan. The bank disburses the loan without concerning for what purpose its intended. The only requirement is that the process of payment for the exported goods must pass through the lending branch of the bank. But one should note that the procedures to get these loans so lengthy as a result of several paper works an applicant has to fulfill.

There are some factors; however, that limit commercial banks ability to give loan to encourage the processing and exporting activities. Among which the major one is Central Bank directive that mandated banks to devote 27% of their lending to priority national projects via purchases of Government bonds, thus reducing the amount of financing capital available. In addition, sesame is agricultural output and its production is strongly vulnerable to effects to drought which makes the loan given such activities risk full. Thus making banks unwilling to lend as high as they give to other sectors.

Insurance policies available to the sesame sector

Insurance coverage is the major form of transferring risk to a third party and there are several insurance coverage options that sesame processors can buy so as to make their business more stable. One form of insurance policy is called Marine inland transit (MRIT) insurance. This policy covers damage on the sesame product as a result of car accident while the product is being transported from farmers to processors. The MRIT insurance can be extended to cover for any damages on sesame transported from warehouse (point of discharge) till it reaches Djibouti port (Point of destination).

The driver of the car even can get into an insurance called carrier liability insurance (CLI) so as to cover the damages that might caused on the sesame they are transporting as a result of his/her fault.

There is also an insurance coverage to sesame stored in the warehouse which is called fire general insurance (FRGN). This type of insurance covers only damages on the sesame in the warehouse as a result of fire and/or lightening. But it's possible to extend the coverage of the insurance into other causes like earthquake and other causes called "act of god" which might include

- ✓ Air craft damage
- ✓ Spontaneous combustion
- ✓ Storm, tempest and flood
- ✓ Bush fire
- ✓ Strike, riot and malicious damage, etc.

While the sesame is in the warehouse, it might be subject to some kind of robbery acts and an insurance policy known as burglary insurance. This insurance works so long as the robbery is made with forceful entrance.

2. Infrastructure

Processing sesame within Ethiopia has the potential to both increase overall sesame revenue and open up new markets. The investment would be facilitated by a robust macroeconomic environment in Ethiopia, including political and macroeconomic growth and stability, multiple investment incentives, and of all large-scale planned infrastructure investments. Though there is recent boom on infrastructure development, the distribution of infrastructure shows great concentration in and around Addis Ababa and oromia region as indicated by large concentration of firms in those areas. These areas are characterized by improved access to water, transport, and electric infrastructure, shipping containers, and security.

The Government is dedicated to clarifying policy and reducing bureaucracy for potential investors through the development of a Project Management Unit housed in the ATA. Efforts to increase access to financing, improve infrastructure along sesame supply chains, improve the security and reliability of high-quality raw materials, and build the capacity of cooperatives and smallholder farmers are already underway. The Government is also committed to improving key infrastructure in order to facilitate agribusiness activity, as part of its five-year Growth and Transformation Plan. These investments include increased air connectivity, improved road networks, and expansion of the electricity supply. Key investments highlighted in the Growth and Transformation Plan include: roads—building 71,000 kilometers of new roads, including all-weather roads to virtually all kebele administrations and a modern Birr 6 billion eight-lane expressway linking Addis Ababa to Adama, a key route to facilitate export and import trade; railways—laying 2,395 kilometers of new railways linking Addis Ababa with Djibouti, linking selected domestic cities, and operating within Addis Ababa itself; air transport—expanding Ethiopian Airlines‘ fleet by 35 aircraft, including four new cargo carriers, and building a huge new cargo hub at Bole Airport with a capacity to handle 125,000 tons per day in perishable export commodities, such as high-value fruits and vegetables; power—creating 8,000 megawatts of new power generation capacity; electricity—laying 132,000 kilometers of new electricity distribution lines and extending electricity coverage to 75 percent of the country; telecom—increasing mobile phone penetration to 45 percent of the population and mobile phone users from 10 million to 40 million; water—expanding the water supply infrastructure to reach 99 percent of the population and drilling some 3,000 water wells per year; irrigation—Increasing irrigation coverage from 3 to 16 percent of total farm land.

Major investments under the Government's Growth & Transformation Program (GTP) are targeted at improving infrastructure across the country, which will benefit the sesame supply chain. Sub-standard infrastructure in rural Ethiopia poses a challenge for transportation and distribution, as the sesame producing Humera region is in Northern Ethiopia, far from the processing facilities located in and around Addis Ababa. Poor roads increase transportation costs, and electricity / water shortages can result in a lost batch of hulled seeds. Investments under the GTP, among other initiatives, will make transporting sesame easier and more cost-effective. Studies indicate that electricity and water access has improved in Humera significantly in the past 5 years. However warehousing and storage for raw sesame waiting transport remains deficiency. Investment in sesame cultivation must include warehouses to protect the harvested sesame from shattering during drying and to protect from winds and rain that can damage a harvest. There is still a room to facilitate improvement in these key infrastructure services (USAID 2012).

A critical component of ensuring the competitiveness of Ethiopia's sesame value chains is the development of high-quality facility to provide road, electricity, water and other utilities. According to the World Bank doing business report (2013) Ethiopia stands at 94 in the ranking of 185 economies on the ease of getting electricity. Getting electricity requires 4 procedures and takes 95 days which is much longer as compared to east African countries (30 days in Rwanda). Delays in providing new connections made getting electricity more difficult which is prohibitive for new investors. For instance a typical to get a warehouse connected to electricity by the local distribution utility required to pass through the following procedures;

- ✓ Submit application and await site visit from Ethiopian Electric Power Corporation (EEPCo)
- ✓ Receive site visit from EEPCo engineer and await estimate
- ✓ Receive estimate, make payment and receive internal wiring inspection
- ✓ EEPCo conducts external connection, meter installation and electricity starts flowing

Another aspect infrastructure that is essential for the development of sesame processing availability of man power capable of installing, operating and repairing equipments and machineries. In this regard processing firms have been suffering a lot especially in getting skilled person to repair their capital inputs. The firms are using on job training and learning by doing mechanisms as a way out to the scarce know how.

