

## **7.PROFILE ON FATTENING FARM**

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## **I. SUMMARY**

This profile envisages the establishment of cattle fattening farm with annual capacity of 10,000 heads of cattle.

The present demand for cattle meat is estimated at 127,731 tonnes per annum. The demand is projected to reach 229,334 tonnes by the year 2012

The envisaged project will create employment opportunity for about 36 persons.

The total initial investment cost of the project is estimated at Birr 12.86 million, out of which 3.7 million is for plant machinery and equipment.

The project is financially viable with an internal rate of return (IRR) of 29% and net present value (NPV) of Birr 14 million, discounted at 10.5%.

## **II. PRODUCT DESCRIPTION AND APPLICATION**

Fattening means controlling what cattles eat by using high quality feed so that to generate faster weight gains. It is a strategic feeding option which produce a quick result (2-3 months), technically quite simple. Agro-industrial by products can be used as feed sources.

Once cattle have eaten to their appetite and remain full, the chance of negative upsets are reduced considerably. In this regard additional libitum feeding would result in increased daily weight gains of upto 700 gm per day.

## **III. MAKET STUDY AND PRODUCTION CAPACITY**

### **A. MARKET STUDY**

#### **1. Past Supply and Present Demand**

Meat produced in the country has two outlets; the local and export market. The greatest portion of the annual production is consumed locally while small portion of it is exported.

To establish the present local demand for beef meat an end-users approach is used. For this estimation " The 1995/1996 Revised Report on Household Income, Consumption and Expenditure Survey", published in 1998 by CSA is used as a base. The demand estimated based on the above indicated survey is given in Table 3.1.

**Table 3.1**  
**ANNUAL BEEF CONSUMPTION (COUNTRY LEVEL)**

Income Group (Annual)	Number of Individuals in the Group	Average Quantity Annually consumed (Gm)	Total consumption (Tonnes)
<600	37,628	148	5.57
600-999	184,605	237	43.75
1000-1399	474,769	332	158
1400-1999	1,777,526	695	1,235
2000-2599	2,841,045	1,011	2,872
2600-3399	5,109,691	1,175	6,004
3400-4199	6,559,456	1,138	7,465
4200-5399	9,181,298	1,405	12,900
5400-6599	7,741,988	1,553	12,023
6600-8999	9,288,388	2,234	20,750
9000-12599	6,088,183	3,549	21,607
12,600-16199	1,611,863	6,089	9,815
16,200-19999	799,619	7,303	5,840
>20,000	993,008	12,156	12,071
<b>Total</b>	<b>52,689,067</b>	<b>-</b>	<b>112,789</b>

As can be seen from Table 3.1, the total national annual beef meat consumption in the year 1995/96 was 112,789 tonnes. The per capita consumption is thus estimated to be 2.14kg, given the total Ethiopian population of 52,689,067 at the time the survey carried out. Using

the population growth rate of 2.9% per annum, the present effective national demand for beef meat is estimated at 126,453 tonnes.

Meat export has tremendously increased in the past few years. Table 3.2 presents export of meat and meat products.

**Table 3.2**  
**EXPORT OF MEAT AND MEAT PRODUCTS**

Year	Export (tonnes)
1991	38
1992	15
1993	40
1994	209
1995	580
1996	1,268
1997	1,823
1998	2,508

**Source:** The External Trade Statistics, Customs Authority

The above table indicates that substantial increase in the export of meat and meat products was registered during the period under review. From the year 1993 to 1998, export grew from 40 tonnes to 2,508 tonnes. The notable reason for this substantial growth in this five years is the devaluation of the local currency (Birr) which stimulated export, thus the average export of meat and meat products in this period i.e, 1,278 tonnes is assumed to indicate the current foreign market demand for the product.

## **2. Demand Projection**

The increase in household meat consumption is mainly a function of three demand determining variables i.e population, income and consumption habit.

