# PROJECT PROFILE

ON

## DEHYDRATED FRUITS
## (HOT AIR DRYING METHOD)

Month & Year
Aug 2010


**PREPARED BY**

**TANSTIA-FNF SERVICE CENTRE**
**B-22, INDUSTRIAL ESTATE**
**CHENNAI-600032**



**Supported by**

Friedrich Naumann STIFTUNG FÜR DIE FREIHEIT

# DEHYDRATED FRUITS
# (HOT AIR DRYING METHOD)

## *1. Introduction*

Many fruits are seasonal in nature and due to their low shelf life after harvest they are sold in the markets at very low prices. There is a considerable surplus of these fruits which can be processed (dehydrated) for consumption during lean months. The seasonal fruits that are in demand during lean periods are mango, pineapples, sapota.

## *2. Market*

The market for dehydrated fruits exists in India to a large extent with dehydrated mangoes (aam papad or mango jelly) being the most sought after. Dehydrated fruits are also common abroad with Israel and China being the largest producers and marketers. Among the consumer markets, the product finds placement in all departmental stores, self-service counters and “A” class outlets in metropolitan towns and cities.

## *3. Packaging*

Dehydrated fruit powders are packed in tins for bulk packaging. In retail packaging, small dispensers are used.

## *4. Production capacity*

- The plant will be in operation for three shifts a day.
- The plant will process 200 kgs of fruits per day.
- The yield of dehydrated fruits will be 40 % that includes 20% pulp and 20% sugar used in the process of dehydration.
- The total quantity of dehydrated fruits produced per annum would be 180 M.T.
- The time period required for achieving full capacity utilization is one year.

## *5. Sales revenue*

With an ex-factory selling price at Rs. 200 per kilogram for dehydrated fruits, the total sales revenue per annum works out to Rs. 360 lakhs. The MRP is Rs. 300 per kilogram of the dehydrated product.

## 6. *Production process outline.*

The fruits received from the farms are directly taken to the cold store. Storage of fruits at 10 degrees centigrade increases the shelf life of the product after harvesting. The fruits are to be processed within one week after receipt from the farms. The fruits are peeled, cubed or pulped as the case may be. They are then blanched in cold water at 2 to 3 degrees centigrade with or without blanching agents such as potassium meta-bi-sulphite. The excess water is drained off in the product. Microfined sugar is dusted to the extent of 20% by weight and later dehydrated in the fluidized bed dryers at temperatures ranging between 50 to 55 degrees centigrade. The time taken to dry is 8 to 10 hours. The dehydrated product is packed in the packing machine.

## 7. *Quality specifications*

- The product should be free from mold and fungal growth.
- It should be free from any fermented odour, coliforms, salmonella and streptococci bacteria.
- It shall not contain any added flavours or colours.
- An FPO license is required for processing.

## 8. *Pollution control measures*

Not necessary as there are no pollutants or effluents.

## 9. *Energy conservation measures*

Common measures will do.

### *10. Land and construction cost for the proposed unit*

Land required – 1.0 acres - Rs. 2.00 lakhs. The area required is 6700 square feet as described below.

| Sl | Description | Sq. feet |
|---|---|---|
| 1 | Processing area – pre preparation | 1000 |
| 2 | Raw material store | 800 |
| 3 | Washing area | 500 |
| 4 | Dehydration area | 1000 |
| 5 | Grinding area | 1000 |
| 6 | Packing area | 500 |
| 7 | Quality control laboratory | 400 |
| 8 | Packaging material store room | 400 |
| 9 | Finished goods store | 400 |
| 10 | Machinery spares store room | 100 |
| 11 | Administration office | 200 |
| 12 | Boiler area | 200 |
| 13 | Toilet space | 200 |
| **14** | **Total** | **6700** |

Cost of construction – Rs. 800 per square foot
Total cost of civil works – 53.60 lakhs
Total cost of land and civil works – Rs. 55.60 lakhs

## *11. Costing of machinery and equipment*

| Sl | Description | Rs. lakhs |
|---|---|---|
| 1 | Precooling facility at + 10 degrees centigrade for raw fruit | 2.500 |
| 2 | Stacking trays for fruits - 500 trays @ Rs. 150 each with each tray holding 10 kgs of raw material | 0.750 |
| 3 | Preparatory section consisting of washing tank, slicers and graters | 2.500 |
| 4 | Blanching tank with thermostat control, solenoid valves, and circulation pump to keep blanching solution in circulation | 1.850 |
| 5 | Vibratory shaker in stainless steel to remove excess water after blanching | 0.600 |
| 6 | Fluidized bed dryers for dehydrating fruits at a capacity of 1000 kilograms in a span of 8 to 10 hours complete with heat exchanger, blower fans and accessories | 4.840 |
| 7 | Pin mill with accessories at a grinding capacity of 50 kilograms per hour | 5.500 |
| 8 | Hot water boiler and accessories | 1.850 |
| 9 | Form fill and seal packing machine with augur weighers and fillers | 2.750 |
| **10** | **Total** | **23.140** |
| 11 | Laboratory equipment | 1.000 |
| **12** | **Grand total machinery and equipment** | **24.140** |

