ECONOMICS OF MANUFACTURING BUTTER AND GHEE IN A DAIRY PLANT

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ABSTRACT

Butter and Ghee is one of the important traditional dairy products most widely used in daily menu. Economic analysis of this product necessary to optimize the cost of each and every component used for the manufacturing of butter and ghee. So that, the product will keep its presence in the competitive market. As a result of this the consumer will take the benefit of this optimum price. Therefore, cost of the product was calculated at Experimental Dairy, NDRI, and the production cost of butter and ghee was Rs.41.34 per 500 gm. and Rs. 126.53 per Kg. respectively.

Keywords: *Economics, traditional dairy product, Ghee, butter, Experimental Dairy, production cost.*

Introduction

India produced about 190 million tons of milk during the year 2019. Milk production. The per capita availability of milk increased from 307 grams in 2013-14 to 394 grams in 2018-19. Annual growth rate of Milk Production during the period 2009-14 was 4.2%, which has increased to 6.4% during 2014-19. The annual growth rate of world milk production has increased by 1.2% during 2014-19. which clearly indicates the growth of this sector. Milk production in India increased due to strong local demand and favourable milk prices leading to per capita availability of 394 per gram per day which was more than the world average of 302 gram in 2019(Dairyman,2020). The rapid change in lifestyle vis-a-vis food habits and greater influence on them will lead to diversion of more expenditure towards milk and milk product. Butter and Ghee is one of the well-known traditional products being used by all classes of society. In manufactured in dairy industry. Therefore, it is necessary to calculate the cost of butter and ghee for fixing the prices of product will maintain the equilibrium between producer and consumer interest.

Materials and Method

The present study was conducted at experimental dairy, National Dairy Research Institute, Karnal. The secondary data was collected for the year 2001-2002 from the different sections of the dairy plant. Most of the data were collected from the log book that maintained by the different sections of the plant. The aim to carry out the cost of processing and manufacturing of various dairy products in an Experimental Dairy Plant, National Dairy Research Institute, Karnal. The present study has been aimed at carrying out the cost of processing and manufacturing of various dairy products in an Experimental Dairy Plant, National dairy Research Institute, Karnal (Haryana). The secondary data were collected from the records maintained in the dairy plant for the financial year 2000-2001.These were supplemented by actual observation and interviewing plant personnel. Data on milk inflow, it's utilization pattern and output of product was taken from different ledgers of the plant where entries made. The quantity of raw material and their price of the item's used for production were drawn from the records of store section. Separate records are maintained for steam boiler. The information on wages and salaries of the person employed was taken from office records of the plant. Actual observation was taken on quantity of water utilized by the plant, temperature of different stages of production, quantity of steam required for the manufacturing of product, electric power utilization was calculated on the basis of horse power of motors (kw) installed on different machineries and equipments, and running capacities of the equipments and machineries.
To work out the cost of production of butter and ghee, the tabular analysis technique was used to workout different cost component of butter and ghee.

Result and Discussion

Ghee is the major product contributing 27.90 %in the total revenue of the plant. During the period under study, the plant manufactured 29271 Kg of Ghee incurring expenditure of Rs.37,60,602/-. The plant manufactures cow Ghee. Economics has been carried out and presented in Table-1

