
Sector	Agro and Food Processing
Sub - Sector	Food Processing
Profile No.	AF-03
Project Title	Baker's Yeast

Project Description

The proposed project envisions setting up of a Baker's Yeast manufacturing unit for compressed and dry yeast, to cater to the domestic and global markets of bakery industry.

Product Application

The principle use of Baker's yeast is as an essential bakery ingredient- for causing fermentation in the dough used in making bakery items. This process helps making soft and fluffy Bakery items like variety of breads, bread rolls, pizza base, cracker biscuits, sweet breads and burger buns etc;.

Market & Growth Drivers

The growth of Bakers yeast market is directly linked to the increasing trend of processed and fast food consumption, especially bakery items. The European and Asian regions produced 51 million tons of bakery items, valued at US \$ 107 billion, in the year 2004-2005. As per the emerging global trend China is presently one of the most promising markets for Baker's yeast, as its demand is continuously increasing with the rise in population and changing demand of Bakery products.

Baker's yeast market in developing countries is touching new highs with increasing demand for processed foods and a consistent growth in Bakery items production, compensating for the slow growth averaging 1% to 2% in developed countries, where the market is saturated.

India's bakery production in the year 2004-2005 registered a growth rate of around 20% producing approximately 50 Lac tons of bakery items; valued at INR 69 billion. Of the total bakery production, the bread production alone was estimated at around 27 Lac tons, indicating a growth rate of 7.5%. India's estimated per capita consumption of bread is 2 Kgs per annum, as compared to other European and developing countries of Asia it is far below the lowest.

As per Government of India trade statistics, the export for Baker's yeast in the current fiscal year 2006-2007(Apr-Jun), is 329.85 tons, valued at INR 28.44 million, with major export to Sri Lanka followed by Saudi Arabia, Lebanon, Nepal, Mali, Egypt and Iran, while imports for the last four years stand cumulatively at a minimal 39.18 tons valued at INR 2.556 million.

Saf Yeast Co. Pvt. Ltd a Mumbai based unit with annual sales below US \$1 million is into production of baker's yeast. Blue Bird India Pvt. Ltd, Mumbai is marketing Dry yeast in retail packing for home use.

The table below briefly highlights the traded quantum of Baker's Yeast for the last four years:

Trade Statistics – Baker's Yeast

Sr. No	Particulars	Years				Total
		2006-07(Apr-Jun)	2005-2006	2004-2005	2003-2004	
1	Export (Q)	329.85	874.68	19.17	142.94	1366.64
	(V)	284.4	707.65	8.38	106.41	1106.84
2	Import (Q)	16.5	20.5	1.96	0.22	39.18
	(V)	10.67	8.1	4.63	2.16	25.56

Source: Department of Commerce, India (Quantity (Q) in Thousand Tons, Value (V) in INR Lacs)

Growth Drivers

- Increasing consumption of bread as a staple food rather than just a breakfast item and the industry registering growth rate of around 7.5%, indicate good prospects for Baker's yeast in the domestic market.
- Increasing number of nuclear families and working women in India particularly in urban and semi urban areas and changing food consumption habits and pattern of people, will drive the growth of Bakery industry and in turn the growth of Baker's yeast demand.
- Demand for bakery products is increasing as they are an essential content of many fast food items and people now increasingly prefer convenience products over traditional Indian food items.

Why Gujarat ?

- Requirement of raw material molasses (by product of sugar mills) in large quantum can be fulfilled easily by 23 sugar mills in the state.
- Due to prohibition of alcohol production in Gujarat, the viable alternative for value added use of molasses is in manufacturing Baker's yeast.
- Good industrial infrastructure for manufacturing and distribution of finished products..
- Availability of technical man power.

