

## **PROFILE OF TETRA PACK UNIT AT FOOD PARK, NILAKUTHI**

### **Introduction**

In a hot country like India, the use of refreshing and thirst quenching beverages, mostly falling under the category of aerated waters, has become stagnant. For a long time, the use of flavoured thick sugar syrups has been very common. During the last few decades, the products like fruit juices, squashes, cordials, crushes, syrup, and ready-to-serve beverages have been introduced in the country on commercial scale to a large extent. The rapid increase in the production of these items in different parts of our country on commercial scale to a large extent is a proof of their rising popularity. The use of fruits by industry for the preparation of such products will not only reduce wastage of fruits during handling but also add nutrition and palatability to the drink. Now-a-days, Ready-to-Drink beverages packed in Tetra pak becomes the most attractive to the consumers. Setting up such a unit is highly viable in the Food Park at Nilakuthi, for the benefit and service to the 40-50 food processing units to be set up in the said Park. The Food Park at Nilakuthi implementing by the Government of Manipur jointly with the MoFPI, GOI is at the stage of completion by 2009.

### **Market Potential**

With the changing pace of human activity and changing life style, the demand for easy-to-prepare drinks is also increasing. Besides, consumption in the households, it is served in hotels, restaurants, clubs, airlines, railways etc. There has been an appreciable increase in the export of processed foods, which includes not only squashes and syrups but also processed food products including aseptic and tetra pack products. With the fast growth of the urban and sub-urban areas and the living standards of the Indian people growing higher, there is a good potential to develop this industry in the small scale sector particularly in Manipur where consumption of RTS drinks are also tremendously increasing during the last decade.

### **Basis and Presumptions**

1. The unit is envisaged to work for one shift of eight hours per day.
2. Full capacity utilization is envisaged to be achieved within three years.
3. The labour wages have been kept at the prevailing rates.
4. Interest rate for fixed capital and working capital has been taken at the prevailing rate.
5. Costs of machineries and equipments are based on the prevalent prices in the market at the time of preparation of the project profile.

**Plant capacity** : 7500 Packs/Hr of fruit juice of each Pack-200 ml.  
**Plant Equipments** : Complete Tetrapack unit, DM Plant, Auxiliary power supply, etc.  
**Organization** : Manipur Food Industries Corporation Ltd., Imphal  
**Region of Impact** : North Eastern India

The facilities, incentives and grants specially declared by the Government of India and existing facilities of Government of Manipur will be benefited to the Units being established in the Food Park.

Private Investors are invited to participate in the setting up the Tetrapack unit in the Food Park at Nilakuthi.

<b>Site Development</b>	<b>:</b>	<b>Already developed</b>
<b>Pack quantity</b>	<b>:</b>	<b>200 ml.</b>
<b>Land requirement</b>	<b>:</b>	<b>1000 sq. mt</b>
<b>Employment</b>	<b>:</b>	<b>22 Nos.</b>
<b>Estimated Project Cost and Financial Statement (Rs. in lakh):</b>		
<b>Building</b>	<b>:</b>	<b>430.00</b>
<b>Machinery</b>	<b>:</b>	<b>1840.00</b>
<b>Working capital</b>	<b>:</b>	<b>3.75</b>
<b>Annual income</b>	<b>:</b>	<b>259.20 at 80% C.U.</b>
<b>Net profit</b>	<b>:</b>	<b>24.85 at 80% C.U.</b>
<b>B.E.P</b>	<b>:</b>	<b>35%</b>
<b>D.E.R</b>	<b>:</b>	<b>3:1</b>
<b>IRR</b>	<b>:</b>	<b>26%</b>

# PROJECT PROFILE OF AGRI-EXPORT ZONE FOR PASSION FRUIT IN MANIPUR

## INTRODUCTION

The concept of Agri-Export Zone is to take care of particular product/produces located in a contiguous area for the purpose of developing and sourcing the raw materials for its processing, packaging and leading to final export. The process commencing right from the availability of inputs like seeds fertilizers, pesticides, credit and then come to the development of pre & post harvest storage. Finally, it is the marketing of the product which holds the key to success.

**Convergence:** It is related to putting together of all the ongoing schemes of Centre, State Govt., Farmer, processor and the exporter.

**Partnership:** Partnership will be between the all stake holders i.e. Central Govt., State Govt., Farmers, processor and the exporter.

