

BLEACHED AND DEHYDRATED GINGER



1.0 INTRODUCTION

The state of Meghalaya produces substantial quantity of ginger with East-Khasi Hill district producing about 5,000 tonnes annually whereas Jaintia Hills district around 2,000 tonnes. Bulk of the ginger is marketed in raw form or dried form and a small quantity is used for making oil. Dry ginger is prepared from the underground shoots or rhizomes of zingiber officinal plant. It is usually prepared by peeling of the outer skin and drying them in sun for about a week. It is also known as unbleached ginger. This is the common practice. But mechanical dehydration increases the production; quality is superior and is more hygienic. This is a versatile product and can be produced in many parts of the country but this note considers Meghalaya as the preferred location.

2.0 PRODUCT

2.1 Applications

Ginger is a seasonal product but it is used extensively in many food preparations. Hence, dried ginger or ginger powder is used in large quantity during off-season.

2.2 Availability of know how, Compliances and quality standards

CFTRI, Mysore, has successfully developed the technological know-how. Compliance under the PFA Act is mandatory. Quality standards are specified in IS 1908:1961.

3.0 MARKET POTENTIAL

3.1 Demand and Supply

Fresh and dried ginger, ginger oil and ginger powder are used in large quantities in many vegetarian and non-vegetarian food preparations in Indian, Continental and Chinese cuisine. Ginger also has medicinal attributes and is used in many households as well as by

pharmaceutical companies. But fresh ginger is available only for about 5-6 months and hence the demand for bleached and dehydrated ginger is increasing.

3.2 Marketing Strategy

Manual and sun-drying method is in vogue for dehydration since long, but production is not only limited but quality is also not up to the mark. Hence, mechanically bleached and dehydrated ginger has become very popular. Restaurants, eateries and dhabas, clubs, caterers, food processing industry and pharmaceutical companies are the main consumers. There are very good export markets as well but the contemplated capacity of the project does not warrant this aspect.

4.0 MANUFACTURING PROCESS

Ginger is washed and cleaned in water and then skin of ginger is peeled partially with the help of peeling machine. It is then dried in electrically operated tray drier at a temperature of about 60 °C. Even if ginger is to be used for extraction purposes, this temperature is advisable as oil contents in ginger are not affected till 80° C. Drying time is 24 hours in cross-flow type drier and 14 hours in through-flow drier. Dried ginger slices are packed in polythene bags and sealed. Average yield after drying is around 25%. CFTRI, Mysore, has developed the technical know-how successfully. The process flow chart is as under:

Washing, cleaning and partial peeling



Drying



Packing

5.0 CAPITAL INPUTS

5.1 Land and Building

Total built-up area requirement is 50 sq.mtrs. and hence it is assumed that a readymade shed shall be bought which would cost Rs.1.25 lacs. Machines can be accommodated in about 20 sq.mtrs. whereas balance area can be utilised for storage and packing.

5.2 Machinery

Rated processing capacity of 20 tonnes per month is suggested considering 1 shift working and production for only 6 months during the year. This would require following set of equipments:

| Item | Qty. | Price (Rs.) |
|--|--------------|-----------------|
| Ginger Peeling Machine | 1 | 40,000 |
| Electrically-operated Tray Drier- 48 trays | 1 | 75,000 |
| Weighing-scales, sealing machine, etc. | -- | 20,000 |
| Washing Tank | 1 | 15,000 |
| | Total | 1,50,000 |

5.3 Miscellaneous Assets

Certain other assets like furniture and fixtures, storage racks, knives and cutters, plastic tubs, packing tables etc. shall be required for which an amount of Rs. 40,000/- is set aside.

5.4 Utilities

Power requirement shall be 10 HP whereas water requirement will be 400-450 ltrs. every day.

5.5 Raw Materials

The all important raw material is fresh ginger. Requirement during the season even at 100% will be 30 tonnes and procurement should not be a problem at all. Bags made from food grade plastic shall be required for inner packing and large size bags for outer packing.