Technology / Process

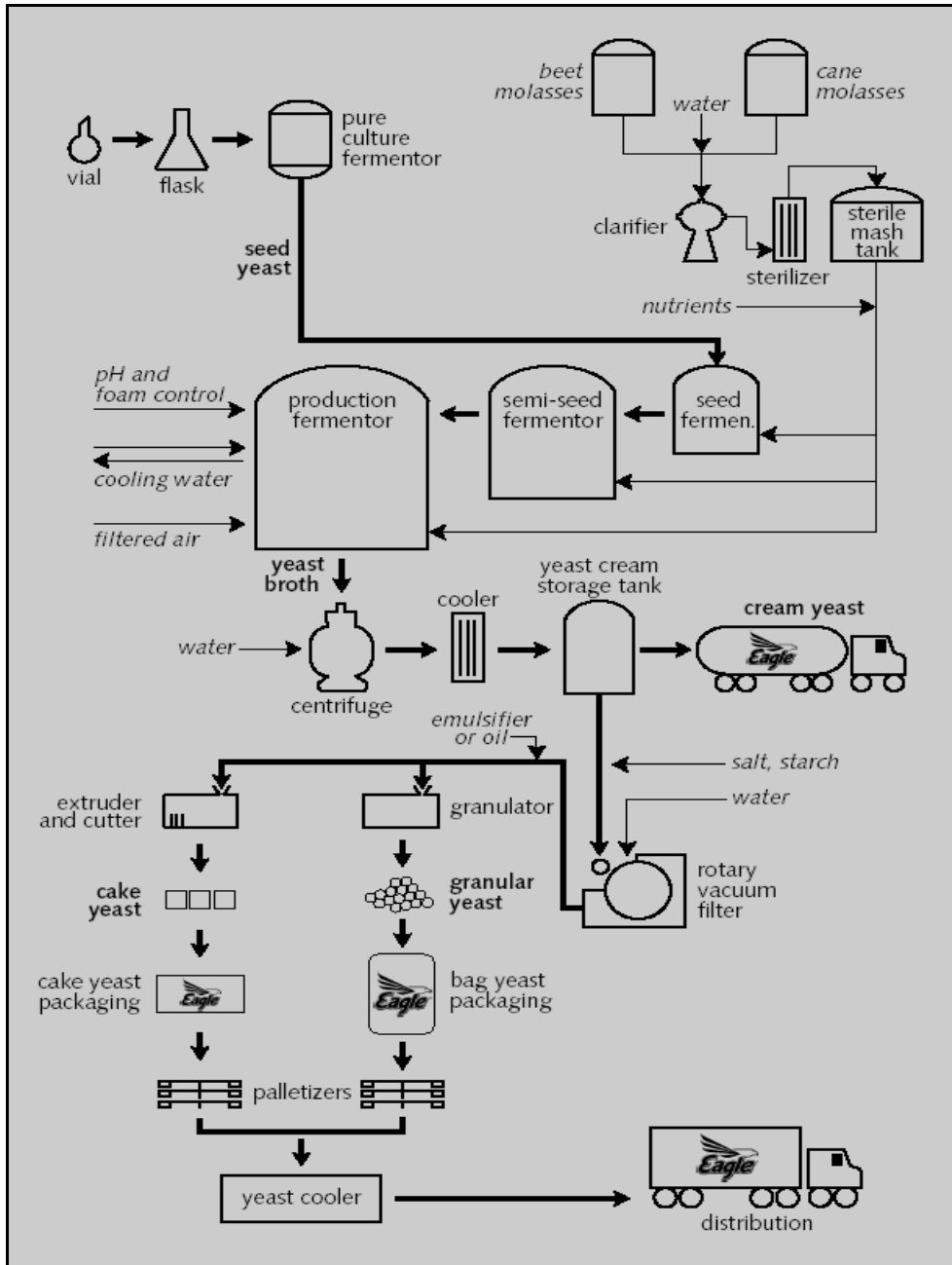
Sugarcane or beet molasses is the primary raw material for Baker's yeast production as it supplies the required sugar and energy with needed nitrogen for the growth of yeast.

- **Raw materials:** Concentrated molasses is diluted with water, clarified and heat sterilized before being fed to the yeast.
- **Fermentation:** Bakers yeast begins as a pure culture of the desired strain, which is inoculated from a small vial into a sterile flask of broth. From the flask it is transferred into a larger vessel and

then passed through several fermentation stages of increasing volumes.

- Processing:** The yeast broth from the fermentor at about 5% solids is concentrated in a centrifuge to about 18% solids and washed with water. The cream liquid is this liquid form which is further cooled and passed through a filter that removes water and increases the solids concentration to about 30%. After filtering small amounts of emulsifiers or oils are added to assist in the extrusion, cutting and improving performance of the yeast's appearance.

Baker's Yeast Technology is available from Central Food Technology Research Institute –CFTRI- Mysore. The manufacturing process is shown in following diagram:



Source: Lallemand Baking Update

Raw Material

The proposed project will require molasses as media for growing yeast stock, and this is easily available in Gujarat. There are 20 Sugar mills operating in Gujarat with an annual production of around 4.5 to 5.4 Lac MT of molasses per year. The following table summarizes molasses production in Gujarat for the last 3 years.

Molasses Production in Gujarat- Last 3 years

Sr. No.	Years	Production (MT)
1	2002-2003	560606
2	2003-2004	445401
3	2004-2005	325992

Source: Gujarat State Co-operative Sugar Industries Federation, Gandhinagar, Annual reports.

The unit would also require pure sterilized culture as base stock for culturing of yeast, the current price of which is US \$ 2 / Kg or say INR 90/ kg.

Suggested Plant Capacity & Project Cost

The capacity of the proposed unit is 3000 TPA, while the capital cost is estimated to be INR 60 million or US \$ 1.33 million.