**Focus:** The Agri-Export Zone provides focus to specific agri-export related issues, thus enabling their quicker resolution.

## PASSION FRUIT

Passion fruit (shitaphal) was not considered an important fruit in Manipur till the year, 2000. However with the implementation of Area Expansion Programme under MM II of Technology Mission for Integrated Development of Horticulture in N.E States including Sikkim, the area under passion fruit has risen to 7853 (2007-08) from negligible area of 100 ha (2000). Consequently, the production has reached 63,606 M.T. Purple and Yellow varieties are the two major varieties cultivated in the State. Senapati and Ukhrul Districts are producers of Purple Variety and Churachandpur District produces yellow variety. There is a growing demand for passion fruit juice. Total world demand for passion fruit juice is presently estimated more than 15,000 MT per annum. Brazil, Ecuador and Peru are the main producers of passion fruit. Their production is almost entirely used for processing into juice concentrate.

## TARGET MARKETS

Europe & USA are the main markets for fresh passion fruit as well as juice. Since the juice also contains multivitamin, it is use in blending. Thus the juice will be exported to Europe, USA and Far Eastern countries. The AEZ for passion fruit juice in Manipur will target USA, Europe & Far Eastern countries.

## **EXPECTED VOLUME OF EXPORT**

World imports of passion fruit juice concentrate are about 20,000 tonnes. Considering the present market hold by 4-5 countries it would be reasonable to set a target of about 2,000 to 3,500 tonnes per year (about 10-15% market share) to be achieved in 10 years time in a phase manner.

## **PROCESSING UNITS**

Initially the unit at Mao in Senapati District and Litan in Ukhrul District and other units located in Imphal and Bishnupur District will be the main unit for catering the export target under AEZ. Once these units start delivering at full capacity and the objective of setting up the AEZ for passion fruits becomes successful, another unit can be set up within 3 years. Since the processing unit should not totally rely on exports, it should also cater to the domestic market of passion fruit juice.

Accordingly, the project parameters for the processing units are as follows.

Capacity of juice Extraction line – 2 TPH.  
Production of passion fruit juice – 3600 t/year at 75% of cap.

### **Equipment:**

Automatic plant to meet the International Standards on quality and hygiene.

- i) Juice Extraction
- ii) Treatment
- iii) Concentration with Aroma recovery
- iv) Cold Storage
- v) Pasteurise & Chilling
- vi) Aseptic plant

Assuming that the unit will export 75% of its produce in concentrate form, the unit will export about 256 tonnes of passion fruit juice concentrate in the first year. Balance production will be for the domestic market. Accordingly the unit will involve 25,000 to 30,000 tonnes of fresh passion fruit per annum. In order to enhance the viability of the unit an additional line for pineapple juice extraction is proposed. The concentration and aseptic filling line will be common. This will enable the plant to be operational for a total of minimum 300 days in a year.

## **INCENTIVES**

Total cost for the processing unit would involve 589.6 million INR. MOFPI, NHB, APEDA under its scheme for development of value added centres will give assistance of 115.1 million INR and remaining 474.5 million INR will be contributed by private investors.

# PROJECT PROFILE OF FRUIT JUICE CONCENTRATE PLANT

## INTRODUCTION

Fruit Juice concentrates have attained an increasingly important position in the food industry. This development has been due to a large extending of the increase use of natural fruit products in fruit juice beverages. Concentrates have also become important products in the manufacture of marmalades, fruit butters, Jam, Jellies and fermented products. There is growing demand for orange, pineapple & passion fruit juice both in the domestic & international market. The demand of high aromatic passion fruit juice in the American and European market is also very encouraging. An important advantage of the concentrated products is the considerable saving realised in Shipping transportation, container & storage cost, greater stability of the concentrates to decomposition.

### Process:

The farm mature fruits are first washed then sorted for inspection. From inspection conveyor the fruit is passed to fruit unit for crushing and then to hydraulic press for juice extraction. Extracted juice is then filtered through filter press and again sent to centrifuge for clarification. The clarified fruit juice is concentrated in evaporation plant. The concentrated juice is sterilized juice in the hot condition is ascetically packed in ascetic bags by ascetic filling machine.

