

PROFILE ON SESAME FARM

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I. SUMMARY

This profile envisages the establishment of a farm for the production of 22,000 quintals of sesame per annum.

The present demand for proposed product is estimated at 578,243 quintals and it is projected to reach at 1.36 million quintals by the year 2013.

The farm will create employment opportunities for 55 persons.

The total investment requirement is estimated at Birr 28.88 million, out of which Birr 9.1 million is required for machinery and equipment.

The project is financially viable with an internal rate of return (IRR) of 25% and a net present value (NPV) of Birr 32.03 million, discounted at 10.5%.

II. PRODUCT DESCRIPTION AND APPLICATION

Sesame is an important oil-seed crop. It is grown in Africa, Asia and parts of Latin America for its edible seeds which are source of sesame oil. The semi-drying oil is of high quality and is used as a substitute for olive oil as a salad and cooking oil. The oil is used in the manufacture of margarine and compound cooking fats and poorer grades in soap and paints, and as a lubricant and illuminant. It is used as a vehicle for medicinal drugs and perfumes.

III. MARKET STUDY AND FARM CAPACITY

A. MARKET STUDY

1. Post Supply and Present Demand

Sesame is highly demanded crop in the international market and is consumed by existing domestic large and small-scale oil mills. Table 3.1 shows the country's total production of oil seeds and sesame as well as the total export of oil seeds.

Table 3.1
PRODUCTION OF OIL SEEDS, SESAME AND
EXPORT OF OIL SEEDS (QUINTAL)

Year	Total Production of Oil seed	Sesame Production	Share of Sesame (%)	Total Export of oil seeds	% of Export from Production
1997/98	1,674,770	98,250	5.9	665,540	39.7
1998/99	1,567,400	176,770	11.3	513,650	32.8
1999/00	1,794,910	166,340	9.3	431,310	24.0
2000/01	2,383,300	188,780	7.9	550,510	23.1
2001/02	2,081,357	388,995	18.7	766,040	36.8
2002/03	1,965,470	362,720	18.5	828,010	42.1
Total	11,467,207	1,318,855		3,755,060	
Average	1,911,201	230,309	12.1	625,843	32.8

*Source:- CSA, Statistical Abstracts for Domestic Production
National Bank, Annual Reports, for Export.*

Table 3.1 reveals that during the past six years, i.e, from 1997/98 upto 2002/03, the annual average production of all types of oil seeds in the country was 1,911,200 quintals. Of the total annual production of oil seeds, the share of sesame is about 12%. Although total production of oil seeds fluctuates from year to year, it has generally grown by about 4% in the past six years.

The production of sesame in the past six years has shown a tremendous increase. The production, which was 98,250 quintals in the year 1997/98 has reached to 388,995 quintals and 362,720 quintals in the year 2001/02 and 2002/03, respectively. This means that domestic production of sesame in the past six years has almost quadrupled.

On the other hand, export of oil seeds in the past four years, i.e, from 1999/00 to 2002/03 has almost doubled. Export of oil seeds which was 431,310 quintals in 1999/00 has grown to 822,010 quintals in the year 2002/03. In general, of the total production of oil seeds about 33% has been exported in the past six years.

The BGRS has a good potential for the production of oil seeds. According to CSA Agricultural Sample Survey, the level of production of oil seeds in the region in the year 2001/02 was about 120,392 quintals, out of which 55,551 quintals or 46% is the share of sesame.

To determine the present effective demand for sesame, the average production level of years 2001/02 and 2002/03 which was 375,858 quintals has been taken as a base. Since the major users of sesame, i.e., existing oil mills are working much below their capacity and there are a number of projects under implementation, the existing production is assumed to cover only 65% of the demand (domestic and export). Hence, the present demand is estimated at 578,243 quintals.

2. Projected Demand

The demand for sesame is believed to increase with improved capacity utilization of existing mills, new projects that demand the crop as well as wide export market in Europe and Middle East countries. Hence, taking the current effective demand as a base and assuming an annual average growth rate of 10% the project demand is presented in Table 3.2. Moreover, of the total projected demand 65% is assumed for local consumption and 35% for export market.