3. Ease of doing business

Currently there are only a handful of companies in Ethiopia that are engaged in sesame processing. Also the operation of these companies is quite limited to sesame hulling, apart from one company that is also engaged in tahini production. Accordingly, no company in Ethiopia has stepped into oil processing or other industrial utilization of sesame as of yet.

According to the report by the World Bank Ethiopia stands at 163 in the ranking of 185 economies on the ease of starting a business. The procedure are described as follows

Step 01: Check the company name for uniqueness:

Checking for the uniqueness of the company name is mandatory according to Article 19 of the Proclamation 67/1997. The search is conducted at the Ministry of Trade and Industry. The party completes a simple form and hands it over to the agent at window #1. The service is fully computerized and the search is quick. A Letter of Recommendation (LR) will be given by the agent and must be attached to the Memorandum and Articles of Association for authentication.

Trade names of a business operated by a sole proprietor should indicate the type of business carried. The following names, however, are rejected:

- Same name in the same field are not accepted,
- Names which are antagonistic to moral issues,
- Names including advertising adjectives- such as fastest way to transfer money and best services in town- are not accepted, and
- Names that are not fully represented only by numbers.

The LR issued must be attached to the Memorandum and Articles of Association when being submitted for authentication.

Step 02: Authentication of the company documents and of the lease agreement at the office of Document and Authentication and Registration Office

According to Proclamation 334/2003, Article 5, the Memorandum and Articles of Associations must be signed by all partners and authenticated at the Ethiopian Document and Authentication

and Registration Office. This document should clearly state the valuation of the contribution of each applicant, in cash or in kind. In practice, as long as the Memorandum and Articles of Association indicates that the capital is fully paid, demonstration of actual payment is not required.

The party will deposit the documents and will be given an appointment for the following day. On this appointment, the applicants may appear in person with an original copy of their Letter of Appointment (Power of Attorney) and a valid Identity Card (National ID or Passport). The officer in-turn checks the validity of the documents-with special emphasis on the value of the in-kind contribution stated in the Memorandum, authenticity of the signatures and the genuineness of the ID presented by applicants.

A flat rate Stamp Duty of ETB 350 (Proclamation 110/1998) is required at the same office where the documents are being registered in the books prior to its authentication. Additional payment includes service charge of ETB 10 (4 copies of Memorandum and Articles of Association). A lease agreement may also be authenticated. In this case, there is an additional cost of 0.1% of the lease value.

Step 03: Submit documents and obtain a letter from the Commercial Registry to open a bank account

The applicant presents the Memorandum and Articles of Association, relevant IDs and Power of Attorney (if done through one) in order to obtain a letter from the Commercial Registry addressed to a chosen commercial bank so that an account may be opened under the new company name.

Step 04: Open a bank account

Upon presentation of the letter from the Commercial Registry, the applicant opens a bank account under the new company name and deposits the capital. The bank provides the applicant with a confirmation letter stating that the deposit has been effected.

Step 05: Register with Ethiopian Inland Revenue and Customs Authority

A newly established firm must register for income tax, payable at the end of the company‘s fiscal year, and pay municipal and license renewal fees and withholding taxes on their employees. Once registered, the Tax Identification Number (TIN) is provided along with the VAT/ToT Certificate.

Step 06: Register and obtain the Commercial Registration Certificate

Once the applicant submits the proof of deposit, a Commercial Registration Certificate (also commonly referred to as the Principal Registration) is issued to the applicant and the Ministry of Trade. The applicant is required to attach the following documents along with the Commercial Registration Certificate-

- The original Memorandum and Articles of Association.
- TIN Certificate issued at ERCA
- Bank confirmation letter of the applicant
- Rent/Lease Agreement
- Power of Attorney- if applicable
- Photocopy valid ID (National ID or Passport)
- Two passport-size photographs
- In the case of Sole Proprietorship, a proof that the applicant has attained the age of 18.
- In the case of Share Company:
    a. A bank statement showing at-least one fourth (25%) of the par value of the subscribed shares of the company is deposited in the bank account;
    b. A report of the in kind contribution; and
    c. Share certificates for each class of shares.

After reviewing the documents, including the lease agreement, the Commercial register delivers a registration certificate and the appropriate license. Payment of ETB 102 is issued at the same time. Provided that the application form has been completed and all necessary documents presented to the satisfaction of the officers, the procedure will take only one day.

Step 07: Make a company seal

While the law does not specifically require a company to have a seal, it is required in practice.

Step 08: Install a cash registration machine

Pursuant to the Council of Ministers Regulations No. 139/2007 to Provide for the Obligatory Use of Sales Register Machines', all businesses must purchase and install a sales register machine in order to comply with Tax obligations. The machines are available at certified supplier locations around Addis Ababa. Once the machine is brought to the company offices, it must be properly installed and set up so that it is linked to the Tax Administration System.

