

MURMURA MANUFACTURING UNIT

1. INTRODUCTION:

Puffed Rice or Murmura is one of the very popular fast food of the Country. The paddy is used after gelatinization of starch which will give a better puffing. The parboiled rice is sundried and dehisced and polished. Then the same is soaked in the brine solution for 6 to 7 hours and drained completely and dried in sun light for about one hour for removing the excess moisture. Later the rice is fried at 110 degree celcius and cooled and packed. Puffed rice is a type of puffed grain from the Indian subcontinent, made from rice, commonly used in breakfast cereal or snack foods, and served as a popular street food in India, Bangladesh and Nepal. It is usually made by heating rice kernels under high pressure in the presence of steam, though the method of manufacture varies widely. It is widely consumed in countries like India.

2. PRODUCT & ITS APPLICATION:

Compared to other ready-to-eat cereals, puffed rice is very low in calories. A 3/4-cup serving of a bran flake cereal has 98 calories, and swapping out your bran flakes for puffed rice can save you 44 calories per serving. If you're trying to lose weight, saving an extra 44 calories a day may help you lose 1 pound every 2 1/2 months. While that may seem like a slow way to lose weight, every little bit helps. Puffed rice, especially the one made from white rice, does not offer any major health benefit. White rice is produced by removing the bran layer, along with the germ. The manufacturing process of white rice destroys much of the nutrients found in unpolished rice, leaving behind only the endosperm that mainly contains carbohydrates with traces of B vitamins. The process of making puffed rice further lowers the nutritional value of this grain, by destroying the heat-sensitive nutrients. However, some manufacturers do add iron and other vitamins and minerals to puffed rice, in order to compensate the loss of nutrients in the manufacturing process. So, fortified puffed rice can provide some essential

nutrients like B vitamins, iron, magnesium, potassium, and phosphorus. Moreover, it contains negligible amounts of sodium, which is good for regulating your blood pressure. Puffed rice is light and easily digestible. Though it has more volume than regular rice, it contains less calories and almost no fat. So, it can be used as a snack between meals. However, puffed rice is not rich in proteins and fibers and will not keep you full for long.

As mentioned already, puffed brown rice is comparatively more nutritious than puffed white rice. Puffed brown rice does contain dietary fiber, and hence, may prove beneficial for maintaining the health of your digestive tract. Brown rice contains a significant amount of B vitamins and minerals, like zinc, manganese, magnesium, potassium, and phosphorus. Puffs made from brown rice also contains these nutrients, though the puffing process reduces the nutritional value of this grain to some extent.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

The promoter does not require any qualification.

4. INDUSTRY LOOKOUT AND TRENDS

Puffed food segmented by category type, application and region. By category, puffing comes in wheat, rice, corn, sorghum, and ragi. Puffed wheat is prepared by heating wheat grains under pressure and then rapidly releasing pressure when the superheated steam in the grain expands grain is puffed. It is a good source of copper, protein, and iron. Puffed rice used in breakfast cereal or snack foods served as popular street food. It is made by heating rice kernels under high pressure in the presence of steam. Puffed food is segmented by applications as Bakery Industry and Snacks Industry. In bakery it uses in in making puffed backed pancake, puffed baked potato and others. Puffed food market is further segmented by region such as Latin America, North America, Europe, Middle East and Africa, and Asia Pacific. Latin America and North America possess significant

potential, whereas Europe and other developing markets such as Asia-Pacific and MEA possess the growth opportunities for quinoa over the forecast period. There is a high consumption of puffed food in Asia-Pacific regions like India and China as growing young population prefers street food and snacks like cheese doodles.