Plant Capacity	: 1050 MT/p.a.
Plant Equipment	: Fruit conveyor, fruit washer, fruit mill, screw extractor, hydraulic press, pulper, filter press, Boiler, kettle, retort, aerator, sterilizer, pasteurizer jacketed storage tank, concentrator, cold storage ascetic filling machine, micro-filtration etc.
Land Requirement	: 5 Acres
Building & Civil works	: 5000 m <sup>2</sup> floor space is sufficient for running the plant.
Power Requirement	: 1.2 lakh kw
Water Requirement	: 40 KL of potable water will be require every working day
Employment	: 150 Nos.
Raw Materials	: 7-8 MT of passion fruit, pineapple & orange require per day.
Turn over	: 815 lakhs p.a.

**Estimated project cost (in million INR)**

Building	- 36.0
Principle Plant & Machinery	- 178.5
Misc. & other Fixed Assets	- 18.5
Pre-operative Expenses	- 1.55
Margin Money	- 1.30
	<b>246.85</b>
<b>Say</b>	<b>- 246.9 million INR</b>
Pay Back	- 5 years

**Fiscal Incentives:** Central Investment Subsidy @ 30% of P & M subject to ceiling of 1.5 crore, Exemption from Income tax, Central Excise Municipal Tax, Interest subsidy, power subsidy, transport subsidy (90%).

<b>B.E.P.</b>	<b>- 53.15%</b>
<b>D.S.C.R.</b>	<b>- 1:2.5</b>
<b>I.R.R.</b>	<b>- 23.59%</b>

# PROJECT PROFILE OF BAMBOO SHOOT PROCESSING & DEHYDRATION PLANT

## INTRODUCTION

Manipur produces around 2.60 lakhs tonnes of fruits and 98 thousand tonnes of vegetable annually. In addition to the above fruits & vegetables, bamboo shoots is also available in substantial quantity. It has been reported that upto 30% of the total production of vegetables is not available for consumption because of the losses which occur in various post harvest operation of harvesting handling, packing, storage, transport and distribution in fresh form. Processing plays an important role in salvaging these losses.

There are vast stretches of bamboo forest in the State. In many of the bamboo clumps, curved or misshaped shoots are form which are wasted. Tender parts of fresh shoots can be converted into several palatable food products such as bamboo candy, bamboo chutney, bamboo pickle and canned bamboo shoots in syrups and brine.

In addition to this bamboo shoot, lotus root is also another important vegetable available in the State. This also be processed and dried as new items in the same plant. These projects envisage canning and dehydration of bamboo shoots including processing of lotus roots.

**Scope:** Products from bamboo shoots and lotus roots are novel products for which there is scope for export. Dried bamboo shoots have potential for interstate marketing. More-over there is good market for this in hotels, restaurants and clubs. The products have thus indicated the commercial possibilities in the country where the canned products are becoming increasingly prohibit.

## CONTRACT FARMING

Emphasis has to be on increasing capacity utilisation to ensure the viability of the processing unit.

In order to optimally utilise the processing capacity to be installed one processing unit at the Bamboo Park which is going to be set up under this Bamboo Mission.

It is also envisaged that about 2000 Ha. will be brought under cultivation of improved bamboo shoots under the Bamboo Mission. This will also help to avail enough raw materials for processing. The MOA under Bamboo Mission will provide 100% assistance under its scheme of integrated development of bamboo shoots.

**Process:** Tender bamboo shoot of freshly harvested are sorted-remove outer scale-peel and waxes. Shoots are cut into desire shape & size-soak in water with 0.1% salt-stand for overnight. This will facilitate to dissolve the hydrocyanade acid present in the shoot. Next day shoots are wash in plain water-blanch in boiling water for 4 to 5 mins. Drain and cool. Fill in tin container and cover with hot syrup or brine, then exhaust, seal

and process. Other products can be prepared before blanching and processed into different items after addition of requisite ingredients.

Plant Capacity	: 3.5 MT/day of 8 hours shift.
Plant Equipment	: Fruit conveyor, washer, fruit mill, boiler, kettle, seamer, retoo, Sterilizer and pasteuriser, cold storage, pressure and temperature control.
Dehydration Section	: The equipment required include washing tanks, preparation table, peeling & slicing machine, cross flow drier/through flow driers, knives, trolley, aluminium vessels and weighing scales.
Land Requirement	: 3.5 Acre
Building & Civil works	An built up area of 2500 m2 will be sufficient for running the plant.
Power Requirement	Total connected load of 300 kw will be required. To meet inter mitant break down – D.G set of 100 KVA is also envisaged
Water Requirement	5 to 6 KL of potable water will be required every working day.
Raw Material	5 to 6 MT of fresh bamboo shoot per day.
Turn over	542.50 lakhs