Table: 1 Component Wise Cost Of Ghee

Sr. No.	Cost component	Total Cost (Rs.)	Fixed Cost (Rs.)	Variable Cost (Rs.)	Total Cost per unit (Rs./kg)	% Cost
1	**Raw material**	3187102.00	---	3187102.00	107.23	84.59
2	**Labour**	90625.00	90625.00	---	3.05	2.41
3	**Electricity**	1492.00	---	1492.00	0.05	0.04
4	**Water**	758.00	---	758.83	0.03	0.02
5	**Steam**	5785.00	133.06	5651.94	0.20	0.15
6	**Refrigeration**	7378.23	636.00	6742.22	0.25	0.20
7	**Administration and Supervision**	346825.94	346825.94	---	11.67	9.22
8	**Repair and maintenance**	1059.86	---	1059.86	0.04	0.03
9	**Store maintenance**	40913.12	40913.12	---	1.38	1.09
10	**Quality Control**	7208.92	2728.58	4480.34	0.24	0.19
11	**Packaging**	32693.10	---	32693.10	1.10	0.87
12	**Depreciation on equipments and building**	37500.00	37500.00	---	1.26	0.10
13	**Sundries**	1260.00	---	1260.00	0.04	0.03
	Total Cost	3760602.00	519361.70	3241240.30	126.53	100.00
	Per unit cost (Rs./Kg)	126.53 (100.00)	17.47 (13.81)	Total production in a year = 29721kg		
Figure in parenthesis are the percentage of total cost. .						

The cost of production of cow ghee was worked out to Rs.126.53/-. In this cost component, the share of fixed cost was 13.81%, while variable cost were 86.19%.Componentwise manufacturing of ghee reveals that cooking butter accounts for 84.59% of total cost, followed by administration and supervision 9.22%, labour1.09%, Packaging and refrigeration had a share of 0.87% and 0.20%.steam had a share of only 0.15%, which was very low for ghee because in commercial production of cooking butter was used as a raw material with 80% fat and 20% water. Ghee kettle, clarifier was the only equipments used for the preparation of ghee. This cooking butter was heated up to a temperature of 115^{o}C at a pressure of 2Kg/cm^{2}. After administration and supervision, raw material and labour cost was the major component in the manufacturing of ghee amounting to 99.3% of fat.

Table: 2 Component wise Cost Of Butter

Sr. No.	Cost component	Total Cost (Rs.)	Fixed Cost (Rs.)	Variable Cost (Rs.)	Total Cost Per unit (Rs./500gm)	% Cost
1	**Raw material**	148560.00	---	148560.00	30.00	72.58
2	**Labour**	3231.18	3231.18	---	0.66	1.58
3	**Electricity**	2776.11	---	2776.11	0.56	1.36
4	**Water**	1200.00	---	71200.00	0.24	0.59
5	**Steam**	569.76	13.10	556.56	0.12	0.28
6	**Refrigeration**	1345.70	116.00	1229.70	0.27	0.66
7	**Administration and Supervision**	20258.53	20258.53	---	4.09	9.90
8	**Repair and maintenance**	1600.00	---	1600.00	0.33	0.78
9	**Store maintenance**	2522.24	2522.24	---	0.51	1.23
10	**Quality Control**	606.37	229.51	376.86	0.40	0.97
11	**Packaging**	1980.80	---	1980.80	0.12	0.30
12	**Depreciation on equipments and building**	19856.00	19856.00	---	4.01	9.70
13	**Sundries**	111.42	---	111.42	0.03	0.05
	Total Cost	204698.11	46226.66	158471.45	41.34	100.00
	Per unit cost (Rs./500gm)	41.34 (100.00)	9.33 (22.58)	32.01 (77.42)		

Figure in parenthesis are the percentage of total cost. Total production in a year 4951.8 packs of 500gm.

Conclusion

Butter is one of the important dairy fermented dairy product in human diet having 80 percent fat and popularly known as “Table butter” in dairy industry. During the study period 4951.8 packs of 500gm of butter was manufactured involving an expenditure of Rs. 2, 04,698.11(Table-2). Variable costs incurred amounted to 77.42 percent and fixed cost was 22.58 percent of the total cost. The average manufacturing cost was Rs.82.68 per kg of butter. Manufacturing activities like cost of raw material cream(40% fat)was Rs.30 per 500 gm of butter .Segregation of processing cost in to its constituents showed that expenditure on administration and supervision accounted for 9.90 percent of the total cost, followed by depreciation on equipments like butter churn, cream tank, multipurpose vat etc. and space occupied by building shared 9.70 percent, electricity 1.36 percent, labour 1.58percent,store maintenance1.23 percent and packaging 0.30 percent of total cost of product manufactured respectively. Other component of total costs was individually less than one percent.

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