

**158. PROFILE ON BLACK PEPPER
PROCESSING**

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I. SUMMARY

This profile envisages the establishment of a plant for the processing and packing of black pepper with a capacity of 150 tonnes per annum.

The present demand for the proposed product is estimated at 217 tonnes per annum. The demand is expected to reach at 318.7 tonnes by the year 2020.

The plant will create employment opportunities for 19 persons.

The total investment requirement is estimated at Birr 2.59 million, out of which Birr 1.1 million is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 25 % and a net present value (NPV) of Birr 1.8 million, discounted at 8.5%.

II. PRODUCT DESCRIPTION AND APPLICATION

The characteristic aroma to black pepper is due to the presence of a volatile oil while the pungency is caused by the non-volatile oleoresin fraction and various alkaloids

Black pepper is an indispensable item in the preparation of sauces, soups, curry powder and pickles. It is also consumed in the preparation of processed meat of all kinds.

It is much employed in medicine as an aromatic stimulant for enhancing salivary and gastric secretions and also as a stomachic.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply And Present Demand

Black pepper which is used for food flavouring has a high market demand. The current demand for the product is estimated based on the per capita consumption, established based on C.S.A's "1999/2000 Income, Consumption and Expenditure Survey" Table 3.1 depicts the average quantity of pasta products annually consumed by different expenditure groups in the urban and rural areas of the Country.

Table 3.1
CONSUMPTION OF BLACK PEPPER BY INCOME GROUP

Income (Birr)	No. of Persons			Per Capita Consumption (gram)		Total Consumption (Tonnes)		
	Total	Urban	Rural	Urban	Rural	Urban	Rural	Total
<600	146,344	114,336	32,008			-	-	-
600-999	405,135	234,421	170,714	37		8.67	-	8.67
1000-1399	836,468	369,121	467,347	2	10	0.74	4.67	5.41
1400-1999	2,503,435	631,878	1,871,557	3	1	1.90	1.87	3.77
2000-2599	3,589,919	579,292	3,010,627	4	5	2.32	15.05	17.37
2600-3399	5,913,004	750,503	5,162,501	8	4	6.00	20.65	26.65
3400-4199	6,983,109	586,154	6,396,955	4	9	2.34	57.57	59.92
4200-5399	9,560,317	859,529	8,700,788	5	3	4.30	26.10	30.40
5400-6599	7,583,587	703,354	6,880,233	5	1	3.52	6.88	10.40
6600-8999	8,289,216	859,349	7,429,867	6	2	5.16	14.86	20.02
9000-12599	4,455,446	598,967	3,856,479	35	4	20.96	15.43	36.39
12600-16199	1,123,972	383,377	740,595	10	5	3.83	3.70	7.54
16200-19999	521,729	260,485	261,244	8	1	2.08	0.26	2.35
20000<	777,382	692,820	84,562	16	2	11.09	0.17	11.25
Grand Total	52,689,063	7,623,586	45,065,477	1,214.10	155.6	72.91	167.22	240.13

Source: CSA, Report on Consumption, Income and Expenditure Survey of the 1999/2000.

As can be seen from Table 3.1, the total consumption of black pepper at the time of survey (1999/2000) was 167.22 and 72.91 tonnes for urban and rural respectively, given the rural and urban population the per capita consumption is computed to be 0.010 kg for urban and 0.02 kg for rural population. Assuming that the demand for black pepper grows with the growth of population the present demand for the product is thus, computed taking the latest (2007) population size. Accordingly, the present demand estimated based on per capita consumption is shown in Table 3.2.