The total population growth rate in Ethiopia is 2.9% per annum, while that of the urban population growth rate is 4% per annum. The consumption of meat by the rural population is expected to increase as a result of higher income. Hence, in order to estimate the probable level of future demand, present demand is assumed to increase by a slightly higher rate than the urban population growth rate, i.e.5% per annum.

According to Economic Commission for Africa's (ECA) "Economic Report on Africa (2002)", the average growth rate of Ethiopian export over the period 1991-2000 were 4.8% per annum. Accordingly the future export market demand for the product is assumed to grow by 4.8% per annum.

The demand projected on the basis of the above assumptions is shown in Table 3.3

**Table 3.3**  
**DEMAND PROJECTION IN TONNES**

Year	Projected Domestic Demand	Projected Export Demand	Total
2001	132,776	1,339	134,115
2002	139,414	1,404	140,818
2003	146,385	1,471	147,856
2004	153,704	1,542	155,246
2005	161,390	1,616	163,006
2006	169,459	1,693	171,152
2007	177,932	1,774	179,706
2008	186,829	1,860	188,689
2009	196,170	1,950	198,120
2010	205,979	2,042	208,021
2011	216,276	2,140	218,416
2012	227,091	2,243	229,334

### 3. Pricing and Distribution

The domestic market price is determined by the market force of demand and supply. Whenever more cattle are driven to the market places the price would decline and vice versa. Generally the domestic market price for meat has shown a continuous increase over the past five years. The domestic market prices are indicated in Table 3.2 below.

**Table 3.4**  
**LOCAL MARKET PRICE OF MEAT**

Years	Local Birr/kg *
1991	7.31
1992	9.04
1993	11.03
1994	11.46
1995	11.76

Farmers bring their cattle to their nearby cattle market, where they are bought by small cattle traders. The small cattle traders drive the cattle to the terminal market from which they are taken finally either to slaughter house after they are sold to meat shops (lukandas) or to other big towns for resale to meat shops in big towns. These cattle markets are the major sources of stock to the cattle fattening farms as well.

Foreign market prices are determined by either through negotiation with the importers abroad or by the international market prices. The former approach is mostly commonly applicable in setting prices at the export market. There was in general price increase in the export market which contributed to the increase in the quantity of meat export. The annual average export price is indicated in Table 3.4.

**Table 3.4**  
**EXPORT MARKET PRICE OF MEAT AND LIVE WEIGHT**

Years	Annual Average Prices of meat (Birr/kg)	Live cattle (Birr/kg)
1990	3.90	
1991	3.80	
1992	1.30	
1993	11.60	4.82
1994	14.50	5.32
1995	13.30	5.19

The sharp increase in the export prices of meat during the early 1990s' was attributed to Birr devaluation. The live weight price of cattle in the year 1995 is assumed to be the finished product price of cattle for the envisaged fattening farm i.e Birr 5,190 per tonne.

The envisaged farm is recommended to directly export its product and for the local market use commissioned agents at strategic locations.

## **B. PLANT CAPACITY AND PRODUCTION PROGRAMME**

### **1. Plant Capacity**

The fattening project will have a capacity of 2500 heads of cattle, per batch and the objective is to process four batches per year with 90 days feeding period per batch. Stock mobilization can be arranged on weekly basis with 210 cattles per week. This level of production (10,000 heads per annum) is considered to be more realistic as it will enable proper management and efficient utilization of resources and assets. An average weight of each animal after fattening is assumed to be about 300 kg.

### **2. Production Programme**

The farm will work all the year round. The farm will start at 75% of its rated capacity in the first year and full capacity in the second year and thereafter.

#### IV. MATERIALS AND INPTUS

##### A. MATERIALS

Annual raw material requirement and cost of the fattening farm at full operation capacity is given in Table 4.1.

