JACKFRUIT PRODUCTS

PRODUCT CODE	:	No specific code is available.
QUALITY AND STANDARDS	:	The unit may produce the products as per specifications available in F.P.O. Rules 1955 and amendments therein and the Prevention of Food Adulteration Act, 1955.
PRODUCTION CAPACITY	:	Qty. : 100 MT, Value : Rs. 71,25,000 per annum.
MONTH AND YEAR OF PREPARATION	:	March, 2003
PREPARED BY	:	Small Industries Service Institute H. Thangmawizuala Building, Republic Road, Aizwal (Mizoram)-796001 Phone No.:0389-2323448

INTRODUCTION

The jackfruit botanically known as Artocarpus heterophyllus lam, one of the popular fruits of India, is believed to be indigenous in our country. It is grown extensively in the west coast, Assam, West Bengal, Orissa and Bihar. The name jack is said to be an adoption of Portuguese 'Jaca' which in turn is believed to have originated from Malayalam name of the fruit, namely 'Chakka'. Among the other Indian names of the fruit are: Pansa (Sanskrit and Telagu), Katahal (Hindi), Phanas (Marathi), Pala (Tamil), Halasu (Kannada). Fully ripe jackfruit is sweet and has an exotic flavour. The bulbs (edible flakes) contain 7.5% sugar on dry weight basis and a fair amount of Carotene (Vitamin A). The seeds are rich in Carbohydrates and also a good source of Vitamins. Ripe fruits are used for nectar and jams. Unripe fruits are also used for culinary preparations like chips, pickles, etc.

MARKET POTENTIAL

There is a prospective market for these products in Kerala as well as outside the State. It is also learnt that there is a good export market potential for these items especially in Middle East countries. In view of the above, it is envisaged that there is a good scope for setting up jackfruit processing units in jack growing areas. This will not only help the farmers to utilize the perishable raw material but also generate more employment opportunities in rural areas. About twenty to twenty five units are engaged in unorganized sector manufacturing jack chips and jackfruit preserves.

BASIS AND PRESUMPTIONS

1. The unit proposes to work atleast 200 days per annum on single shift basis. However, the

production activity will be available only for 6 months.

2. The unit can achieve its full capacity utilization during the 3rd year of operation.
3. The wages for skilled workers is taken as per prevailing rates in this type of industry in Kerala.
4. Interest rate for total capital investment is calculated @ 14% per annum.
5. The entrepreneur is expected to raise 20 - 25% of the capital as margin money.
6. The unit proposes to construct own building as per F.P.O. specifications while the cost of construction is based on local enquiry.
7. Costs of machinery and equipments are based on price-lists received from machinery manufacturers.

TECHNICAL ASPECTS

Process of Manufacture

Canned Jackfruit

The crisp bulbs of the ripe Jackfruit are used for canning in sugar syrup. Yield of bulbs varies from 20 to 25 per cent depending upon the weight of fruit.

After cutting the fruit in several pieces, the bulbs are removed with hand. As the fruit contains a white highly sticky latex, a little gingili oil or any vegetable oil is smeared on the hands as the latex is soluble in the oil. The seeds are removed from the bulbs. The bulbs are then canned either as whole or as halves or quarters. Syrup of 40°B with 0.5% citric acid is used to increase acidity level as the PH value of the fruit is very high (5.2). The canned jackfruit has an exotic flavour and is relished by all sections.

The outer skin of the fruit which is a waste material is rich in pectin. This can be used for the preparation of pectin. A good jelly can be also made out of the peel, and the inner part of the fruit. The seeds are used as vegetable in every preparation.

Jackfruit Nectar

The bulb are removed from ripe jackfruit and passed through a pulping/ fruit mill. They are then mixed with about 10% hot water and passed through a pulper having a fine sieve of 1 mm hole. The pulp is used for preparing nectar.

