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DAIRY SECTOR IN INDIA: PRODUCTION AND UTILIZATION OF MILK AND MILK PRODUCTS – A SHORT REVIEW

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ABSTRACT India is the leader in white revolution since 1998, India surpassed the United States and became the largest milk producer in the world by executing Operation flood and also the largest consumer of dairy products. Milk production in the country has increased from 146.3 million tonnes in 2014-15 to 198.4 million tonnes in 2019-20 (Economic Times, 2021). In comparison with 2018-19, the production has increased by 5.70 percent according to the government data. More than 75 percent of the households in the country are consuming milk. The per capita milk consumption is found to be much higher for the home-grown households than those which purchased in most of the state.

KEYWORDS : Constraints, Producer, Production & Per-capita

INTRODUCTION

Dairying became a subsidiary of agriculture and now gained economic importance and introduced white revolution after "Green Revolution". It plays a critical role in the economic development of rural India by satisfying the needs of urban India. It is practiced along with agricultural activities to generate additional income in addition to meet its own household requirement of milk and milk products. Since 1997, India is the largest milk-producing country and also the largest consumer of dairy products. In India, the co-operatives and private dairies have access to only 20.0% of the milk produced. Among the produced milk, 34.0 % of the milk is sold in the unorganized market whereas 46.0 % is consumed locally. Indian dairy sector is the world's largest milk production system producing 187.70 million tonnes (Mt) of milk where about 70.0% of the milk is produced by smallholders having 1 to 3 animals per household. India dominates about 13.0% of world milk production and India consumes about 100% of its production. The livestock sector contributes 4.20% GDP as of 2020 and 25.60% of total Agriculture GDP. In 2019, the Indian dairy sector was reported to be growing at 4.90% yearly. Uttar Pradesh is the massive contributor of 17.60% and Tamil Nadu clenches the ninth position by contributing 5.03%.

India - The largest producer of milk

India is the world's largest milk producer. This was not the case a few years ago. The country used to be milk short, and imported milk from other countries to serve its growing population. India accounts for over one-fifth of the global milk production followed by the US, China, Pakistan and Brazil. In 1950s and 1960s, India was heavily dependent on milk imports until 1965, the Indian government decided to establish a National Dairy Development Board to improve India's dairy sector. From 1970s, the country aimed to enhance milk production, which led to the launch of Operation Flood and in 1998, India surpassed the US and became the largest milk producer in the world. India's per capita availability of milk more than doubled during 1991-2019, with the production growing at a 4% CAGR.

India's Milk Production

In 1991 per capita availability in India is 178 gm/day whereas in 2018 per capita availability in India is 411 gm/day. Similarly, per capita availability in the world during 2018 was 302 gm/day.

Table 1: Milk Production and Per Capita Availability of Milk in India

Year	Production (million tonnes)	Per Capita Availability (gms/day)
2014-15	146.3	322
2015-16	155.5	337
2016-17	165.4	355
2017-18	176.3	375
2018-19	187.7	394
2019-20	198.0	411

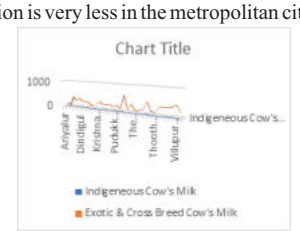
Source: Basic Animal Husbandry Statistics, DAHD&F, GoI

In terms of milk production, it was 55.6 million tonnes in 1991 in India and 187.7 million tonnes in 2018. Indian milk production growth during 1991-2018 in India was 4% CAGR. The Secretary at the Department of Animal Husbandry and Dairying in the Ministry of Fisheries, Animal Husbandry and Dairy, has termed Operation Flood as the world's most ambitious dairy development program that acted as a stepping stone in the country's growth towards milk production.

Milk Production in Tamil Nadu

The total milk production in Tamil Nadu has increased at an average annual growth of 4.2 percent during the last decade and touched 8.3 million tonnes in 2018-19, accounting for 5.3 percent of the country's milk production. Cow milk accounted for 90 percent of milk production and the balance was buffalo milk. Within the cow milk basket, the share of crossbred milk to total milk production has increased from 23 percent in 1992-93 to 80 percent in 2018-19. Higher production of milk to total milk production has improved the per capita availability of milk in the state from 169 grams/day in 1993-94 to 285 grams/day in 2018-19.

The highest milk production has been observed in the Salem District of Tamil Nadu with 671.78 million tonnes among the various districts of Tamil Nadu in the year 2016-17, while the least milk production has been observed in Chennai with 9.11 million tonnes which shows that the milk production is very less in the metropolitan cities.



Graph 1 : District wise Milk Production in Tamil Nadu 2018-19

Source : National Informatics Centre Portal, GoI

Per capita availability of Milk in Tamil Nadu

The milk production in Tamil Nadu has increased from 7556 million tonnes in 2017 to 7742 million tonnes in 2018. The per capita availability of milk has also increased from 294gms/day in 2017 to 300gms/day in 2018. Thus there is an overall increase in milk production in Tamil Nadu since 2010 accounting for an overall increase of 911 million tonnes in milk production, while the per capita availability of milk reached the highest in 2012-13 with 541gms/day then fell to 280gms/day in 2013-14. The per capita availability of milk has increased since 2013.