Export of Sesame

The Ministry of Trade requires a letter issued by the Inspection and Certification Case Team of the Animal and Plant Health Regulatory Directory at the Ministry of Agriculture in order to issue a permit for the export of Sesame Seed. To this end, an application form must be submitted to MoA with the following documents:

- Certificate of Competence issued from the Food, Medicine and Health Care Administration and Control Authority of Ethiopia;
- Lease or Rent Agreement for the Warehouse;
- Valid license from Ethiopian Quality and Standard Authority for the Processing (Cleaning) Machine- whether rented or purchased;
- The Scales must be certified by the Ethiopian Quality and Standard Authority;
- An assurance from Environment Protection Agency (EPA), in the form of a letter, stating that the Processing (Cleaning) plant and the Warehouse will be able to dispose of waste materials without having a deterring impact on the environment, society or individuals;
- Employment Letter, CV and supporting documents of an Agronomist graduate with sufficient knowledge that has been hired full time to work with the organization; and

In today's globalized world, making trade between economies easier is increasingly important for business. Excessive document requirements, burdensome customs procedures, inefficient port operations and inadequate infrastructure all lead to extra costs and delays for exporters and importers, stifling trade potential. In the World Bank doing business report (2013) Ethiopia

stands at 161 in the ranking of 185 economies on the ease of trading across borders. Exporting a standard container of goods requires 7 documents, takes 42 days and costs $2160 and importing the same container of goods requires 9 documents, takes 44 days and costs $2660 on average which is the second lowest in east Africa (above Eritrea). This results mainly from the large number of documents and clearances one has to complete to finalize its import and export trade.

For instance a medium size business requires completing the following procedures to export or import its product;

- ✓ Documents preparation (which vary across businesses)
- ✓ Customs clearance and technical control
- ✓ Facilitate Ports and terminal handling
- ✓ Make Inland transportation and handling at ports

The documents required to export include the following;

- ✓ Bank Permit
- ✓ Bill of lading
- ✓ Commercial Invoice
- ✓ Customs export declaration
- ✓ Export permit
- ✓ Health and fumigation certificate
- ✓ Packing List

The documents required to import are;

- ✓ Bill of lading
- ✓ Certificate of origin
- ✓ Commercial invoice
- ✓ Customs import declaration
- ✓ Foreign exchange authorization
- ✓ Import permit
- ✓ Insurance documentation
- ✓ Packing list
- ✓ Pre-shipment inspection clean report of findings

A significant share of the sesame seed produced in Ethiopia is exported with a little domestic consumption. As such, sesame is mainly an export commodity in Ethiopia and is major source of foreign exchange earnings. Therefore the Ethiopian government is attempting to support export sector in general and sesame in particular by providing different types of facilities especially in terms of loans. National bank of Ethiopia has established an export guarantee scheme to encourage exporters to get financial support from commercial banks. The NBE in its directive no. SBB/41/2007 has set the following preconditions to be eligible for the guarantee;

- The export project to be financed under the export credit guarantee scheme shall be bankable
- Exporters shall not carry loss category loans, as defined in NBE's directives on provisioning, owed to any bank in Ethiopia
- Exporters shall present a bone-fide order from a foreign buyer
- Exporters shall produce evidence of a valid investment certificate and/or trade license.

Commercial banks (United Bank s.c) provides different types of export loan such as term loan, overdraft facilities, pre-shipment advances, and advance on export bills. Investors in Ethiopia also enjoy several import / export incentives. These include:

- 100% customs import duty exemption
  - Agricultural and industrial machinery / equipment imported for investment purposes
  - Raw materials for production of export goods
  - Spare parts worth 15% of total investment capital goods
- Export duty exemptions for products and services developed domestically
- Additional export incentives include
  - Export Credit Scheme, Duty Drawback Scheme, Foreign Exchange Retention Scheme, Foreign Credit and Loan Schemes
  - Access to 70% of capital investment financing at reasonable rates from the Development Bank of Ethiopia (USAID, 2012)

4. Land Application

According to the Investment Guide 2012, there are two broad classifications of land for rent or lease purposes: rural land and urban land. Currently, there is nearly 11.55 million ha of potential land for farming.

Rural land is rented mainly for agriculture. The Ministry of Agriculture is authorized to provide land above 5000 ha, in addition to providing technical support for private investors for efficient utilization of the afore mentioned land.

Urban land is divided into land for industrial use and land for other activities. Industrial land is given much attention by the government and a number of industrial zones with the necessary infrastructural facilities (roads, electricity, water, telephone) are established in the major cities and towns. Land for export-oriented industries is generally available at concessionary rate. The Ethiopian Investment Agency (EIA) has the mandate to facilitate the allocation of land for FDI projects throughout the country. Urban land for other activities is available on an auction basis. The auction prices vary, depending on demand.

According to the data presented by Ministry of Agriculture, the land that is permitted for farming is for the cultivation of Cotton. As long as an organization can cultivate Cotton as a major product, then the organization will be able to grow Sesame on a portion of the land. This also takes into the benefit of cultivating Cotton with regards to the soil mineral content/fertility of the land. According to the Investment Guide 2012, the land allocated for Cotton cultivation is 3,000,810 ha and is located in:

- Tigray
- SNNP
- Oromiya
- Amhara
- Benishangul Gumz
- Gambella
- Afar, and
- Somali

Until very recently, the products that the Ministry of Agriculture will warrant land for included Palm, Sugarcane and Rubber Tree. But these products are currently on hold pending a thorough Environmental Impact Assessment.

Procedures

1. Fill out Agriculture Investment Land Request Form at the Agricultural Investment Support Directorate, Ministry of Agriculture. The documents that should be attached to this form include
    - Identification Card/Passport
    - Power of Attorney (in case of Agents)
    - Article of Association and Memorandum of Association (in case of share companies)
    - Investment License
    - Company Profile- stating the previous business history of the entity and the volume of transaction during that period.
    - Letter of Interest to Pay a one year lease
    - Bank Statements of all accounts held by entity for the latest 12 months
    - Audit report done by an external Auditor which has to be in-line with the Bank Statements
    - Confirmation letter to conduct and submit Environmental Audit Report before the project commencement
    - Work Permit /Foreign Investor/
    - Resident Permit
    - TIN
    - 'CPO' for land rent
2. The council will convene to check the validity of the application and, provided that all the requested forms are complete, a decision will be made within three days.
3. Upon approval, a visit will be conducted at the land which is available for cultivation.
4. The organization will be expected to conduct Environmental Impact Assessment/Environmental Audit Report. This Report is conducted by an external consultant, who must be preapproved by the Ministry of Agriculture.