Puffed food provides a multitude of health benefits, as these are rich source of protein, fiber, magnesium, iron, and potassium, and which are anticipated to contribute to the growth of global puffed market over the coming years. Puffed food has low calories which easily gets digested and absorbed quickly which acts as one of the factors of popularity among consumers.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

Puffed rice is enriched with extra vitamins and minerals. The refining process used to create the white rice cereal also removes many of the essential nutrients, so manufacturers add iron and B vitamins back into the product. As a result, one cup of puffed rice provides 25 percent of the daily value for iron and niacin and 24 percent for thiamin, based on a 2,000-calorie diet. The cereal also provides 24 percent of the daily value for riboflavin and 10 percent for manganese. It is not a notable source of any other vitamins or minerals. You can use puffed rice to extend your serving sizes of more nutritious cereals. Many healthier cereals contain 150 to 200 calories per 1/2 to 1 cup serving. If you find these servings too small for your appetite, consider stretching them by adding 1 cup of puffed rice, which adds minimal calories, but may help you feel more satisfied. Eating puffed rice alone may leave you feeling hungry sooner because it contains no fiber or protein.

6. RAW MATERIAL REQUIREMENTS:

The basic raw material for the unit is RICE.

7. MANUFACTURING PROCESS:

Rice is first cleaned to remove stones and husk. It is then soaked in brine solution and dried. On drying it is fed into the puffing machine from where the 2 puffed products is obtained. It is cooled and packed immediately to prevent moisture absorption. A traditional puffed rice called muri is made by heating rice in a sand-filled oven. Muri is to rice as popcorn is to corn. The processing involved makes rice less perishable. Mandakki is a staple food in many parts of Rayalaseema, North Karnataka, Odisha, Tripura, West Bengal and Bangladesh. Jhalmuri or Masalemandakki is a very popular preparation made from mandakki (muri). Puffed rice is formed by the reaction of both starch and moisture when heated within the shell of the grain. Unlike popcorn, rice kernels are naturally lacking in moisture and must first be conditioned with steam. Puffed rice can be created by heating the steam-conditioned kernels either with oil or in an oven. Rice puffed in this way is crisp, and known as "crisped rice". Oven-crisped rice is used to produce the Rice Krispies breakfast cereal as well as the crisped rice used in Lion Bars, Nestlé Crunch, Krackel, and similar chocolate bars. Though not as dramatic a change when compared to popcorn, the process and end result are the same. Another method of puffing rice is "gun puffing", where the grain is conditioned to the correct level of moisture and pressurized to around 200 psi (1,400 kPa). When the pressure is suddenly released, the pressure stored inside the kernel causes it to puff out. This method produces a puffed rice which is spongy in texture. Rice can also be puffed by making a rice dough, and extruding small pellets which are then rapidly heated. The moisture in the dough flash boils and puffs the rice up.

8. MANPOWER REQUIREMENT :

The enterprise requires 4 employees as detailed below:

Sr. No.	Designation	SALARY	Salary ₹	Number of Employees				
				PER ANNUM	Year-1	Year-2	Year-3	Year-4
	Working Staff							
1	Operators	20000	12000	1	1	1	1	1
2	Helpers	12000	20000	2	2	2	2	2
			32000	3	3	3	3	3
1	Fixed Staff:							
2	Admin Manager	15000	15000	1	1	1	1	1

	<i>Sub-Total</i>		15000	1	1	1	1	1
	Total		47000	4	4	4	4	4

9. IMPLEMENTATION SCHEDULE:

The project can be implemented in 4 months' time as detailed below:

Sr. No.	Activity	Time Required
1	Acquisition of premises	2.00
2	Construction (if applicable)	2.50
3	Procurement & installation of Plant & Machinery	2.50
4	Arrangement of Finance	1.00
5	Recruitment of required manpower	1.00
	Total time required (<i>some activities shall run</i>	4.00

10. COST OF PROJECT:

The project shall cost ₹ 8.60 lacs as detailed below:

Sr. No.	Particulars	₹ in Lacs
1	Land	0.00
2	Building	0.00
3	Plant & Machinery	3.00
4	Furniture, other Misc. Equipments	0.50
5	Other Assets including Preliminary / Pre-operative expenses	0.30
6	Margin for Working Capital	4.80
	Total	8.60

11. MEANS OF FINANCE:

	Particulars	₹ in Lacs
1	Promoter's contribution	2.15

2	Bank Finance	6.45
	Total	8.60

12. WORKING CAPITAL CALCULATION:

The project requires working capital of ₹ 4.80 lacs as detailed below:

Sr.	Particulars	Gross Amt	Margin %	Margin	Bank
1	Inventories	2.40	0.25	0.60	1.80
2	Receivables	1.20	0.25	0.30	0.90
3	Overheads	1.20	100%	1.20	0.00
4	Creditors	-		0.00	0.00
	Total	4.80		2.10	2.70

13. LIST OF MACHINERY REQUIRED:

The major machineries are: (1) Dehusker, (2) Iron Drum, (3) Bhatti (4) Sieves, (5) Packing Machine (6) Weighing Balance. The Specifications is

Production Capacity: 250, 350 kg/hr

Efficiency: 100 kg Rice Turns in about 95 kg Muri

Husk Reqd: Approx. 50 kg/hr

Dielse Reqd in Diesel Furnace: 12 - 15 L

Roaster RPM: 20 - 22 RPM

Space required for installation: 20" x 15"

Sr. No.	Particulars	UOM	Qty	Rate (₹)	Value
					(₹ in Lacs)
	Plant & Machinery / equipments				3.00
	Furniture / Electrical				
c)	Computer & Printer	LS	1	50000	0.50
	<i>sub total</i>				0.50
	Other Assets				

a)	Preliminary and preoperative				0.30
	<i>sub-total Other Assets</i>				0.30
	Total				3.80

All the machines and equipments are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of machines and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

1. Fry-Tech Food Equipments Private Limited
S. No. 4, Raviraj Industrial Estate,
Bhikhubhai Mukhi Ka Kuwa Bharwadvash,
Ramol, Ahmedabad - 380024,
Gujarat, India

2. Hindustan Vibrotech Pvt. Ltd.
Office No. 2, Ground Floor,
Vrindavan Building, Vile Parle East,
Mumbai - 400057,
Maharashtra, India

3. Electrons cooling systems Pvt. Ltd.
S-27, SIDCO Industrial Estate
Kakkalur Industrial Estate
Tiruvallur - 602003,
Tamil Nadu, India

4. Springboard Enterprises India Ltd.
1st, 2nd & 3rd Floor,
Plot No. 7, 8 & 9,
Garg Shopping Mall,

Service Centre, Rohini Sector 2
New Delhi - 110085,
Delhi, India

5. Flour Tech Engineers Private Limited
Plot No. 182, Sector 24,
Faridabad - 121005,
Haryana, India

6. P Square Technologies
3, Swami Mahal,
Gurunanak Nagar,
Off. Shankarsheth Road Bhavani Peth,
Pune - 411002,
Maharashtra, India

7. Ricon Engineers
10 To 13, Bhagwati Estate,
Near Amraiwadi Torrent Power,
Behind Uttam Dairy,
Rakhial, Ahmedabad - 380023,
Gujarat, India

14. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	60%	70%	80%	90%	100%
2	Sales	₹. In Lacs	14.40	16.80	19.20	21.60	24.00
3	Raw Materials & Other direct inputs	₹. In Lacs	9.80	11.43	13.06	14.70	16.33
4	Gross Margin	₹. In Lacs	4.60	5.37	6.14	6.90	7.67
5	Overheads except interest	₹. In Lacs	1.68	1.79	2.00	2.06	2.10

6	Interest @ 10 %	₹. In Lacs	0.65	0.65	0.43	0.32	0.26
7	Depreciation @ 30 %	₹. In Lacs	0.90	0.63	0.46	0.36	0.27
8	Net Profit before tax	₹. In Lacs	1.38	2.31	3.25	4.16	5.04

The basis of profitability calculation:

This unit will have capacity of 60 METRIC TONNES at 40 INR/KG. The growth of selling capacity will be increased 10% per year. (This is assumed by various analysis and study; it can be increased according to the selling strategy.)