#### ESTIMATED PROJECT COST (figure in million INR)

Land & Land Development	-	7.70
Building	-	23.77
Principal Plant & Machinery	-	65.00
Auxiliary equipments	-	7.07
Other Fixed Assets	-	14.50
Pre-operative Expenses	-	5.60
Margin Money	-	2.34
		<b>125.99</b>
<b>Say</b>	<b>-</b>	<b>126.00</b>
<b>B.E.P.</b>	<b>-</b>	<b>43.77%</b>
<b>D.S.C.R.</b>	<b>-</b>	<b>1:1.85</b>
<b>I.R.R.</b>	<b>-</b>	<b>10.55%</b>

#### Fiscal Incentives:

Facilitating infrastructure support, Incentive packages like Centre investment subsidies of 30% on P & M to the ceiling of 15.00 million INR, power subsidy, interest subsidy, transport subsidy and any other assistance for successful implementation of the project.

# PROJECT PROFILE ON OLEORESINS & SPICE OIL

## INTRODUCTION

Oleoresins are the total flavour extract prepared by solvent extraction of the ground spices. They have the aroma of spice and possess the attributes which contribute to the taste such as pungency. The oleoresins and spice oils are used because of their uniformity in flavour and pungency, care in storage. Essential oils and oleoresins of spices are used in the preparation of beverage confectionery, soup powders, sauce, curries, canned meat and poultry products, noodles, etc.

## SCOPE FOR SPICE OIL & OLEORESINS IN MANIPUR

The State of Manipur is producing Ginger, Turmeric and King Chilli (High pungent) in 'Substantial quantities'. If these spices are procured into oils & oleoresins within the State, it will be beneficial in the following ways:

- i. More employment opportunities can be created.
- ii. Transportation cost in export can be minimized to a considerable extent.
- iii. Industries based on by-products can also be encouraged within the State.
- iv. The unit value in foreign exchange realized will be considerably more by exporting an equivalent quantity of the raw spice.

Hence there is need to replace the spices with oleoresins and spice oils. There is a considerable scope to develop these industries to meet the external demand and exports for oleoresins and spice oils.

## PROCESS:

The main steps involved in the oleoresin extractions are given below:

- Cleaning and grinding of raw material
- Powdering of raw material to a suitable mesh size.
- Extraction using proper solvent.
- Distillation of the extract.
- Recovery of the solvent from the spent meal.
- Blending & packing.

Alternatively, oleoresins extracted with supercritical fluids have a higher price offer higher quantity and have fewer variations in the final product than those extracted with organic solvents. Replacement of organic solvents such as hexane, ethylene acetate and chlorinated hydrocarbons with a benign solvent such as supercritical CO<sub>2</sub> is also considered desirable from an environmental standpoint.

## PLANT CAPACITY

- i. Spices oils - 7500 kg
- ii. Oleoresins - 16000 kg

**DEHYDRATION SECTION:** The equipment required include washing tanks, wooden preparation tables, peelers, slicing machines, cross flow drier/through flow driers, knives, trolley, aluminum vessels and weighing scale.

**BUILDING & CIVIL WORKS:** An built up area of 4000 m<sup>2</sup> industrial & other shed/ building including aseptic room, and raw material refrigerated room.

**POWER REQUIREMENT:** Total connected – load of about 300 kw will be required. To meet the short supply of power, a D.G. set of 100 kva is also envisaged.

**WATER REQUIREMENT:** About 5-6 kl of water will be required for every working day.

**EMPLOYMENT:** - 75 nos.

**RAW MATERIAL** – 800 kg to 1500 kg spices per day (Ginger, Turmeric, & Chilli )

### ESTIMATED PROJECT COST (figure in million INR)

(i)	Land & land development	-	11.00
(ii)	Building	-	85.00
(iii)	Machinery	-	63.50
(iv)	Other fixed assets	-	21.50
(v)	Preliminary & pre-operative expenses	-	1.55
(vi)	Margin money	-	1.97
			<b>184.52</b>

<b>TURN OVER:</b>	-	61 million INR
<b>B.E.P.</b>	-	56.00%
<b>D.S.C.R.</b>	-	1:2.5

### FISCAL INCENTIVES

Facilities infrastructure support, Extension of incentive packages as escort service – central investment subsidy of 30% on Plant & Machinery to the ceiling of 15.00 million INR, Power subsidy, Interest subsidy, Transport subsidy and any other assistance for speedy and successful implementation of the project.