5. Simultaneously, a Business Plan is to be prepared by the entity in accordance to the format provided by the Ministry of Agriculture- 'Guideline for Agricultural Project/Business Planning'.

Provided that all the documents required are present, then the procedure is expected to take a period of three months.

5. Tax

Taxes are essential. They fund the public amenities, infrastructure and services that are crucial for a properly functioning economy. But the level of tax rates needs to be carefully chosen and needless complexity in tax rules should be avoided. Doing business report by the World Bank (2013) indicates that a medium size business make 31 tax payments a year. Besides the process of filing, preparing and paying taxes requires prohibitively quite a long procedures and many paper works. The numbers of hours spend in paying taxes show a steady progress over the past five years (198 hrs in 2008 to 306 hrs in 2013) which is lower as compared to sub-Saharan Africa average (306 hrs) and higher in international standards (176 hrs). Recently the country has introduced a social insurance contribution.

The kind of the taxes paid by a typical medium size business include the following

- ✓ Corporate income tax
- ✓ Property tax
- ✓ Contribution for Pension of Private organization employees
- ✓ Excise tax on fuel
- ✓ Capital gains tax
- ✓ License renewal fees
- ✓ Tax on interest
- ✓ Vehicle tax
- ✓ Stamp duty on contracts
- ✓ Value added tax (VAT)
- ✓ Personal income tax

Though there is high crowd of taxes in the economy, the government offers a package of incentives especially for business engaged in manufacturing or agro-industrial activities or the

Production of agricultural products supplied to an exporter. Proclamation no 280/2002 states that firms engaged in the above mentioned activities that exports at least 50% of their products, or supplies at least 75% of their product to an exporter as a production input are eligible for income tax exemption for 5 years that might be extended to 7 years based on the decision of investment board. The granting of income tax exemption for a period longer than 7 years requires the decision of the Council of Ministers. An investor engaged in the above activities who exports less than 50% of his/her products or supplies his/her products only to the domestic market shall be eligible for income tax exemption for 2 years. Investments in relatively under developed regions such as Gambella, Benishangul and Gumz, South Omo, Afar, Somali and other regions to be determined by the Board, the investor shall be eligible for income tax exemption for an additional 1 year period. According to the proclamation an investor who has incurred loss within the period of income tax exemption shall be allowed to carry forward his loss for half of the income tax exemption period, after the expiry of such period.

An investor is also allowed to import duty free capital goods and construction materials necessary for the establishment of a new enterprise or for the expansion or upgrading of an existing enterprise. The Board may, by its directives, bar the duty-free importation of capital goods and construction materials where it finds that they are locally produced with competitive price, quality and quantity.

6. Contract Enforcement

Sesame processors obtain their row sesame to be processed from farmers and cooperatives through contracts. Such contracts usually specify the quantity and quality of product to be delivered. Prices are typically fixed, although adjustments may be made according to current market prices at the time of sale. Given the volatile nature of sesame price in the market (especially after the involvement of ECX) local farmers do have an incentive to left their agreed contract and supply directly to the market at higher price. Variable commodity prices could tempt sesame cooperatives or out-growers away from agreed upon contracts if more lucrative prices for their crops are available or if traders offer attractive side-selling options. This factor is widely acknowledged by sesame processors and traders currently operating in Ethiopia, many of whom articulate the need for better contracts

Thus incentivize sesame growers to fulfill contractual agreements is an important consideration. The use of bonus programs, cash on delivery, and pricing agreements (offer a price premium up to 10% above market price) with sesame cooperatives and farmers will help mitigate variable prices and protect supply for processors as well as incentivize them to adhere to contract agreements. Furthermore, by working with cooperatives rather than individual smallholder sesame farmers, the investor will be able to simplify the process and leverage the buying power associated with its large orders, as well as reduce some of the management burden typically associated with out-growers. The investor might also provide farmers with certain inputs, training, and production materials. Such an extension program with out-growers is expected to increase sesame yields and quality of supply and is being undertaken by other agro-processors in Ethiopia as well. Improved quality of raw material in turn lead to improved quality of sesame.

7. Sesame Trade in ECX

In 2008/09 Ethiopian commodity exchange was established with the objective of institutionalizing commodity trade like coffee, sesame and other products. ECX has established a directive that dictates how and on what basis sesame transactions are undertaken. The directive includes specifications and criteria's that cover various aspects of sesame transaction.

- Preparation of sesame product from farmers and cooperatives that is going out to be sold at ECX (for domestic as well as export market)
- Obligations of sesame producing farmers and cooperatives that supply to ECX, warehouse owners and processors.
- Inspection of quality of sesame traded

ECX has established its outlets at major sesame production areas to which farmers and cooperatives directly provide their product and first stage transaction takes place at these outlets. Relative closeness to major production areas and access to road facility are the major requirements to establish outlets. The raw sesame collected in these outlets then supplied via licensed providers to the ECX market from where sesame processors and exporters buy. ECX classifies the sesame it trades as reddish, whitish or mixed based on color and as Wellega and Humera or Gondor based on where it's produced.