## 12. *Project cost*

| Sl | Description | Rs. lakhs |
|---|---|---|
| 1 | Land | 2.000 |
| 2 | Civil works | 53.600 |
| 3 | Plant machinery | 23.140 |
| 4 | Laboratory equipment | 1.000 |
| 5 | Transport vehicle ( 1 LCV) | 7.500 |
| 6 | Pollution control equipment | 0.000 |
| 7 | Energy conservation equipment | 0.000 |
| 8 | Cost of power connection | 1.000 |
| 9 | Cost of electrification | 1.000 |
| 10 | Erection and commissioning | 2.500 |
| 11 | Cost of machinery spares | 0.500 |
| 12 | Cost of office equipment | 1.000 |
| 13 | Deposits if any | 0.250 |
| 14 | Company formation expenses | 0.100 |
| 15 | Gestation period expenses | 1.500 |
| 16 | Sales tax registration expenses | 0.100 |
| 17 | Initial advertisement and publicity | 10.000 |
| 18 | Contingencies | 1.000 |
| 19 | Working capital margin money | 10.484 |
| **20** | **Total** | **116.674** |

## 13. *Working capital requirements per month*

### a. *Salaries and wages*

| Sl | Description | No of persons | Total salary / month (Rs. lakhs) |
|---|---|---|---|
| 1 | Production Manager | 1 | 0.400 |
| 2 | Production supervisor cum chemist | 3 | 0.600 |
| 3 | Skilled workers | 3 | 0.240 |
| 4 | Unskilled workers | 9 | 0.360 |
| 5 | Packing workers | 9 | 0.360 |
| 6 | Administrative staff | 2 | 0.400 |
| 7 | Driver | 1 | 0.070 |
| 8 | Sales coordinator | 1 | 0.200 |
| **9** | **Total** | **29** | **2.630** |

***b. Raw material requirement per month***

| Sl | Description | Qty (kgs) | Rate / kg (Rs) | Value (Rs. lakhs) |
|---|---|---|---|---|
| 1 | Fruits | 60000 | 30.00 | 18.000 |
| 2 | Sugar | 3500 | 27.00 | 0.945 |
| 3 | **Total raw material** | **63500** | | **18.945** |

***c. Packaging material requirement per month***

| Sl | Description | Qty | Rate / unit Rs) | Value (Rs. lakhs) |
|---|---|---|---|---|
| 1 | Primary packaging material – metallized polyester – poly film | 50 kgs | 250 | 0.125 |
| 2 | Cartons and straps | 2000 nos | 40 | 0.800 |
| 3 | **Total** | | | **0.925** |

**Total raw + packaging material = Rs. 19.870 lakhs**

***d. Utilities per month***

| Sl | Description | Rs. lakhs |
|---|---|---|
| 1 | Power 14000 kwh @ Rs. 5.50 per unit | 0.770 |
| 2 | Water | 0.050 |
| 3 | Boiler fuel | 0.500 |
| 4 | **Total utilities** | **1.320** |

### *e. Contingent expenses per month*

| Sl | Description | Rs. lakhs |
|---|---|---|
| 1 | Rent for processing shed | 0.000 |
| 2 | Postage and stationery | 0.020 |
| 3 | Telephones, fax etc. | 0.050 |
| 4 | Consumable stores | 0.020 |
| 5 | Repairs and maintenance | 0.281 |
| 6 | Local transports, loading and unloading | 0.200 |
| 7 | Advertisement and publicity @ 2% of sales | 0.600 |
| 8 | Insurance | 0.018 |
| 9 | Sales expenses @ 1% of sales | 0.300 |
| 10 | Miscellaneous expenses @ 1% of sales | 0.300 |
| 11 | Trade incentives @ 2% of sales | 0.600 |
| 12 | Taxes | 0.000 |
| **13** | **Total contingent expenses** | **2.389** |

### f. Total working capital requirement per month

| Sl | Description | Rs. lakhs |
|---|---|---|
| 1 | Salaries and wages | 2.630 |
| 2 | Raw material and packaging material | 19.870 |
| 3 | Utilities | 1.320 |
| 4 | Contingent expenses | 2.389 |
| **5** | **Total** | **26.209** |

### *14. Means of finance*

| Sl | Description | Rs. lakhs |
|---|---|---|
| 1 | Total Project Cost | 116.674 |
| 2 | Equity | 38.502 |
| 3 | Debt | 78.172 |
| 4 | Working capital margin money | 10.484 |

## 15. *Financial analysis*

| Sl | Description | Rs. lakhs |
|---|---|---|
| 1 | Total recurring cost per year | 314.508 |
| 2 | Depreciation on land and building | 5.560 |
| 3 | Depreciation on machinery | 2.914 |
| 4 | Depreciation on furnaces | 0.000 |
| 5 | Depreciation on moulds and fixtures | 0.020 |
| 6 | Depreciation on office equipment | 0.100 |
| 7 | Interest on long term loan @ 13.5% | 10.553 |
| 8 | Interest on short term borrowings@ 13.5% | 2.123 |
| **9** | **Total cost of production** | **335.778** |

## 16. *Turnover per year*

| Sl | Item | Qty | Rate/unit (Rs) | Total Rs. lakhs |
|---|---|---|---|---|
| **1** | **Dehydrated fruits** | **180,000 kgs** | **200.00** | **360.00** |

## 17. *Viability analysis*

| Sl | Description | Value |
|---|---|---|
| 1 | Net profit before income tax (Rs. lakhs) | 24.222 |
| 2 | Net profit ratio | 6.7% |
| 3 | Internal rate of return | 20.71% |
| 4 | Break even percentage | 39% |
| 5 | Debt service coverage ratio | 2.008 |

*List of machinery suppliers*

1. Geeta Food Engineering, Plot No. C - 7 / 1, TTC Industrial Area, Pawana MIDC, Thane - Belapur Road, Behind Savita Chemicals, Navi Mumbai 400705. Maharashtra.; Tel: 022 - 56101973; Fax: 022 - 55906450