Table 2 : Milk Production and Per Capita Availability of Milk in Tamil Nadu

Year	Production ('000 tonnes)	Per Capita Availability (gms/day)
2011-12	6831	278
2012-13	6968	265
2013-14	7005	541
2014-15	7049	280
2015-16	7132	282
2016-17	7244	283
2017-18	7556	283
2018-19	8361	285

Source: Basic Animal Husbandry Statistics, DAHD&F, GoI

Utilization of milk and milk products

More than 75 per cent of the households in the country are consuming milk, Vinay Paten, 2016. The per capita milk consumption is found to be much higher for the home grown households than those which purchased in most of the States. There exists huge potential for increasing liquid milk marketing by the organised sector. It is believed that cow and buffalo ownership improve milk consumption in the families predominantly among children (Bhagowalia et al., 2012). India is a vast country with substantial interstate variations in the consumption of liquid milk.

Liquid Milk	46 %
Ghee / Butter	33 %
Curd	7 %
Khoa (Pedha, Burfi)	7 %
Paneer	3 %
Powder, Cheese	4 %

Source: Basic Animal Husbandry Statistics, DAHD&F, GoI

Milk utilization pattern in India

The data revealed that 78 per cent of the rural households were consuming milk. There were only 27 per cent families taking milk out of home produce, while 51 per cent through outright purchase. While comparing northern and southern India, it shows that the percentage of household consumption of liquid milk was higher in northern India & outright of purchase was higher in southern India. In Tamil Nadu, only 10% of households consumed their home produce and 76% of households are from outright purchase. In rural areas of the country, consumption of milk out of home produce was 270 grams/day/consumer, almost double compared to outright purchase (131 grams/day) (Patel, 2020). This indicates that a person of a producing household in the rural areas consumed about 140 grams of additional milk than a person of a purchasing household.

Major challenges to the dairy industry:

1. Challenges related to production

- Small and marginal farmers – prime stakeholders of entire value chain deprived of minimum resources of land, labour, capital, etc…
- Inadequate feeding of animals due to increasing pressure for food crop production than fodder crops and lack of financial support for concentrate.
- Low genetic potential of animals.
- More disease incidence in animals.

2. Challenges at the co-operative level

- Less number of member farmers and informal channel of milk sale.
- Lower participation of farmers and government interference in the decision-making process.
- Poor management at the village co-operative leads to faith loss in the farmers.
- Inadequate availability of quality feed, germplasm and veterinary services.

3. Issues and challenges for marketing

- The dairy farmers are mainly smallholders and hence milk is collected from each twice daily and waiting for deposits.
- The involvement of too many intermediaries leads to quality and volume loss in milk.
- The absence of a screening system leads to zoonotic, adulteration. Contamination leads to spoilage of the entire batch if one goes undetected.
- Lack of infrastructure like chilling plants and bulk coolers to prevent spoilage.
- Manipulation of the quality of milk by the farmers by adding fat, vegetable fat, starch to alter fat and solid content of milk to get a fair price.

4. Issues and challenges at the processing level

- Seasonality of production and fluctuating supply.
- Absence of quality standards and food safety, adulteration, the cheap substitution of SMP (Standard Manufacturing Practices) with the below standard substances which is hazardous to health.

5. Issues and challenges with supply chain

- In 50% rural and 50% urban (domestic market) - 50% of produced milk is utilized as fluid milk; 35% of milk is used for the production of the traditional product (paneer, cheese, yogurt, milk-based sweets) and 15% of milk are consumed for
- production of butter, ghee, milk powder and other processed dairy products (baby foods, ice creams, whey powder, casein, milk albumin).
- The organized dairy sector consumes 15% of total milk production for producing liquid milk, butter, cheese and milk powder.
- The unorganized sector consumes 80% of total milk production for producing traditional products.

6. Policy issues

- The majority of the market is unorganized and it competes with the organized market in relation to price.
- Consumers are not purchasing from the organized sector due to high prices (due to processing). They have the mindset to purchase fresh whole milk from milkmen.
- Less penetration to the rural market because organized sector concentrates sales only in urban.
- Lack of transparent milk pricing system.

7. Infrastructural issues

- Lack of storage facilities like chilling plants leads to wastage of milk due to its perishable nature it requires immediate cooling to prevent spoilage and contamination.
- The gap in the cold chain and transport facilities.

8. Human resource issues

Lack of trained and skilled workers to handle safe and hygienic milk production.

CONCLUSION:

In 2020, it was 198MMT of milk was produced which is comparatively lower than the demand estimated for 2020-2021(Vinay Patel et al.,2016). The assessment suggests that in comparison to CY 2019's 191 million metric tons (MMT), the CY 2020 may go as high as 195 MMT, which is a piece of good news for Indian consumers. National Dairy Development Board (NDDB) Chairman Amrita Patel said that, with increased income levels, India's demand for milk is expected to go up to 200-210 million tonnes by 2020-21 and called for collective efforts and increased productivity to raise milk production to meet it. As per the study on demand for milk conducted by the National Dairy Development Board (NDDB), the estimated demand for 2030 at and all India level is 266.5 million metric tonnes for milk and milk products.

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