6.0 MANPOWER REQUIREMENTS

| Particulars | Nos. | Monthly Salary (Rs.) | Total Monthly Salary (Rs.) |
|---------------------|------|----------------------|----------------------------|
| Skilled Workers | 1 | 2,250 | 2,250 |
| Semi-skilled Worker | 1 | 1,650 | 1,650 |
| Helpers | 2 | 1,250 | 2,500 |
| Salesman | 1 | 2,500 | 2,500 |
| | | Total | 8,900 |

7.0 TENTATIVE IMPLEMENTATION SCHEDULE

| Activity | Period (in months) |
|--|--------------------|
| Application and sanction of loan | 1.5 |
| Site selection and commencement of civil work | 0.5 |
| Completion of civil work and placement of orders for machinery | 1.5 |
| Erection, installation and trial runs | 0.5 |

8.0 DETAILS OF THE PROPOSED PROJECT

8.1 Building

As explained earlier, a readymade premise of around 50 sq.mtrs. would cost around Rs.1.25 lacs.

8.2 Machinery

The total cost of machinery will be Rs. 1.50 lacs as mentioned earlier.

8.3 Miscellaneous Assets

A provision of Rs. 40,000/- under this head is adequate as explained before.

8.4 Preliminary & Pre-operative Expenses

A provision of Rs. 50,000/- is made towards pre-production expenses like registration, establishment & administrative charges, travelling, interest during implementation, trial runs etc.

8.5 Working Capital Requirements

Capacity utilisation during first year is expected to be 60% for which the working capital needs will be as under:

(Rs. in lacs)

| Particulars | Period | Margin | Total | Bank | Promoters |
|-------------------------|---------|--------------|-------------|-------------|-------------|
| Stock of Finished Goods | 1 Month | 25% | 0.72 | 0.54 | 0.18 |
| Receivables | 1 Month | 25% | 1.00 | 0.75 | 0.25 |
| Working Expenses | 1 Month | 100% | 0.15 | -- | 0.15 |
| | | Total | 1.87 | 1.29 | 0.58 |

8.6 Cost of the Project & Means of Financing

(Rs. in lacs)

| Item | Amount |
|--|-------------|
| Building | 1.25 |
| Machinery | 1.50 |
| Miscellaneous Assets | 0.40 |
| P&P Expenses | 0.50 |
| Contingencies @ 10% on Land and Building & Plant & Machinery | 0.28 |
| Working Capital Margin | 0.58 |
| Total | 4.51 |
| Means of Finance | |
| Promoters' Contribution | 1.41 |
| Term Loan from Bank/FI | 3.10 |
| Total | 4.51 |
| Debt Equity Ratio | 2.20 : 1 |
| Promoters' Contribution | 31% |

Financial assistance in the form of grant is available from the Ministry of Food Processing Industries, Govt. of India, towards expenditure on technical civil works and plant and machinery for eligible projects subject to certain terms and conditions.

9.0 PROFITABILITY CALCULATIONS

9.1 Production Capacity & Build-up

The rated capacity is 20 tonnes per month and the plant would be operated for 6 months. The promoters may use it for some other fruits or vegetables but this note does not account for any such activity. Capacity utilisation in the first year is taken at 60% and thereafter it is limited to 75%.

9.2 Sales Revenue at 100%

Assuming selling price of Rs.70,000/- per ton, sales revenue at 100% for 6 months will be Rs. 21.00 lacs.

9.3 Raw and Packing Materials Required at 100%.

(Rs. in lacs)

| Product | Qty. (Tonnes) | Price/Ton (Rs.) | Value (Rs. in lacs) |
|-------------------|------------------|--------------------|------------------------|
| Ginger | 120 | 10000 | 12.00 |
| Packing Materials | -- | -- | 1.00 |
| | | Total | 13.00 |

9.4 Utilities

Cost of utilities at 100% utilisation will be Rs. 4,000/- per month.

9.5 Interest

Interest on term loan of Rs. 3.10 lacs is calculated @ 12% per annum considering repayment in 3 years including a moratorium period of 6 months. Interest on working capital loan from bank is taken as 14% per annum.

9.6 Depreciation

It is calculated on WDV basis @ 10% on building and 20% on machinery and miscellaneous assets.