Estimated Project cost & Means of finance

Sr. No	Cost of project	INR in Million
1	Land and Land development Sq. mt	2.53
2	Building Sq. mt.	6.00
3	Plant & Machinery	32.00
4	Misc. Fixed Assets	4.00
5	Preliminary & Pre-operative	3.07
6	Provision for contingencies	4.10
	Total Fixed Assets	51.70
7	Margin Money for working capital	8.30
	Total	60.00
	Means of Finance	
8	Promoters contribution	17.14
9	Term loan	42.86
	Total	60.00

As indicated above, the proposed project will require approx 3500 sq. mt of land with proposed built up area of 1500 sq. mt. Considering 150 working days in a year the unit is proposed to have an installed capacity of 3000 TPA. The total fixed cost of the project is estimated at INR 51.71 million and INR 8.30 million is the working capital margin which adds up to the block capital cost to INR 60

million. The unit being proposed to cater domestic as well as International demand is suggested to have a Debt equity ratio of 2.5:1. Thus, the estimated term loan amounts to INR 42.86 million and Equity at INR 17.14 million.

Plant and Machinery

The list of plant and machineries / utilities required for production of 10 MT per day finished product is summarized in following table:

List of Plant and Machinery

Sr. No	Particulars	Quantity	Suppliers
1	Molasses Storage & Sterilization Tanks	4	Praj Industries, Pune
2	Twin lobe air blower /compressors (8-10 psi) & filters	1	Ingersol-Rand India Ltd, Ahmedabad
3	Diesel generating set to run stirrers in fermentation tanks	2	Super Nova Engineering- Chhatral
4	Boiler Oil fired	1	Thermax Ltd, Pune
5	Heat exchanger	2	Praj Industries, Pune Alfa-Laval Ltd, Pune
6	Refrigeration unit for freeze drying of yeast	1	Frick India Ltd- New Delhi
7	Centrifugal separator	4	Alfa-Laval Ltd, Pune
8	Extruder	2	Campbell Wrapper Machinery, Andhra Pradesh
9	Electricals	Lot	Kirloskar Electric Co. Ltd., Karnataka
10	Piping, Pumps, Valves	Lot	R.R Industries, New Delhi Genesis Automation Pvt Ltd., Chennai
11	D.M Plant	1	Doshi-ion exchange P. Ltd.
12	Effluent Treatment Plant	1	Akar Impex Private Limited, Noida Oilex Engineers (India) Pvt Ltd., Mumbai
13	Laboratory equipments	Lot	Sakova Scientific Co., Mumbai

Utilities

The unit would necessitate utilities like water, electric power and fuel for roasting. 50 KL water, 200 HP power and 12 MTPD Coal or equivalent FO as fuel, would be a basic requirement for the proposed unit.

Suggested Location

The preferred location will be Central and South Gujarat as molasses will be easily available from sugar mills in this area. The market for Baker's yeast is also concentrated in these areas.

Estimated Man Power Required

Estimated total manpower requirement for the proposed unit is 30 persons, that will include 5 people at managerial grade, 12 people as staff in the manufacturing section, 3 persons in quality control and 10 other staff members for other departments including purchase and marketing assistants.

Project Time Line

The proposed project will have cumulative implementation period of 10-12 months of which 5 to 6 months would entail obtaining the obligatory clearances from various authorities.

Financial Indicators

Based on the profitability projections worked out for the proposed project, key financial indicators are as summarized below:

Key Financial Indicators

Sr. No	Financial Ratios	1 st Year	2 nd Year	3 rd Year
A	Break-Even Point in % capacity	38.17	35.00	31.93
B	Debt-service Coverage Ratio	1.68	2.07	2.53
C	Average DSCR	2.10		
D	Return on Investment (ROI)	23.36	27.88	32.44
E	IRR	46%		

As perceived from the Project cost and Means of finance table, the suggested Debt Equity Ratio for the proposed project is 2.5:1. The IRR (Internal Rate of Return) for the proposed project is approx. 46% projected for a period of 10 years.

Clearances Required

The proposed unit will have to register itself with Secretariat of Industrial Approvals (SIA), Ministry of Industries and Government of India, by filing Industrial Entrepreneur's Memorandum (IEM), as it will have plant and machinery investment of more than INR 10 million.

The proposed unit will also be an export oriented unit and the major Baker's yeast market being in advance countries like USA, Canada, UK, Europe and Australia, it will require to get approval of their product with Food and Drugs Administration (FDA) in these countries, apart from registration with Indian and state food administrations.

The most critical aspect of this product will be its shelf life for consumers and meeting FDA regulations in consuming countries and Codex standards followed by them.

The unit will get EOU registration from RBI, DGFT and with APEDA as registered manufacturer exporter to avail the export incentives.

The end product quality will be as per- IS 1320:1988 for Baker's yeast (third revision) with revision made in March, 2005. Furthermore, it is obligatory to meet provisions under the PFA act for all ingredients and quality aspects for marketing the product in Indian market, and the same will also be applicable to Baker's Yeast.

Agencies to be Contacted

Industrial Extension Bureau

Mott MacDonald India

Gujarat Agro Industries Corporation Ltd