Jack Chip

Raw jackfruit is the basic raw material for fried jack chips. First of all, raw jack fruit are cut into large pieces. The bulbs are then removed with hand. The seeds are also removed. The raw bulbs are then cut into suitable length wise pieces. These pieces are fried in coconut oil or refined vegetable oil. Salt may be added to the frying pieces to enhance its taste and preservation. They are packed in polythene bags and sealed with sealing machine.

Quality Control and Standards

The products envisaged in the project are governed by F.P.O. Rules 1955. The manufacturer has to obtain F.P.O. license from the Ministry of Food Processing, Government of India. Since this project has a maximum annual capacity of 100 MT, the unit is categorized as small scale 'A' unit as per FPO terminology. The product should also comply with PFA standards and GMP (Good Manufacturing Practices).

Production Capacity (per annum)

(a) Quantity : 100 MT

(b) Value : Rs. 7,12,5000

Motive Power 15 KW

FINANCIAL ASPECTS

A. Fixed Capital

(i) Land and Building	Amount (In Rs.)
Land - 250 Sq.mtr.	65,625
Built up Area	
Finished goods and raw materials godown, office etc. 100 Sq.mtr. @ Rs. 3000 per sq. m.	3,00,000
Working shed including, concrete storage tanks - height 14',area 100 Sq.mtr. @ Rs. 3000 per sq.m.	3,00,000
Total Cost of Land and Building	6,65,625

(ii) Machinery and Equipment

Sl. No.	Description	Qty.	Amount (In Rs.)
1.	Baby boiler 200kg. of steam per hour	1	60,000
2.	100 lit, cap. Steam jaketted kettle of S.S. Construction	1	16,500
3.	Straight feeding exhaust box with 2 HP motor, starter and gear box.	1	25,000
4.	Sterilization tank (local make)	2	6,000
5.	Semi-automatic can sealer with 301, 401 chucks, roller etc.	1	40,000
6.	Can body reformer with motor and starter	1	15,000
7.	Can body flanger with motor and starter	1	10,000
8.	Fruit mill with 2 HP motor starter with blade and sieves suitable for jackfruit	1	17,000
9.	Wooden basket press	1	5,000
10.	P.P. Cap sealing machine	1	8,000
11.	Work table with aluminium top	2	7,000
12.	Frying pans	2	7,000
13.	Plastic bag sealing machine	2	1,500
14.	Wooden Tables	2	2,500
15.	Plate form weighing machine	1	3,500
16.	Counter scale balance	2	1,500
17.	Storage containers made of food grade plastic 50 kg capacity for pickles	100	17,000
18.	Storage container made of food grade plastic 300 lit. cap for Pulp juice	40	18,000
19.	Knives and other factory utensils	LS	7,000
20.	Testing equipment like refractometer, salinometer, pH meter, pipette, Burette	LS	9,000
21.	Transportation, erection and electrification		2,500
22.	Tax insurance charges	LS	15,000
	Total		3,16,500
	Cost of office equipments and furniture		20,000
	Total		3,36,500
(iii)	Pre-operative Expenses		15,000
	Total Fixed Capital (i + ii + iii)		10,17,125

B. Working Capital (per month)

i) Personnel

Sl. No.	Designation	No.	Salary (In Rs.)	Total (In Rs.)
1.	Food Technologist-cum-Manager	1	5000	5000
2.	Production Supervisor	1	3000	3000
3.	Skilled Workers	2	2000	4000
4.	Clerk-cum-Store Keeper	1	2000	2000
5.	Unskilled Workers	10	1500	15000
	Total			29,000
	Perquisites @ 15% of Salary			4350
	Total			33,350