Energy Costs are considered at 7 INR/ Kwh and fuel cost is considered at Rs. 65 per liter. The depreciation of plant is taken at 10-12 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 30.74 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	24.00
2	Variable costs	₹. In Lacs	16.33
3	Fixed costs incl. interest	₹. In Lacs	2.36
4	$BEP = FC/(SR-VC) \times 100 =$	% of capacity	30.74%

16. STATUTORY / GOVERNMENT APPROVALS

The Ministry of Food Processing Industries has been operating several plan schemes for the development of processed food sector in the country during the 10th Plan. One of the schemes relates to the Technology Up-gradation/ Establishment/ Modernization of food processing industries.

The Indian food processing industry is regulated by several laws which govern the aspects of sanitation, licensing and other necessary permits that are required to

start up and run a food business. The legislation that dealt with food safety in India was the Prevention of Food Adulteration Act, 1954 (hereinafter referred to as "**PFA**"). The PFA had been in place for over five decades and there was a need for change due to varied reasons which include the changing requirements of our food industry. The act brought into force in place of the PFA is the Food Safety and Standards Act, 2006 (hereinafter referred to as "**FSSA**") that overrides all other food related laws.

FSSA initiates harmonization of India's food regulations as per international standards. It establishes a new national regulatory body, the Food Safety and Standards Authority of India (hereinafter referred to as "**FSSAI**"), to develop science based standards for food and to regulate and monitor the manufacture, processing, storage, distribution, sale and import of food so as to ensure the availability of safe and wholesome food for human consumption. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

All food imports will therefore be subject to the provisions of the FSSA and rules and regulations which as notified by the Government on 5th of August 2011 will be applicable.

Key Regulations of FSSA

- A. Packaging and Labelling
- B. Signage and Customer Notices
- C. Licensing Registration and Health and Sanitary Permits

17. BACKWARD AND FORWARD INTEGRATIONS

The objective of the scheme is to provide effective and seamless backward and forward integration for processed food industry by plugging the gaps in supply chain in terms of availability of raw material and linkages with the market. Under the scheme, financial assistance is provided for setting up of primary processing centers/ collection centers at farm gate and modern retail outlets at the front end along with connectivity through insulated/ refrigerated transport.

The Scheme is applicable to perishable horticulture and non-horticulture produce such as, fruits, vegetables, dairy products, meat, poultry, fish, Ready to Cook Food Products, Honey, Coconut, Spices, Mushroom, Retails Shops for Perishable Food Products etc. The Scheme would enable linking of farmers to processors and the market for ensuring remunerative prices for agri produce.

The scheme is implemented by agencies/ organizations such as Govt. / PSUs/ Joint Ventures/ NGOs/ Cooperatives/ SHGs / FPOs / Private Sector / individuals etc.

Backward Linkage:

- Integrated Pack-house(s) (with mechanized sorting & grading line/ packing line/ waxing line/ staging cold rooms/cold storage, etc.)
- Pre Cooling Unit(s)/ Chillers
- Reefer boats
- Machinery & equipment for minimal processing and/or value addition such as cutting, dicing, slicing, pickling, drying, pulping, canning, waxing, etc.
- Machinery & equipment for packing/ packaging.

Forward Linkage:

- Retail chain of outlets including facilities such as frozen storage/ deep freezers/ refrigerated display cabinets/cold room/ chillers/ packing/ packaging, etc.
- Distribution centre associated with the retail chain of outlets with facilities like cold room/ cold storage/ ripening chamber.

18. TRAINING CENTERS AND COURSES

There are few specialised Institutes provide degree certification in Food Technology, few most famous and authenticate Institutions are as follows:

1. Indian Institute of Food Science & Technology,
Plot No.1, Near Maa-Baap ki Dargah,Opp to Nath Seeds,
Paithan Road Aurangabad
Aurangabad - 431005
Maharashtra, India
2. MIT College of Food Technology, Pune
Gate.No.140, Raj Baugh Educational Complex,
Pune Solapur Highway,
Loni Kalbhor, Pune - 412201
Maharashtra, India
3. CSIR - Central Food Technological Research Institute (CFTRI)
Cheluvamba Mansion, Opp. Railway Museum,
Devaraja Mohalla, CFTRI Campus, Kajjihundi, Mysuru
Karnataka - 570020

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for handholding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation

Source:- Udyami Mitra/Sidbi