**Table 4.1**  
**ANNUAL RAW MATERIAL REQUIREMENT AND**  
**COSTS OF FATTENING FARM AT FULL CAPACITY**

No	Description	Qty	Cost, Birr in '000		
			Local	Foriegn	Total
1	Cattle (head)	10,000	6,000		6,000
2	Feed (tonnes)	3,700	2,236	-	2,236
3	Other feed (tonnes)	9,000	1,620	-	1,620
4	Vaccin & treatment injection	LS	24	216	240
	<b>Total</b>		<b>9,880</b>	<b>216</b>	<b>10,096</b>

##### B. UTILITIES

Annual requirement of electricity, water and fuel is estimated at 12,950 kwh, 110,500 m<sup>3</sup> and 75,500 liters, respectively. The total costs of utilites is, therefore, about Birr 455,650 per annum.

#### V. TECHNOLOGY AND ENGINEERING

##### A. TECHNOLOGY

###### 1. Production Process

Generally, the fattenig farm will have the following process. Cattles purchased from purchasing centres – holding areas – feed lots - marketing. The holding areas are used as

quarantine and tretreatment. Treatment include: weighing, vaccination, deeping, etc. It is important that animals in the fattening programme receive adequate disease protection. Unhealthy and unproductive animals do not make good use of high quality fed, which is scares therefore, animals poorly performing after 2 weeks, needs to be culled and sold in the local market. Well performing animals kept for three months are expected to gain an average wieight of 60kg.

## 2. Source of Technology

The machinery and equipment required can be supplied by Hagbes Ethiopia PLc.

## B. ENGINEERING

### 1. Machinery and Equipment

The required machinery, equipment and tools are listed in Table 5.1. Total cost is estimated at Birr 3.7 million, out of which Birr 3.1 million (84.0%) is in foreign currency.

**Table 5.1**  
**LIST OF MACHINERY AND EQUIPMENT FOR FATTENING FARM.**

No	Description	Qty (No.)	Unit Price (Birr)	Total cost ('000 Birr)		
				Foreign	Local	Total
1	Deeping vat	1	50,000	10.0	40.0	50.0
2	Cruch	1	5,000	4.5	0.5	5.0
3	Syringes	50	500	22.50	2.50	25.00
4	Hoof treamer	15	700	9.45	1.05	10.50
5	Burdizzo crusher	15	800	10.80	1.20	12.00
6	Knapsak sprayer	15	1,500	20.25	2.25	22.50
7	Weigh bridge/scale	2	75,000	135.00	15.00	150.00
8	Feeder and water trough	30	6,500	156.00	39.00	195.00
9	Tractor	3	200,000	540.00	60.00	600.00
10	Trailer	4	75,000	270.00	30.00	300.00
11	Water tank	4	95,000	190.00	190.00	380.00
12	Reservior	4	400,000	1,534.24	65.76	1,600.00
13	Molasses tank	2	35,000	35.0	35.0	70.00
14	Urea mixer tank	2	95,000	95.0	95.0	190.00
15	Silage Graps	2	50,000	75	25	100
<b>Total Cost</b>			-	<b>3,107.74</b>	<b>602.26</b>	<b>3,710.00</b>

## 2. Land, Buildings and Civil Works

The total area required for fattening farm is about 5000 m<sup>2</sup>. Building area of 620 m<sup>2</sup> and shade area of 1250 m<sup>2</sup> are required. The total cost buildings and civil works at the rate of Birr 1,500 per m<sup>2</sup> for the building and Birr 1000 per m<sup>2</sup> for the shade is estimated at Birr 2,180,000. On the other hand, the total cost of land lease at the rate of Birr 1.2 per m<sup>2</sup> and for 95 years of land holding is estimated at Birr 570,000.

## 3. Proposed Location

The location can be Gode or Jigjiga, where there is an easy foreign and local market accesses.

## VI. MANPOWER AND TRAINING REQUIREMENT

### A. MANPOWER REQUIREMENT

Manpower required and the corresponding labour cost for the envisaged project is indicated in Table 6.1.