Table 3.2**PROJECTED DEMAND FOR SESAME (QUINTAL)**

Year	Total Projected Demand	Existing Production Capacity	Unsatisfied Demand
2003/04	578,243	375,858	202,385
2004/05	636,063	375,858	260,205
2005/06	699,674	375,858	323,816
2006/07	769,641	375,858	393,783
2007/08	846,606	375,858	470,748
2008/09	931,266	375,858	555,408
2009/10	1,024,392	375,858	648,534
2010/11	1,126,832	375,858	750,974
2011/12	1,239,515	375,858	863,657
2012/13	1,363,466	375,858	987,608

3. Pricing and Distribution

Price of sesame is mainly influenced by the export market and domestic supply of the crop. Current market price of sesame in Addis Ababa is Birr 750/ quintal. Assuming transportation and other marketing costs, farm-gate price of Birr 700/quintal is assumed for the project. The product can be directly exported to the world market or can be sold directly to bulk consumers in the country.

B. FARM CAPACITY AND FARMING PROGRAMME**1. Farm Capacity**

The capacity of the envisaged farm at its full production capacity is estimated to be 22,000 qts per annum. The above volume of sesame produce is expected to be generated from 2,200 hectares of net irrigable land.

2. Farming Programme

The farm will start with 50 per cent capacity in the first production season, then will reach full capacity in the fifth year of operation. The production programme of the farm is shown in Table 3.3.

Table 3.3
FARMING PROGRAMME OF SESAME FARM

Year	Total Area	Yield/ha (Qt)	Total Production (Qt)
1.	1100	10	11000
2.	1300	10	13000
3.	1600	10	16000
4.	1900	10	19000
5.	2200	10	22000

IV. FARM MATERIALS, AGRICULTURAL INPUTS AND UTILITIES

A. FARM MATERIALS AND AGRICULTURAL INPUTS

Commercial fertilizers, seeds, chemicals and sacks are among the most important materials required for sesame farm.

The materials and inputs required along with their corresponding costs at full capacity operation of the farm are described in Table 4.1

Table 4.1**LIST OF FARM RAW MATERIALS REQUIREMENT AND COSTS**

Sr. No	Description	Unit of Measure	Qty	Coast (000 Birr)		
				FC	LC	Total
1	Seeds	Qt	180	-	90	90
2	Fertilizer	Qt	2200	660	220	880
3	Chemicals	Qt	22	165	55.0	220
4	Sacks	Pcs	22,000	-	66.00	66.00
Grand Total		-	-	825	431	1,256

B. UTILITIES

In general terms, the utilities required by the farm include electricity, water, fuel, grease and lubricant. The costs of utilities at full production capacity of the farm are shown in Table 4.2.

Table 4.2**UTILITIES REQUIREMENT AND COST**

Sr. No.	Description	Qty (000)	Cost ('000 Birr)
1.	Electricity (kWh)	206	97.65
2.	Water (m ³)	208.7	352.35
3.	Fuel (lt)	337	843.5
4.	Lubricant, grease and oil (lt/kg)	33.7	84.4
Total			1,377.9

V. FARM OPERATION TECHNOLOGY AND ENGINEERING

A. FARMING TECHNOLOGY

1. Farming Process

a) Land Development

The main production process of sesame farm will be started with land development activities, such as surveying, land clearing, leveling and irrigation system, and access and farm road construction. The land development activities are expected to be undertaken by machinery and equipment such as Bulldozers, leveling and surveying instruments. These machinery and equipment are expected to be rented from other enterprises.

b) Land Preparation, Sowing and Fertilization

Generally, land development for sesame production is followed by land preparation. It comprises ploughing, disking and harrowing. Sowing follows harrowing with fertilizer application. For this purpose, tractors with various bottoms like disc plough, disc harrows and seed and fertilizers drillers are employed in general.

c) Pre-harvest Management

The pre-harvest management in sesame production usually involves irrigation application, weeding and cultivation, insect pest and disease control. Irrigation water application using different canals by gravity and weed control will be performed by casual labour. Moreover, insect pest control is carried out by chemicals and motorized sprayer.

d) Post-Harvest Management

Post harvest in sesame growing include harvesting, threshing, packing, storing and marketing. Harvesting & threshing are expected to be carried out mechanically/manually by casual labour. While transporting will be done by tractor driven trailers and trucks, from the farm and stores, respectively.