Table 3.2
TOTAL BLACK PEPPER CONSUMPTION (2007)

<u>SNNPRS</u>	Population size	Black pepper Consumption	
		Per household(Kg)	Total (Tonnes)
Urban	1,338,000	0.01	13.38
Rural	13,983,000	0.02	279.66
Total	15,321,000		293.04
<u>County Level</u>			
Urban	12,689,000	0.01	126.89
Rural	64,438,000	0.02	1289
Grand Total	77,127,000		1415.65

As can be seen from Table 3.2, the total country level consumption (urban plus rural) for black pepper is estimated at 1,415 tonnes. However, assuming that industrially processed black pepper is mainly consumed by the urban population the present (2007) demand for the product is estimated at 217 tonnes of which the share of SNNPRS is 13 tonnes.

2. Projected Demand

The demand for black pepper is determined by the growth in population. Demand for product is, therefore, assumed to grow by 3%. Accordingly, Table 3.3 shows projected demand for black pepper.

Table 3.3
PROJECTED DEMAND FOR BLACK PEPPER (TONNES)

Year	Projected Demand
2008	223.5
2009	230.2
2010	237.1
2011	244.2
2012	251.6
2013	259.1
2014	266.9
2015	274.9
2016	283.1
2017	291.6
2018	300.4
2019	309.4
2020	318.7

3. Pricing and Distribution

The price of processed black pepper varies from season to season. For the propose of financial analysis, an average factory-gate price of Birr 20 per kg is adopted. The product will be directly delivered and served to consumers.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

The annual production capacity of the project is 150 tonnes of black pepper powder based on 300 working days and 3 shifts per day.

2. Production Programme

Table 3.4 indicates the production programme of the envisaged project. At the initial stages of production, the project may require some years to penetrate the market. Therefore, in the first and second year of production, the capacity utilization rate will be 70 and 90%, respectively. In the third year and then after, full capacity production shall be attained.

Table 3.4
PRODUCTION PROGRAMME

Sr. No.	Description	Production Programme		
		Year 1	2	3-10
1	Black pepper powder (tonnes)	105	135	150
2	Capacity Utilization rate (%)	70	90	100

IV. MATERIAL AND INPUTS

A. RAW AND AUXILIARY MATERIALS

The annual raw and auxiliary materials requirement and cost are indicated in Table 4.1.

Table 4.1**RAW AND AUXILIARY MATERIALS REQUIREMENT & COST**

Sr. No.	Material	Unit	Qty	Cost ('000 Birr)
1	Black pepper seed	Tonne	165	2,475
2	Packing material	kg	4500	112.5
	Total			2,587.5

B. UTILITIES

Water and electricity are the utilities of the project. The annual utilities requirement and its cost are shown in Table 4.2.

Table 4.2**ANNUAL UTILITIES REQUIREMENT & COST**

Sr. No.	Utility	Unit	Qty	Cost ('000 Birr)
1	Electricity	kWh	120,000	56.88
2	Water	M ³	1000	10
	Total			66.88

V. TECHNOLOGY AND ENGINEERING**A. TECHNOLOGY****1. Process Description**

Black pepper will first be cleaned and washed manually. The cleaned pepper is sun dried. Solar drying is the cheapest and popular mode of drying agricultural product.

The dry pepper then enters into the milling unit in which milling and pulverization operations are carried out. The powder is then sifted and tested according to standard procedures depending on the target market. It is then packed for sales.

2. Source of Technology

A black pepper processing plant can be acquired from different suppliers. The following company could be requested for the offer.

Food And Biotech Engineers

Khawaja, Faridabad, Haryana-121003, INDIA

Phone: +91-129-2510924

B. ENGINEERING

1. Machinery & Equipment

The list of machinery and equipment required for the project is indicated in Table 5.1. the total cost of machinery and equipment is estimated at Birr 1,100,000 of which Birr 916,700 is required in foreign currency.

Table 5.1
LIST OF MACHINERY & EQUIPMENT

Sr. No.	Description	Qty
1	Chamber solar drier	1
2	Vibratory screen	1
3	Disintegrator	1
4	Micropulverizer	1
5	Sifting machine	1
6	Weighing and packing unit	1 unit
7	Miscellaneous, equipments like handling bins, storage vessels etc.	Lumpsum

2. Land, Building and Civil Work

The total land requirement of the project is estimated at 1,000 m² of which the built-up area is 300 m². Therefore, the cost of building is Birr 450,000. The lease value of land is about Birr 80,000 at a rate of 1 Birr per m² per annum for 80 years.