One key challenge commonly shared among existing processing companies is access to traceable and homogeneous raw sesame seed. This has mainly to do with ECX sourcing that, according to most processors, reduces access to traceable, homogeneous and high quality seed for processing. Though prices are standardized by the introduction of the ECX, low yields and inconsistent quality can result in farmers not maximizing the full income potential of their sesame production, due to lower volumes sold to buyers. ECX reduces seed traceability, which decreases quality assurances, and increases purchase price due to added transaction costs. One of the major factors that determines export price of sesame, especially for processed sesame, is homogeneity in terms of size, color and origin. As a result of ECX the quality of seeds can be unreliable and untraceable, and the cumulative transaction costs erode the competitiveness of Ethiopian sesame seeds on the global market. Even if the strict regulation that requires processors to get raw sesame only through the ECX is getting more relaxed through negotiations and waivers, the alternative option of getting sesame through a contract farming scheme with small producers and/or cooperatives is also proved of not being that easy. Investors may gain exemption from sourcing through the ECX if they can demonstrate that they are adding value to the product prior to export. (USAID 2012).

Cross-cutting Issues
Gender Consideration

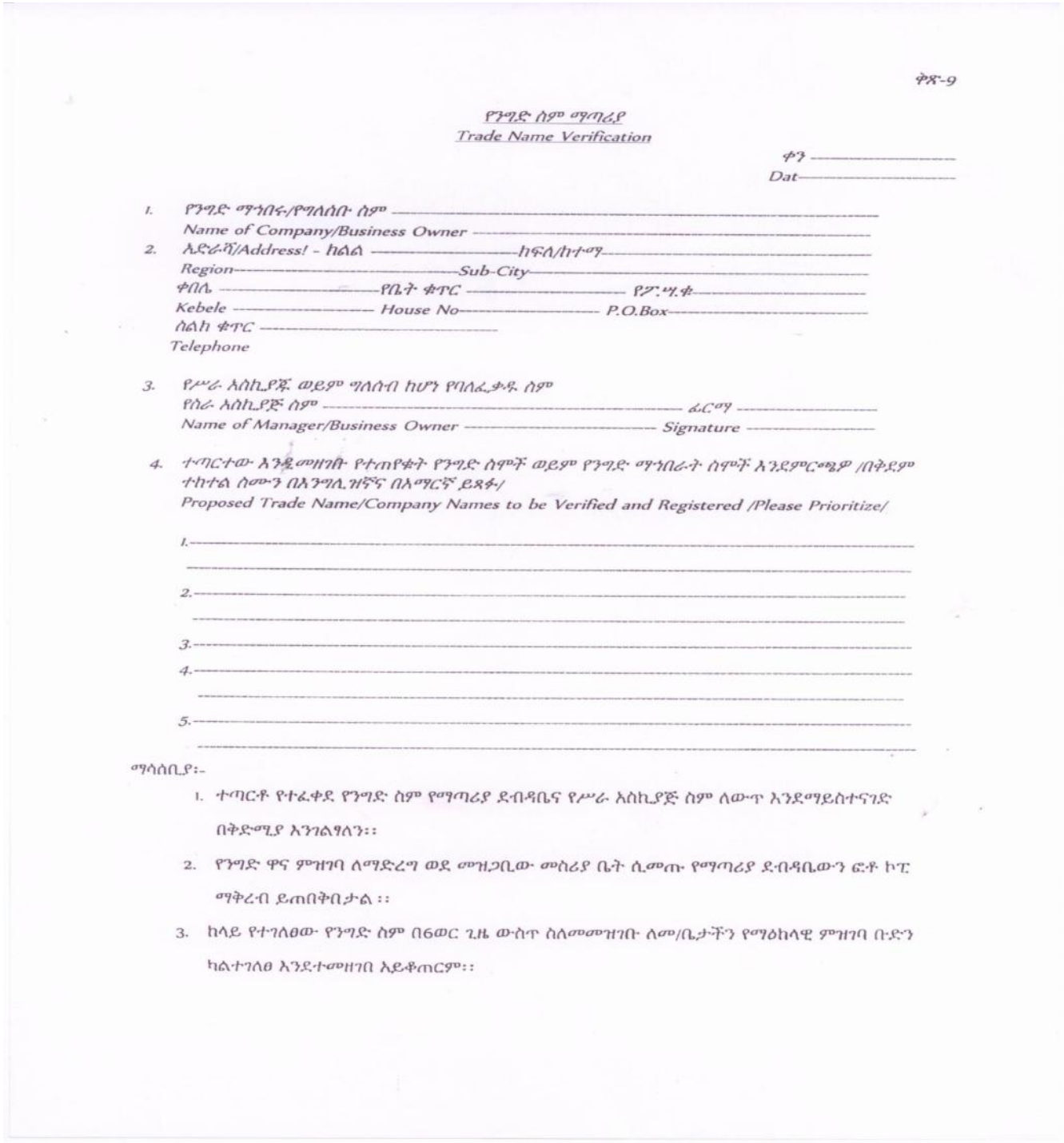
Sesame is among potential and suitable crop for poverty alleviation in the nation. Emphasis should be given to smallholder farmers to increase their production and productivity. Without significant investment, farmers can make simple expenditure on sesame seed and equipments. Sesame production at smallholder level is performed by family labor where women participation is insignificant, as their primary responsibility is to manage household, engagement in sesame farming activity is additional chore for them. On the other hand, at commercial farming level, even though women are treated equally as men, cultivation and harvesting of sesame is hard for women. Generally the involvement of women in sesame production is as seen below.