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

No	Description	Req. Person	Monthly salary, (Birr)	Annual salary (Birr)
1	Farm Manger	1	1500	18,000
2	Secretary	1	600	7,200
3	Unit leaders	2	1050	25,200
4	Cattle Attendant	12	600	86,400
5	Sales person	2	900	21,600
6	Ass. Feed specialist	1	900	10,800
4	Veternarian	1	1000	12,000
5	Record keeper	2	700	16,800
6	Drivers	5	700	42,000
7	Ass. Driver	5	350	21,000
8	Guards	4	300	14,400
	<b>Sub-Total</b>	<b>36</b>		<b>275,400</b>
	Employee's Benefits (25%)			68,850
	<b>Grand Total</b>	<b>36</b>		<b>344,250</b>

## **B. TRAINING REQUIREMENT**

No special training is required for the envisaged project

## **VII. FINANCIAL ANALYSIS**

The financial analysis of the Cattle Fattening 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	5 years
Bank interest	10.5%
Discounted cashflow	10.5%
Land value	Based on estimated lease rate of the region
Repair and maintenance	5 % of the total plant and machinery
Accounts receivable	30 days
Raw material local	30 days
Raw materials import	90 days
Work in progress	90 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 about Birr 12.86 million, out of which 26 per cent will be required in foreign currency. For details see Table 7.1.

**Table 7.1**  
**INITIAL INVESTMENT COST ('000 BIRR)**

	Cost Items	Foreign Currency	Local Currency	Total
1	Land	-	570.00	570.00
2.	Building and Civil Work	-	2,180.00	2,180.00
3.	Plant Machinery and Equipment	3,107.74	602.26	3,710.00
4.	Office Furniture and Equipment	-	50.00	50.00
5.	Vehicle	-	500.00	500.00
6.	Pre-production Expenditure*	-	1,274.30	1,274.30
	<b>Total Investment cost</b>	<b>3,107.74</b>	<b>5,074.30</b>	<b>8,274.30</b>
7	Working Capital	142.12	4,442.48	4,584.6
	<b>Total</b>	<b>3,249.86</b>	<b>9,516.78</b>	<b>12,858.90</b>

## B. PRODUCTION COST

The annual production cost at full operation capacity of the plant is estimated at Birr 12 million (see Table 7.2). The material and utility cost accounts for 8 per cent while repair and maintenance take 1.52 per cent of the production cost.

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\* *Pre-production expenditure include interest during construction (Birr1.12 million) and cost 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
Raw Material and Inputs	7,572.00	10,095.00	10,096.00	10,096.00
Labour direct	171.45	228.60	228.60	228.60
Utilities	341.74	455.65	455.65	455.65
Energy and Power				
Spare parts				
Maintenance and repair	138.24	184.31	184.31	184.32
Factory overheads	51.60	68.80	68.80	68.80
Administration Overheads	46.80	46.80	46.80	46.80
<b>Total Operating Costs</b>	<b>8,322.40</b>	<b>11,080.90</b>	<b>11,080.90</b>	<b>11,080.90</b>
Depreciation	617.60	617.60	487.60	487.60
Cost of Finance	563.40	551.00	466.50	409.30
<b>Total Production Cost</b>	<b>9,503.40</b>	<b>12,249.50</b>	<b>12,035.00</b>	<b>11,977.80</b>

## 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 profit to total sales, net profit to equity (Return on equity) and net profit plus interest on total investment (return on total investment) show an increasing trend during the life-time of the project.

The income statement and the other indicators of profitability show that the project is viable.

### 2. Break-even Analysis

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

$$\text{BE} = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable cost}} = 15\%$$

### **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 29% and the net present value at 10.5% discount rate is Birr 14 million.

### **D. ECONOMIC BENEFITS**

The project can create employment for 36 persons. In addition to supply of the domestic needs, the project will generate Birr 15 million interms of tax revenue. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports.