

DAIRY PRODUCTS

1. Introduction

Agriculture along with animal husbandry has been and will continue to be the lifeline of Indian economy. India has the highest livestock production with 50% of the buffaloes and 20% of the world's cattle population, most of which are milch cows and milch buffaloes. India has emerged as the largest milk producing country in the world with present level of annual milk production estimated as 94.5 million tonnes. It is the most important sector of the Indian economy particularly in poverty alleviation and employment generation. This sector contributes close to one-fourth of India's National income and total work force engaged in agriculture is about 60 per cent.

At global level, milk has been identified as an integral part of food for centuries. The success of White Revolution in India has largely been written by millions of small holders. About 70 million dairy farmers produce more than 50 per cent of the milk in the country. Milk and milk products such as Curd, Flavoured milk, Ghee, Butter, Paneer etc. are the important components of the Indian food industry. Consumption of milk and milk products is deeply rooted in our tradition and it is an essential item during rituals, festivals and other auspicious events.

Dairy products are commonly consumed in every household as they are highly nutritive and farm fresh. In hot tropical climate like ours, they are nourishing, cooling and less expensive. They also form an alternative to aerated and bottled soft-drinks.

2. Products and Packaging

The products manufactured are Flavoured milk, Curd, Butter-milk and Ghee. The Flavoured milk in Vanilla and Strawberry flavours can be sold in 200 ml glass bottles. Curd and Butter-milk are packed in polyethylene pouches of 200 ml. capacity. Ghee is packed in 100 gm capacity food-grade plastic bottles.

3. Market

The dairy products have a very good demand in domestic market in all seasons. Butter-milk and curd will be more demanding during summer and the demand for Ghee will shoot up in south India during the three months of 'Sabarimala' pilgrimage season. The products could be sold out through all "A", "B", "C" class outlets, Bakeries, self-service, departmental stores and supermarkets.

4. Production capacity

- The plant operates to one shift of eight hours duration.
- The time period required for achieving full capacity utilization is six months.
- The processing capacity is estimated to 500 litres of raw-milk per day. The average yield is estimated to 250 litres of Flavoured-milk, 120 litres of curd, 300 litres of buttermilk and 15 kg of Ghee per day.
- The estimated processing capacity per annum of 300 working days is 1,50,000 litres of Raw-milk.

5. Sales revenue per day

- Two hundred and fifty litres of flavoured milk can be packaged to 1250 bottles, each of 200 ml capacity.
- One hundred and twenty litres of curd can be filled to 600 sachets of buttermilk, each of 200 ml capacity.
- Three hundred litres of Buttermilk can be filled to 1500 sachets, each of 200 ml capacity.
- Fifteen Kilogram of Ghee can be packaged to 150 bottles, each of 100 gm capacity.

The sales revenue per annum comprises :

- a. Rs. 45.00 lakhs through sale of Flavoured milk @ Rs.12.00 per bottle. MRP Rs.20
- b. Rs. 10.80 lakhs through sale of Curd @ Rs. 6.00 per sachet. MRP Rs.10
- c. Rs. 18.00 lakhs through sale of Butter-milk @ Rs.4.00 per sachet. MRP Rs.6
- d. Rs. 9.00 lakhs through sale of Ghee @ Rs.200.00 per Kg bottle. MRP.300

6. Production process outline.

The Raw-milk will process in Cream-separator machine to separate the cream to 2.5 to 3.5 % depending on the fat content of the milk. The remaining milk is called skim milk which contains 0.5 to 1.5 % fat is used to prepare Flavoured milk, curd and buttermilk. The fat portion is then heated to separate the Ghee.

a. Flavoured Milk:

The skimmed milk is boiled in copper bottom vessels and cooled by dipping into the can cooler. Flavours (Vanilla and strawberry) sugar and food grade colours are added, stirred well and filled to 200 ml glass bottles. After capping and sealing, the bottles are shifted to Autoclave to sterilize it. When cooled down, the flavoured milk is ready to sale.

b. Curd:

The skimmed milk is boiled in copper bottom vessels and cooled by dipping into the can cooler. The cream separating on top is skimmed off. The milk is then curdled by the addition of seed curd. The curd is allowed to set gradually in 8 to 10 hours time and increases its volume by 120%. Then it is packed in plastic pouches and refrigerated prior to dispatch.

c. Butter-milk:

Milk is boiled in copper bottom vessels and cooled by dipping into a can cooler. The cream separating on top is skimmed off. The milk is curdled by addition of sufficient quantities of seed curd and allowed to set for a period of 8 to 10 hours. To a known weight of the curd, salt and spices consisting of an extract of green chillies, ginger, pepper, cumin, amounting to 2 percent of the weight of the curd and three times of sterilized water are added. The mixture is homogenized in a centrifugal homogeniser. The resulting liquid mass is dispensed by 200 ml dispensers in standee pouches. The pouches are sealed in an impulse sealer.

d. Ghee:

The separated fat is heated to remove the water content. When the pure ghee is formed, the hot fluid is allowed to cool down and then bottled in food grade plastic bottles of 100 gm capacity. After labeling it is ready to sale.

7. Quality specifications

- The manufacturer must obtain a Health Authority license.
- Mold and fungal growth should be absent.
- The product should not have a fermented odour and should not provide an acidic sour taste.
- Addition of harmful flavouring and colouring substances are prohibited.
- Addition of artificial sweeteners is prohibited.
- The product should be free from coliforms, salmonella and streptococci bacteria.

8. Pollution control measures

Not necessary as there are no pollutants or effluents. However, as it is a dairy product, the processing area has to be kept sterile by washing with a solution of sodium hypochlorite to prevent external pollution.

9. Energy conservation measures :Common measures will do.

10. Land and construction cost for the proposed unit

The total leased area for the unit is 1000 square feet vide details given below:

Sl	Description	Sq. feet
1	Processing area	500
2	Refrigeration room	150
3	Washing area	150
4	Office space	100
5	Toilets	100
6	Total	1000

Lease rent – Rs. 8.00 per square foot, Total rent per month – Rs. 8000

11. Costing of machinery and equipment

Sl	Description	Rs. lakhs
1.	Cream Separator	0.500
2.	Packing Machine(Plastic sachet)	0.300
3	Autoclave	0.750
4	Bottle capping machine(Manual)	0.100
5	Copper bottom heating vessels	0.350
6	Can cooler	0.550
7	Refrigerator (2 nos)	0.660
8	Stainless steel storing vessels	0.150
9	Freezer	0.700
10	High speed centrifugal homogeniser	0.250
11	Slat conveyers and sealers	0.250
12	Stainless steel working tools	0.100
13	Weighing scales, dispensers, fillers etc	0.250
14	Plastic trays (50 nos)	0.100
15	Total	5.010
16	Laboratory equipment	0.500
17	Grand total machinery and equipment	5.510

12. Project cost on Fixed Capital

Sl	Description	Rs. lakhs
1	Land	On lease
2	Civil works	On lease
3	Plant machinery	5.010
4	Laboratory equipment	0.500
5	Transport vehicle	1.800
6	Pollution control equipment	0.000
7	Energy conservation equipment	0.000
8	Cost of power connection	0.100
9	Cost of electrification	0.250
10	Erection and commissioning	0.220
11	Cost of machinery spares	0.100
12	Cost of office equipment	0.500
13	Deposits if any	0.200
14	Company formation expenses	0.170
15	Gestation period expenses	0.500
16	Sales tax registration expenses	0.100
17	Initial advertisement and publicity	0.300
18	Contingencies	0.350
19	Working capital margin money	0.400
20	Total Fixed Capital	10.500

13. Working capital requirements per month

a. Salaries and wages

Sl	Description	No of persons	Total salary / month (Rs. lakhs)
1	Production Manager	1	0.100
2	Unskilled labour	3	0.075
3	Driver	1	0.060
4	Assistant driver	1	0.040
5	Accounts and Administration	1	0.100
6	Total	7	0.375

b. Raw material requirement per month

Sl	Description	Qty	Rate / unit (Rs)	Value (Rs. lakhs)
1	Milk	12500 Ltrs	24.00	3.000
2	Sugar	1000 kg	40.00	0.400
3	Flavour	200 kg	220.00	0.440
4	Spices and salt	625 kg	20.00	0.125
2	Total raw material			3.965

c. Packaging material requirement per month

Sl	Description	Qty	Rate / unit (Rs)	Value (Rs. lakhs)
1	200 ml polythene pouches for curd	12500	0.50	0.0625
2	200 ml polythene pouches for buttermilk	25000	0.50	0.125
3	100 ml food grade plastic bottle for ghee	3750	2.00	0.075
3	200 ml Glass bottles to substitute for damaged	6250	4.00	0.250
4	Labels	30000	0.25	0.075
5	Glass-Bottle caps	25000	0.40	0.100
	Total			0.6875