Smallholder	**Communal land Management**	**Large Scale**
Women engage in sesame production (20-40%), but are not represented in sale of sesame	Women engage in sesame production (20-30%)	Women hired as labor, but bias in favor of male labor
Women are given 1-2 position as board members, but nonfunctional role	• Triple work load: women farm on individual and communal land, and do household work	Triple work load: women farm on individual land, do household work, and work as hired labor
Double work burden: farming and household work		

APPENDIX:

Application Forms for Business Simulation

I. Trade Name Verification Form



ቅጽ-9

የንግድ ስም ማጣሪያ
Trade Name Verification

ቀን ———————
Dat———————

1. የንግድ ማኅበሩ/የግለሰቡ ስም ———————
   Name of Company/Business Owner ———————
2. አድራሻ/Address! - ክልል ———————ክፍለ/ከተማ———————
   Region———————Sub-City———————
   ቀበሌ ———————የቤት ቁጥር ——————— የፖ.ሣ.ቁ———————
   Kebele ——————— House No——————— P.O.Box———————
   ስልክ ቁጥር ———————
   Telephone

3. የሥራ አስኪያጁ ወይም ግለሰብ ከሆነ የባለፈቃዱ ስም
   የስራ አስኪያጅ ስም ——————— ፊርማ ———————
   Name of Manager/Business Owner ——————— Signature ———————

4. ተጣርተው እንዲመዘገቡ የተጠየቁት የንግድ ስሞች ወይም የንግድ ማኅበራት ስሞች እንደምርመጫዎ /በቅደም ተከተል ስሙን በእንግሊዝኛና በአማርኛ ይጻፉ/
   Proposed Trade Name/Company Names to be Verified and Registered /Please Prioritize/

   1.———————
   ———————
   2.———————
   ———————
   3.———————
   4.———————
   ———————
   5.———————
   ———————

ማሳሰቢያ፡-

1. ተጣርቶ የተፈቀደ የንግድ ስም የማጣሪያ ደብዳቤና የሥራ አስኪያጅ ስም ለውጥ እንደማይስተናገድ በቅድሚያ እንገልፃለን፡፡
2. የንግድ ዋና ምዝገባ ለማድረግ ወደ መዝጋቢው መስሪያ ቤት ሲመጡ የማጣሪያ ደብዳቤውን ፎቶ ኮፒ ማቅረብ ይጠበቅበታል ፡፡
3. ከላይ የተገለፀው የንግድ ስም በፅወር ጊዜ ውስጥ ስለመመዝገቡ ለመ/ቤታችን የማዕከላዊ ምዝገባ ቡድን ካልተገለፀ እንደተመዘገበ አይቆጠርም፡፡

II. **Application Form for Business Registration (Page 1)**

Form 5

The Federal Democratic Republic of Ethiopia
Ministry of Trade
Application Form for Business License and Renewal

Date _____ Month _____ Year _____

PARTICULARS OF THE APPLICATION

1. The Applicant
   Sole Business person
   a) Full Name .....G/Father's Name .....Mother's Name .....
   b) Nationality ..... Age ..... Sex .....
   Company/Organization
   a) Name .....
   b) Name of the manager .....
   c) Legal Status .....
2. Address
   2.1 Business adder in Ethiopia
   Region..... Sub -City .....
   City/town .....Kebele .....House No.....
   Tel. .....Mobile .....P.O.Box .....Fax .....
   E-mail .....
   2.2 Where it is foreign established company, address of the head office outside Ethiopia,
   Country .....
   .....
   2.3 Residential address of the sole person or manager
   Region..... Sub -City .....
   City/town .....Kebele .....House No.....
   Tel. .....Mobile .....P.O.Box .....
3. Business .....
   .....
4. Capital invested or allocated for the business
   a) Paid up/allocated capital .....
   b) Subscribed capital .....
5. Trade Name (if any) .....
6. Where the principal registration is made at the federal level registration number
   .....
   .....
7. Documents to be attached:
   a) For the request of all new business licenses
   1. A photocopy of the identification card of the applicant which identify him/her;
   2. where an application is signed by an agent guardian; a photocopy of a power of Attomey/ guardianship;
   3. Two recent passport sized photographs of the applicant/manager/guardian;
   4. Where the applicant is previously registered at the regional level, a photocopy of the principal registration;
   5. Where the commercial company is registered at the regional level, a photocopy of its articles and memorandum of association as well as well as certificate of the principal registration shall be submitted.
   b) Certificate of competence or level of standard to be required of specific field;
   1. A photocopy of the certificate of competence issued by the drug administration and country of Authority for the importation of human and veterinary drugs, pesticides, medicines, medical equipments and tools;

e) Where the application is signed by an agent/a guardian, a photocopy of a power of attorney/ guardianship;

f) Two recent passport sized photographs of an applicant/a guardian;

g) Where it is a commercial organization, original of its articles and memorandum of association;

h) Where it is a share company;

a. A bank statement showing the deposit of 25% of the subscribed capital:

b. A report of the contribution in kind, if any:

c. A specimen of share certificates for each class of shares

7. Where it is a public enterprise, a photocopy of the law under which it was established and the letter of appointment of the manager.

Declaration

I hereby declare that all the statements I made here in and the additional I have attached hereto are true and correct.

Applicant's

Name ..... Signature ..... Date .....

For Office Use Only

1. Verification and declaration

a) Any registration previously done by the applicant

Registered ☐ Not Registered ☐

b) Application for Principal or summary registration is

1/ Accepted and pay Birr ..... for the service .....

2/ If not accepted; reasons .....

.....

3/ Verified and declared by

Name ..... Signature ..... date .....

2. Declaration of the Registration Head

a) Application for principal/summary registration is

Accepted ☐ Not accepted ☐

b) If it is not accepted

reasons .....

Name ..... Signature ..... Date .....