10.0 PROJECTED PROFITABILITY

(Rs. in lacs)

| No. | Particulars | 1st Year | 2nd Year |
|----------|--|------------------------|--------------|
| A | Installed Capacity | ----- 120 Tonnes ----- | |
| | Capacity Utilisation | 60% | 75% |
| | Sales Realisation | 12.60 | 15.75 |
| B | Cost of Production | | |
| | Raw and Packing Materials | 7.80 | 9.75 |
| | Utilities | 0.14 | 0.18 |
| | Salaries | 0.52 | 0.65 |
| | Stores and Spares | 0.09 | 0.16 |
| | Repairs & Maintenance | 0.15 | 0.24 |
| | Selling Expenses | 1.55 | 1.90 |
| | Administrative Expenses | 0.18 | 0.27 |
| | Total | 10.43 | 13.15 |
| C | Profit before Interest & Depreciation | 2.17 | 2.60 |
| | Interest on Term Loan | 0.30 | 0.17 |
| | Interest on Working Capital | 0.18 | 0.23 |
| | Depreciation | 0.51 | 0.41 |
| | Profit before Tax | 1.18 | 1.79 |
| | Income-tax @ 20% | 0.04 | 0.35 |
| | Profit after Tax | 1.14 | 1.44 |
| | Cash Accruals | 1.65 | 1.85 |
| | Repayment of Term Loan | 0.60 | 1.20 |

11.0 BREAK-EVEN ANALYSIS

(Rs. in lacs)

| No | Particulars | Amount | |
|-----|-------------------------------|--------|-------|
| [A] | Sales | | 12.60 |
| [B] | Variable Costs | | |
| | Raw & Packing Materials | 7.44 | |
| | Utilities (70%) | 0.10 | |
| | Salaries (70%) | 0.36 | |
| | Stores & Spares | 0.09 | |
| | Selling Expenses (70%) | 1.33 | |
| | Administrative Expenses (50%) | 0.09 | |
| | Interest on Working Capital | 0.18 | 9.59 |
| [C] | Contribution [A] - [B] | | 3.01 |
| [D] | Fixed Cost | | 1.83 |
| [E] | Break-Even Point [D] ÷ [C] | | 61% |

12.0 [A] LEVERAGES

Financial Leverage

= EBIT/EBT

= 1.66 ÷ 1.18

= 1.41

Operating Leverage

= Contribution/EBT

= 3.01 ÷ 1.18

= 2.55

Degree of Total Leverage

= FL/OL

= 1.41 ÷ 2.55

= 0.55

[B] Debt Service Coverage Ratio (DSCR)

(Rs. in lacs)

| Particulars | 1st Yr | 2nd Yr | 3rd Yr |
|-----------------------|------------------|-------------|-------------|
| Cash Accruals | 1.65 | 1.85 | 2.11 |
| Interest on TL | 0.30 | 0.17 | 0.08 |
| Total [A] | 1.95 | 2.02 | 2.19 |
| Interest on TL | 0.30 | 0.17 | 0.08 |
| Repayment of TL | 0.60 | 1.25 | 1.25 |
| Total [B] | 0.90 | 1.42 | 1.33 |
| DSCR [A] ÷ [B] | 2.17 | 1.47 | 1.86 |
| Average DSCR | ----- 1.83 ----- | | |

[C] Internal Rate of Return (IRR)

Cost of the project is Rs. 4.51 lacs.

(Rs. in lacs)

| Year | Cash Accruals | 20% | 24% | 28% |
|------|---------------|-------------|-------------|-------------|
| 1 | 1.65 | 1.37 | 1.33 | 1.29 |
| 2 | 1.85 | 1.28 | 1.20 | 1.13 |
| 3 | 2.11 | 1.22 | 1.11 | 1.01 |
| 4 | 2.30 | 1.11 | 0.97 | 0.86 |
| | 7.91 | 4.98 | 4.61 | 4.29 |

The IRR is around 25%.

These machines are available with

1. Industrial Equipments, Guwahati, Assam
2. Archana Machinery Stores, Guwahati, Assam