Total raw + packaging material = Rs. 4.653 lakhs

d. Utilities per month

Sl	Description	Rs. lakhs
1	Power 1500 kwh @ Rs. 3.50 per unit	0.050
2	Water	0.010
3	Fuel(LPG)	0.075
4	Total utilities	0.135

e. *Contingent expenses per month*

Sl	Description	Rs. lakhs
1	Rent for processing shed	0.080
2	Postage and stationery	0.010
3	Telephones, fax etc.	0.050
4	Consumable stores	0.020
5	Repairs and maintenance	0.066
6	Local transports, loading and unloading	0.100
7	Advertisement and publicity	0.133
8	Insurance	0.005
9	Sales expenses & Trade incentives	0.027
10	Miscellaneous expenses	0.027
11	Taxes @ 4%	0.276
12	Total contingent expenses	0.794

f. *Total working capital requirement per month*

Sl	Description	Rs. lakhs
1	Salaries and wages	0.375
2	Raw material and packaging material	4.653
3	Utilities	0.135
4	Contingent expenses	0.794
5	Total	5.957

- g. **Total Project cost = Fixed Capital + Working Capital(One month)**
 $= 10.50 + 5.957$
 $= 16.457 \text{ Lakhs}$

14. *Means of finance*

Sl	Description	Rs. lakhs
1	Term loan from bank for Fixed Capital (70%)	7.350
2	Cash Credit for Working Capital (70%)	4.169
3	Equity (30% of Total Project cost)	4.937
	Total	16.456

15. Financial analysis

Sl	Description	Rs. lakhs
1	Total recurring cost per year	71.484
2	Depreciation on land and building	0.000
3	Depreciation on machinery	0.550
4	Depreciation on furnaces	0.000
5	Depreciation on moulds and fixtures	0.000
6	Depreciation on office equipment	0.100
7	Interest on long term loan @ 14%	1.470
8	Interest on short term borrowings@ 14%	0.834
9	Total cost of production	74.438

16. Turnover per year

Sl	Item	Qty	Rate/unit (Rs)	Total Rs. lakhs
1	Flavoured milk	75000 litres	60	45.00
2	Curd	36000 litres	30	10.80
3	Buttermilk	90000 litres	20	18.00
4	Ghee	4500 Kg	200	9.00
	Total			82.80

17. Viability analysis

Sl	Description	Value
1	Gross profit before income tax (Rs. lakhs)	8.362
2	Net profit after Income Tax(25%)	6.272
3	Net profit ratio	7.57%
4	Internal rate of return	38.11%
5	Break even percentage	47.69%

17(a). Calculation of Viability Ratios:

$$\begin{aligned}\text{Net Profit Ratio} &= (\text{Net profit} \times 100) / \text{Sales} \\ &= (6.272 \times 100) / 82.80 \\ &= 7.57 \%\end{aligned}$$

$$\begin{aligned}\text{Internal Rate of Return} &= (\text{Net Profit} \times 100) / \text{Total Investment} \\ &= (6.272 \times 100) / 16.457 \\ &= 38.11 \%\end{aligned}$$

$$\text{BEP} = (\text{Fixed cost} \times 100) / (\text{Sales} - \text{Variable Cost})$$

Fixed Cost = depreciation + Term loan Interest + salary

Variable Cost = Raw material + Utilities + wages

Fixed cost = 0.86 Lakhs

Variable cost = 5.097 Lakhs

Sales = 6.90 Lakhs

$$\begin{aligned}\text{BEP} &= (0.86 \times 100) / (6.90 - 5.097) \\ &= 86 / 1.803 \\ &= 47.69 \%\end{aligned}$$

18. List of Machinery Suppliers

1. M/s. Mega Machines, 414B, Councilor Rd, Cochin, Kerala-682017
2. M/s. Thaimadam Machines, Fathimapuram, Changanassery, Kerala-686101
3. M/s. Universal Dairy Equipments, 394, Giriamman Koil Street, Peelamedu, Coimbatore, Tamil Nadu-641004

19. Conclusion

From the above discussion it can be seen that the project is technically feasible and economically viable on the financing pattern.