2. Sources of Technology

The machinery and equipment required by the envisaged farm could be supplied by Ries Engineering, Nazareth Tractor Assembly Plant, TETRACO. PLC etc.. Whereas seeds, fertilizers and chemicals could be supplied by a number of organizations like Agricultural Input Supply Enterprise, Ambassel, Dinsho, Wondo, etc.

B. ENGINEERING

1. Farm Machinery and Equipment

The machinery and equipment required by the farm and the corresponding costs are given in Table 5.1. The net cultivable area and the efficiency of the machinery were the basis for calculating the total required machinery and equipment.

Table 5.1

FARM MACHINERY AND EQUIPMENT REQUIREMENT AND ESTIMATED COST

Sr. No.	Description	Qty. No.	Coast (000 Birr)		
			FC	LC	Total
1	Tractor 110 HP-125 HP	5	1350	-	1350
2	Disc Plough 5-6 furrow	5	300	-	300
3	Disc Plough of set type	5	450	-	450
4	Planter 6 rows	5	1000	-	1000
5	Cultivator	1	25	-	25
6	Sprayers (manual)	50	50	-	50
7	Ringer	5	200	-	200
8	Trailers	4	360	-	360
9	Workshop (set)	1	50	-	50
10	Tools (set)	1	12.50	-	12.50
11	Generator	1	155	-	155
12	Sickles	83	-	2.2	2.2
	Total FOB	-	3952.5	2.2	3954.7
13	Inland Cost (20% of FOB)	-	-	790.94	790.94
	Grand Total	-	3952.5	793.14	4745.64

2. Land, Building and Civil Works

The total land required for the envisaged project is estimated to be about 3,200 hectares. The land will be allocated for sesame production, residential houses, offices, stores, launge, workshop, access and farm road constructions. Rural land lease rate in BGRS ranges from Birr 15 to Birr 30 per hectare, taking the maximum lease rate, and for 70 years of land holding, the total land lease cost is estimated at Birr 6.72 million. Even though the actual practice is to pay a certain portion in advance and the balance within a defined period, in this profile it is assumed that the total land lease cost is paid in advance.

Building area of the farm which includes stores, residential houses, offices, launge and workshop is estimated to be 7,000 m² and its total construction costs will be about Birr 4.900 million, at unit cost of Birr 700 per meter square.

Surveying, clearing and leveling of farm land and main canal, drainage, access and farm road and hydraulic structures constructions will be among the civil work activities to be carried out for sesame production. The total costs are estimated at Birr 4.2 million.

3. Proposed Location

The location of the proposed sesame farm is expected to be in Kamashi zone which has big potential for the production of oil seeds.

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

The envisaged sesame farm requires 55 permanent work force. The corresponding costs for both permanent and casual labour for each production season are shown in Table 6.1.

B. TRAINING REQUIREMENT

No special training is required.

Table 6.1**MANPOWER REQUIEREMENT AND ANNUAL LABOUR COST**

Sr. No.	Description	2009		
		Req. No.	Monthly Salary Birr '000	Total Annual Salary Birr '000
1	Farm Manager	1	2250	27.00
2	Secretary	1	700	8.40
3	Agronomist	1	2000	24.00
4	Plant Protection Inspector	1	1500	18.00
5	Irrigation Agronomist	1	2000	24.00
6	Production Supervisor	4	500	12.0
7	Accountant	1	800	9.6
8	Cashier	1	600	7.2
9	Purchaser	1	700	8.4
10	Salesperson	1	700	8.4
11	Tractor Operator	10	500	60.0
12	Assistant Tractor Operator	10	300	36.0
13	Chief Mechanic	1	700	8.4
14	Assistant Mechanic	2	500	6.0
15	Generator Operator	1	300	3.6
16	Driver	3	500	18.0
17	Assistant Driver	2	300	7.2
18	Storekeeper	1	300	3.6
19	Office Boy	1	200	2.4
20	Guard	10	200	24.00
21	Janitor	1	200	2.4
	Sub-Total			318.6
	Employee Benefit 25%			79.65
	Sub-Total	55	-	398.25
	Casual labour			1,042.0
	Grand Total	55		1,440.25