APE 7900/2004

Application Form for Business License (Page 1)

The Federal Democratic Republic of Ethiopia **Form 1**
Ministry of Trade
Application Form for Principal/ Registration

Date _____ Month _____ Year _____

PARTICULARS OF THE APPLICATION

1. The Applicant
   * Sole Business person
     a) Full Name ..... Mother Name .....
     b) Nationality ..... Age ..... Sex .....
     c) Tax Identification No. .....
   * Private Limited Company
     a) Trade Name .....
     b) Name of the manager .....
     c) Tax Identification No. .....
2. Address
   * Business address in Ethiopia
     Region ..... Sub -City .....
     City/town ..... Kebele ..... House No.....
     Tel. ..... Mobil ..... P.O.Box.....
     Fax ..... E-mail.....
   * Where it is a foreign established company, full address of the head office outside Ethiopia: Country .....
     .....
3. Where the applicant may have a business licence or registered trade name:
   a) Type of the licence .....
   b) Date of issuance .....
   c) Place .....
4. Business purpose/purposes .....
   .....
   .....
5. The amount of capital invested or allocated for the business
   a) Paid up/allocated capital .....
   b) Subscribed Capital .....
6. Document to be attached:-
   a) A photocopy of the kebele identification card or passport of the applicant.
   b) Tax identification Certificate /TIN/ copy
   c) Bank confirmation letter of the applicant or Financial Statement
   d) Where the house is owned by the applicant titledel of where it is Rent or lease agreements by the leaser and the lesee.

2. A photocopy of the certificate of competence issued by the Ethiopian Customs Authority for custom clearing works;
3. A photocopy of the certificate of competence issued by the Ministry of infrastructure for freight forwarding & shipping agency works;
4. A photocopy of the certificate of competence issued by the Ministry of infrastructure that designates first grade contractors;
5. A photocopy of the ownership registration book of the vehicles for cross country/Tran regional road transport service;
6. a photocopy of professional hunting license issued by the wild life protection and Development Agency for safari works;
7. Letter of competence given by the Ministry of information for the publication of news papers and magazines shall be submitted.

c) For renewal

A statement/clearance of tax payment issued either by the Federal inland Revenue Authority or regional finance Bureau endorsing the renewal of license shall be submitted.

Declaration

In confirming to have been introduced about the legally stated operational requirements and eligibility criteria to be fulfilled and maintained for .....business field. i have requested; I hereby under sign the undertaking of the engagement of the duties and responsibilities to maintain them and I hereby declare that all the statements I made herein and the additional documents I have attached here to are true and correct.

Applicant's Name..... Signature .....Date.....

For Office use Only

1. Verification and declaration
   a) Any previous similar license in the name of the applicant is Issued ☐ sued ☐
   b) Application for licence/renewal is
      1) Accepted and pay Birr .....for the services
      2) If not accepted; reasons .....
      .....
2. Declaration of the licensing head
   a) Application for license is Accepted ☐ Not accepted ☐
   b) If it is not accepted reasons .....
   .....

Name ..... Signature ..... Date .....

3. Declaration of the Registration Head
   A) Application for principal/summary registration is
      Accepted ☐ Not accepted ☐
   B) If it is not accepted
      reasons .....

Name ..... Signature ..... Date .....

APE 7901/2004

MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT
LAND REQUEST FORM

1. **General Information**
   Investor's / Company Name _____ _____
   Citizenship _____ Sex ___
2. **Address of the Investor / his legal representative**
   Region _____ ____ Zone /sub city _____
   District _____ Kebele _____ House Number _____
   Telephone No _____ Fax _____ Email _____ P.O.Box_____
3. **Location of the Required Land :**
   Zone _____ District _____ Town _____ Kebele /Rural village _____
   Particular Name (If any) _____ Size of the requested land in ha _____
   Plot number _____ Code _____
4. **Project Description**
   Sector _____ Project Title _____
   Amount of Capital in Birr_____ US dollar _____
5. **Expected Employment Opportunity in Number:** Permanent____
   Casual _____Total _____
6. **Marketing Plan:** Domestic _____% Foreign _____%
7. **The following documents must be submitted with this Request form**
   A. Identification card/Passport : ❑
   B. Power of Attorney (in case of agents) : ❑
   C. Article of Association and memorandum of Association (in case of share companies) : ❑
   D. Investment License : ❑
   E. Company Profile : (From Ethiopian Embassy)❑
   F. Letter of Interest to pay a one year lease : ❑
   G. Bank Statement at least a year : ❑
   H. Land use Plan : ❑
   I. Action Plan of the proposed Project :
   J. Confirmation letter to conduct and submit environmental audit report before the project commencement
   K. Work Permit /Foreign Investors/ ❑
   L. Resident Permit ❑
   M. TIN ❑
   N. "CPO" for land rent ❑

Name _____ Signature _____
Approved by: Agricultural Investment Support Directorate
Name _____ Signature _____ Date _____

Ministry of Agriculture and Rural Development

Guideline for

Agricultural Project/Business Planning

May, 2010

Project Document Evaluation Checklist

A. CHAPTER SUMMARIES

1. EXECUTIVE SUMMARY
2. INTRODUCTION
3. STUDY OF PROJECT SITE
4. SOCIO-ECONOMICS STUDY
5. ENVIRONMENTAL IMPACT ASSESSMENT
6. AGRONOMICAL/LIVESTOCK PROFILE
7. MARKET STUDY
8. FINANCIAL BUDGET
9. FINANCIAL AND ECONOMIC ANALYSIS
10. PLAN OF OPERATION
11. ORGANIZATIONAL STRUCTURE AND MANAGEMENT
12. PROJECT MONITORING AND EVALUATION
13. ANNEXES

B. CHAPTER

1. EXECUTIVE SUMMARY

1.1 Project Title
1.2 Promoter profile
1.3 Location of the project /Region, District and PAS.
1.4 Project goal and purpose
1.5 Estimated cost of the project

- Total cost
- Capital cost
- Operations cost
- Contingency

1.6 Project component

- Area
- Types of investment
- Estimated production (annual)

1.7 Expected Beneficiaries

- Permanent
- Temporary

1.8 Duration of the Project
1.9 Risks and Uncertainty

2. INTRODUCTION

2.1 Name, Nationality, Promoter, Project Name, Contact Person, Legal Form of Business, etc
2.2 Description of economic back ground and potential of the country, region and district in relation to investment.
2.3 Features of the sector
2.4 Beneficiaries
2.5 Past and present intervention
2.6 Justification of the project why it is proposed?
2.7 Support for the Project
2.8 Goal and objective

- Over all goal
- Main and Specific objective

3. STUDY OF THE PROJECT SITE

- Descriptions of the area
- Reason for selection of investment
- Land ownership (lease, rent, etc.)
- Physical and natural condition of project site climate (temperature, rainfall data, relative humidity) soil conditions, etc.)
- Area of land for investment in ha with expected expansion in the future.
- Production of each commodity per ha with and without project
- Description of infrastructures such as road, power, water, telephone, fax, internet, etc.