3. Proposed Location

Alcho weriro town is the best location of the proposed project for its proximity to raw material sources.

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

The envisaged project requires a work force of 19 persons. Table 6.1 shows the list and cost of manpower. The total annual labour cost is estimated at Birr 201,000.

Table 6.1
MANPOWER REQUIREMENT LABOUR & COST

Sr. No.	Description	Req. No.	Monthly Salary (Birr)	Annual Salary (Birr)
1	General manager	1	3,000	36,000
2	Secretary	1	700	8,400
3	Production head	1	2,000	24,000
4	Accountant	1	2,000	24,000
5	Operators	3	2,000	25,200
6	Labourers	10	3,000	36,000
7	Guards	2	600	7,200
	Sub-total	19	13,400	160,800
	Benefit (25% BS)		3350	40,200
	Total		16,750	201,000

B. TRAINING REQUIREMENT

On-the-job training shall be carried out by the experts of machinery suppliers and its cost is estimated at Birr 15,000.

VII. FINANCIAL ANALYSIS

The financial analysis of the black pepper processing project is based on the data presented in the previous chapters and the following assumptions:-

Construction period	1 year
Source of finance	30 % equity
	70 % loan
Tax holidays	years
Bank interest	8%
Discount cash flow	8.5%
Accounts receivable	30 days
Raw material local	30 days
Raw material, import	90 days
Work in progress	5 days
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days

A. TOTAL INITIAL INVESTMENT COST

The total investment cost of the project including working capital is estimated at Birr 2.59 million, of which 43 per cent will be required in foreign currency.

The major breakdown of the total initial investment cost is shown in Table 7.1.

Table 7.1
INITIAL INVESTMENT COST

Sr. No.	Cost Items	Total Cost (‘000 Birr)
1	Land lease value	80.0
2	Building and Civil Work	450.0
3	Plant Machinery and Equipment	1,100.0
4	Office Furniture and Equipment	100.0
5	Vehicle	200.0
6	Pre-production Expenditure*	290.4
7	Working Capital	370.1
	Total Investment Cost	2,590.4
	Foreign Share	43

* N.B Pre-production expenditure includes interest during construction (Birr 140.37 thousand) training (Birr 15 thousand) and Birr 135 thousand costs of registration, licensing and formation of the company including legal fees, commissioning expenses, etc.

B. PRODUCTION COST

The annual production cost at full operation capacity is estimated at Birr 3.22 million (see Table 7.2). The material and utility cost accounts for 82.39 per cent, while repair and maintenance take 1.55 per cent of the production cost.

Table 7.2**ANNUAL PRODUCTION COST AT FULL CAPACITY ('000 BIRR)**

Items	Cost	%
Raw Material and Inputs	2,587.50	80.31
Utilities	66.88	2.08
Maintenance and repair	50	1.55
Labour direct	96.48	2.99
Factory overheads	32.16	1.00
Administration Costs	64.32	2.00
Total Operating Costs	2,897.34	89.93
Depreciation	212.5	6.60
Cost of Finance	111.98	3.48
Total Production Cost	3,221.82	100

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 including cost of finance when it starts to operate at full capacity (year 3) is estimated by using income statement projection.

$$\text{BE} = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable Cost}} = 67 \%$$

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 4 years.

4. Internal Rate of Return and Net Present Value

Based on the cash flow statement, the calculated IRR of the project is 25 % and the net present value at 8.5% discount rate is Birr 1.8 million.

D. ECONOMIC BENEFITS

The project can create employment for 19 persons. In addition to supply of the domestic needs, the project will generate Birr 1.33 million in terms of tax revenue.