# PROJECT PROFILE OF INTEGRATED MUSHROOM- CUMPROCESSING PLANT

## INTRODUCTION

Mushroom is more relevant in Manipur because of its climatological condition which is very conducive for regular production with minimum artificial aids. There are two distinct sectors in respect of this commodity viz: (i) the sector dealing with wild growing mushrooms (ii) the sector growing cultivated varieties mainly the white button mushroom including pleurotus and volvariella which can be marketed either in form of dehydrated, canned or pickled form.

Mushroom cultivation is labour intensive job. Complete mechanization of farm where labour requirement will be less in very high capital is cheap coupled with potential supply of agro-waste and requisite temperature makes this activity more attractive and most economical.

Mushroom can provide an excellent protein rich vegetable, full of vitamins and minerals. It is a rich source of folic acid as an alternative for liver to anaemia patient.

**PARTNERSHIP:** The proposals related for putting together of all the ongoing schemes of Central, State Govt., farmers, processing and the exporter.

**SCOPE FOR EXPORT:** India produces about 22635 tonnes of button Mushroom of which 6560 tonnes of processed mushroom were exported to different countries in 1994-95. The figure has increased four to five fold in 2006. The unit value realization has registered significant increase in the last 2/3 years and presently the prices are quoted at around US \$ 150 per kilogram of dehydrated mushroom.

**MUSHROOM PRODUCTION IN MANIPUR:** Total Mushroom production in the north eastern States is around 15000 tonnes and Manipur share about 60%. The major issues of concern in the State are as follows:

- i. Cultivation is mainly confined to inorganic manner.
- ii. Problems of marketing which has hampered the grower to expand its production.
- iii. No direct interaction between growers and processors to understand the specific requirements for processing.
- iv. Lack of storage, infrastructure and processing, resulting in high post harvest losses.

## PROCESS

Mushrooms can be cultivated almost throughout the year in Manipur. For a successful and profitable cultivation, it is essential to have good compost, pure & productive

spawn, appropriate temperature and relative humidity. Mushroom can be preserved in brine in a hermitically sealed container and its shelf life can be increased for longer period. Since the mushroom is very perishable fungus, the one way of the preserving mushroom is by canning. The other mushroom except the white button can be dried or dehydrated. In India 60% of the mushroom products are canned.

**PLANT CAPACITY:**

- i. - 3000 TPA (Fresh Mushroom)
- ii. - 3600 TPA in processed form

**PLANT EQUIPMENT:** Imported turner, mixer, boiler, tractor, control switch panel, computer control, CO<sub>2</sub> Control, temp/humidity equipment, air handling units, water chilling plant, ducting for AHU, canning machinery, laboratory equipment.

**DEHYDRATION SECTION:** The equipment required include washing tanks, preparation tables, peelers, slicing machines, cross flow drier, knives, trolley, aluminium/stainless steel vessels and weighing scale.

**BUILDING & CIVIL WORKS:** 2500 sq.m. The building includes cropping room, spawn lab, pasteurization tunnel, composting yard, casing soil chamber, cold room, canning area and other storeroom.

**POWER REQUIREMENT:** Connected – load of about 300 KW will be required. To meet the short supply of power, a D.G. set of 100 KVA is also envisaged.

**WATER REQUIREMENT:** About 5-6 kl of potable water will be required for every working day.

<b>EMPLOYMENT:</b>	-	<b>100 nos.</b>	
<b>RAW MATERIALS</b>	-	<b>3 to 3.5 tonnes fresh mushroom</b>	
<b>TURN OVER:</b>	-	<b>115.1 million INR at 90% capacity utilisation</b>	
<b>B.E.P.</b>	-	<b>34.69%</b>	<b>D.S.C.R. - 1:3.6      I.R.R. - 19.50%</b>
<b>ESTIMATED PROJECT COST (figure in million INR)</b>			
(i)	Land & land development	-	15.00
(ii)	Production & canning unit, production & canning, spawn lab)	-	115.90
(iii)	Plant & Machinery	-	117.50
(iv)	Margin money	-	2.10
	<b>Total</b>		<b>250.50</b>
<b>FISCAL INCENTIVES:</b>			
Infrastructure support, extension of incentives, packages like Central Investment.			