VII. FINANCIAL ANALYSIS

The financial analysis of sesam farm project is based on the data presented in the previous chapters and the following assumptions:-

Construction period	2 years
Source of finance	30 % equity
	70 % loan
Tax holidays	6 years
Bank interest	10.5%
Discounted cashflow	10.5%
Repair and maintenance	5 % of the total farm machinery & equipment
Accounts receivable	30 days
Raw material, local	30 days
Raw materials, import	90 days
Work in progress	270 days
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days

A. TOTAL INITIAL INVESTMENT COST

The total initial investment cost of the project including working capital is estimated at Birr 28.88 million, out of which about 14% will be required in foreign currency. Details are indicated in Table 7.1.

Table 7.1
INITIAL INVESTMENT COST ('000 BIRR)

Sr. No.	Cost Items	Foreign Currency	Local Currency	Total
1.	Land	-	6,720.00	6,720.00
2.	Building and Civil Work	-	9,100.00	9,100.00
3.	Farm Machinery and Equipment	3952.5	793.14	4745.64
4.	Office Furniture and Equipment		50.00	50.00
5.	Vehicle	-	2000.00	2000.00
6.	Pre-Farming Expenditure*	-	4,808.86	4,808.86
	Total Investment cost	3952.5	23,472.00	27,424.50
7	Working Capital	219.68	1,244.88	1,464.56
	Total	4,172.18	24,716.88	28,889.06

B. FARMING COST

The annual production cost at full operation capacity of the farm is estimated at Birr 7.82 million (see Table 7.2). The farming material and utility cost accounts for 32 per cent while repair and maintenance take 5.34 per cent of the production cost.

* *Pre-farming expenditure include interest during construction (Birr 4.2 million), training, and costs of registration, licensing and formation of the company including legal fees, commissioning expenses, etc.*

Table 7.2
ANNUAL PRODUCTION COST ('000 BIRR)

Items	Year			
	3	4	7	10
Farming Material and Inputs	628.00	742.16	1,256.00	1,256.00
Labour direct	100.98	119.34	201.96	201.96
Utilities	688.70	813.89	1,377.40	1,377.40
Casual labour	521.00	615.71	1042.00	1042.00
Maintenance and repair	212.13	250.69	424.25	424.25
Labour overheads	42.08	49.72	84.15	84.15
Administration Overheads	67.32	79.56	134.64	134.64
Total Operating Costs	2,268.20	2,671.06	4,520.4	4,520.4
Depreciation	1,537.38	1,537.38	1,537.38	1,030.56
Cost of Finance	2,479.64	2,327.74	1,769.48	1,016.27
Total Production Cost	6,277.21	6,577.36	7,827.26	1,016.27

C. FINANCIAL EVALUATION

1. Profitability

According to the projected income statement, the project will start generating profit in the first year of operation. Important ratios such as the percentage of net profit to total sales, net profit to equity (return on equity) and net profit plus interest to total investment (return on total investment) will show an increasing trend throughout the production life of the project. The income statement and other profitability indicators show that the project is viable.

2. Break-even Analysis

The break-even point of the project is estimated by using income statement projection.

$$\text{BE} = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable cost}} = 20 \%$$

3. Pay-Back Period

The investment cost and income statement projection are used to project the pay-back period. The project's initial investment will be fully recovered within 5 years.

4. Internal Rate of Return and Net Present Value

Based on the cashflow statement, the calculated IRR of the project is 25 % and the net present value at 10.5% discount rate is Birr 32.03 million.

D. ECONOMIC BENEFITS

The project can create employment for 55 persons. In addition to supply of the domestic needs, the project will generate Birr 30.83 million in terms of tax revenue. Moreover, the Regional Government can collect employment, income tax and sales tax revenue. The establishment of such farm will have a foreign exchange earning effect to the country by exporting its produce.