ii) Raw Material including Packaging Material Requirement

Sl. No.	Particulars	Qty.	Rate (In Rs.)	Amount (In Rs.)
1.	Jackfruit (ripe)	25 MT	1500	37500
2.	Jackfruit (raw)	16 MT	1500	24000
3.	Sugar and Jaggery	4 MT	15000	60000
4.	Citric acid, pectin, colours and chemicals	LS	–	6000
5.	Vegetable oil	30 MT	20000	600000
6.	Salt, vinegar and spices	LS	–	2500
7.	A 2-1/2 size can	4920 Nos	10	49200
8.	Jam/pickles bottle (500 ml cap.)	13350 Nos.	5	66750
9.	Nectar, syrup bottle (680 ml cap)	6140 Nos.	5	30700
10.	58 mm caps	13350 Nos.	1	13350
11.	31.5 mm caps	6140 Nos.	0.50	3070
12.	Labels	24500 Nos.	0.40	9800
13.	Printed polythene bags	6670 Nos.	1.50	10005
14.	Packaging cases	1100 Nos.	8	8800
			Total	9,21,675

iii) Utilities	Amount (In Rs.)
Power	3900
Fuel and Water charges	5000
Total	8,900

iv) Other Contingent Expenses		Amount (In Rs.)
1.	Repair and maintenance	2,000
2.	Postage, stationery and telephone	1,500
3.	Transportation charges	3,000
4.	Advertisement and Publicity	3,000
5.	Other miscellaneous expenses	1,500
	Total	11,000

v) Total Recurring Expenditure		Amount (In Rs.)
1.	Personnel	33350
2.	Raw material	921675
3.	Utilities	8900
4.	Contingent expenses	11000
	Total	9,74,925

(vi) Total Working Capital (on 2 months' basis) Rs. 19,49,850

C. Total Capital Investment

	Amount (In Rs.)
Fixed Capital	10,17,125
Working Capital	19,49,850
Total	29,66,975

FINANCIAL ANALYSIS

Raw materials are seasonal. Hence, only raw material for six months has been taken into consideration.

1) Cost of Production (per annum)		Amount (In Rs.)
1.	Cost of raw materials (6 months)	5530050
2.	Salary and wages	400200
3.	Utilities for 6 months	53400
4.	Other contingent expenses	132000
5.	Depreciation of building @ 5%	30000
6.	Depreciation of machinery and equipment @ 10%	31650
7.	Depreciation on office furniture @ 20%	4000
8.	Interest on total capital investment @ 14%	415377
	Total	65,96,677

2. Turnover (per year)

Sl. No.	Item	Qty. (MT)	Rate per MT	Total (In Rs.)
1.	Canned jackfruit	25	80000	20,00,000
2.	Jack jam/preserve	25	65000	16,25,000
3.	Jack nectar/ jack syrup	25	50000	12,50,000

Sl. No.	Item	Qty (MT)	Rate per MT	Total (In Rs.)
4.	Jack pickles	15	70000	10,50,000
5.	Jack chips	10	120000	12,00,000
			Total	71,25,000

3. Net Profit (per year) Rs. 5,28,323

4. Net Profit Ratio 7.4%

5. Rate of Return on Investment 17.80%

6. Break-even Point

i) Fixed Capital	Amount (In Rs.)
(a) Depreciation on machinery equipment and building	65650
(b) Interest on total Investment	415377
(c) 40% of salary and wages	160080
(d) 40% of other contingent expenses	52800
Total	6,93,907

ii) Net Profit (per year) Rs. 5,28,323

$$B.E.P. = \frac{FC \times 100}{FC + NP}$$

$$= 56.7\%$$

Addresses of Machinery and Equipment Suppliers

1. M/s. Batliboi and Company Ltd.
   P.B. No. 3066,
   Old Railway Station Road,
   Kochi-682018.
2. M/s. B. Sen Barry and Co.
   65/11, New Rohtak Road,
   Karol Bagh,
   New Delhi-110005.
3. M/s. H and P Industries
   Near Mundupalam Junction,
   Thrissur -110006.
4. M/s. Raylons Metal Works
   P.O. Box No. 17426,
   JB Nagar, Andheri (E),
   Mumbai - 400059.
5. M/s. Laxmi Boilers
   2453-B, Karkmpatta Road,
   Pallimukku,
   Cochin-682016.