4. SOCIO-ECONOMIC STUDY IMPORTANCE AND CONTRIBUTION OF THE PROJECT

4.1 Socio-economic benefit for the society

Labor required (employment opportunity)

4.2 Poverty alleviation due to project intervention
4.3 Economic benefit for the community
4.4 Economic contribution to the country

5. AGRONOMIC/LIVESTOCK PROFILE/TECHNICAL STUDY

- Production system and management
- Physiology, Anatomy and Morphology of the proposed crop
- Inputs required and their response to the investment crop & the project area.
- Production of each commodity with and without project
- The expected productivity and production plan.

6. ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACT ASSESSMENT(Positive and negative)

Preparing an Environmental Impact assessment after acquiring the investment land being an inevitable obligation the following issues should be briefly discussed in the business plan

- social aspect
- Natural Resource management (nutrient, residue, crop, erosion, water)
- agricultural practice aspect

7. MARKET STUDY

7.1 General Review

- Description of market situation in the country and in the world in the past three years.
- Production for consumption and/or export.
- Describe briefly the demand of market inside and in the world market.
- Competitiveness of the intended project.
- Identify problems on production quality, processing, pricing, etc.

- Design strategy to produce good quality product which is demanded by customers.

7.2 Demand analysis

- Factors affecting demand
- Volume of demand
- Historical data
  - Export trend, foreign and local
  - Import trend, foreign and local
  - Consumption trends foreign and local
- Estimated demand analysis
  - Customer demand potential
  - Forecast demand trend to satisfy customers
  - Market penetration of customer
  - Performance of domestic firm engaged in the same business.

8. FINANCIAL BUDGET OF THE INVESTEMENT

Total financial requirement

- For capital investment
- For operating cost
- For contingency
- Source of fund

9. FINANCIAL AND ECONOMIC ANALYSIS

9.1 Price for input and output.

9.2 Credit and borrowing system.
9.3 Tax and subsidy policy
9.4 Export policy
9.5 Financial depreciation

9.6 Economic and financial analysis

- Cash flow statement
- Discount cash flow and discount rate
- Benefit with and without project

9.7 Cost benefit analysis

- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Benefit Cost Ratio (BCR)
- Pay back period

9.8 Sensitivity analysis

- Risk and Uncertainty
  - Environmental protection
  - Social-cultural aspects
  - Institutional management
  - Technology
  - Price, etc.

10. PLAN OF OPERATION

- Detail activity of the project which includes construction, land preparation, planting, harvesting, storing transporting, export, etc
- Indicators for each activity
- Amount of labor and cost for each activity.

11. ORGANIZATIONAL STRUCTURE AND MANAGEMENT

- Structure of project management which could show level of status.
- Brief summary of each personnel with expected role.
- Stake holder analysis which includes name, type of duties, role in the project, impact, etc.
- Skilled and unskilled manpower.
- Permanent and temporary manpower.

12. PROJECT MONITORING AND EVALUATION

11.1 **Monitoring:** is a follow-up activity according to the schedule for accomplishment.

- Keep recording
- Continuous collection of data and converting into information
- Provide data to improve management
- Guide management decision
- Insure implementation

11.2 **Evaluation:** the project evaluation is done at two stages.

- **Midterm evaluation:** to revise objectives and methods for the project in progress
- **Project completion:** which may done at the end of investment to estimate return

The results of the evaluation should be incorporated into the next project planning and lessons learned from experience. It is important to keep recording and planning process during operation. Likewise, the project management should have to establish indicators for monitoring and evaluation to verify the success of the investment.

13. Annex

May includes the following

1 - Fixed asset list such as office, clinic, store and workshop with estimated cost

2. Office furniture list with price

3 - Machinery list with price

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5 - Manpower list with salary

6 - Vehicles, and motor cycles with cost, etc.

7 - Land use plan

8 - Map of the land

9 - Required expatriates and local professional and their duration of employment

Ministry of Agriculture and Rural Development

Guideline for

Agricultural Project/Business Planning

Project Document Evaluation Checklist

C. CHAPTER SUMMARIES

14. EXECUTIVE SUMMARY
15. INTRODUCTION
16. STUDY OF PROJECT SITE
17. SOCIO-ECONOMICS STUDY
18. ENVIRONMENTAL IMPACT ASSESSMENT
19. AGRONOMICAL/LIVESTOCK PROFILE
20. MARKET STUDY
21. FINANCIAL BUDGET
22. FINANCIAL AND ECONOMIC ANALYSIS
23. PLAN OF OPERATION
24. ORGANIZATIONAL STRUCTURE AND MANAGEMENT
25. PROJECT MONITORING AND EVALUATION
26. ANNEXES

D. CHAPTER

14. EXECUTIVE SUMMARY

1.10 Project Title
1.11 Promoter profile
1.12 Location of the project /Region, District and PAS.
1.13 Project goal and purpose
1.14 Estimated cost of the project

- Total cost
- Capital cost
- Operations cost
- Contingency

1.15 Project component

- Area
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