



A Comparative Analysis Of The Production Of Milk In Southern States Of India

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Introduction

India is highest producer of dairy product in the world. The milk production of India registered an increase of 58 % during the last decades. Its exports 67572.99 MT dairy product which is worth 284.65\$ during the year 2022-23. The major export destinations includes Bangladesh, United Arab EMTs, Saudi Arab, USA, Bhutan, etc. Dairy has been an integral part of Indian cuisine from ancient times to the present. The top milk producing states in India are Rajasthan, Uttar Pradesh, Madhya Pradesh, Gujarat and Andhra Pradesh. But India's dairy industry requires significant development in infrastructure investment across processing, chilling, logistics, cattle feed and so on. The Central/State Government have sanctioned various incentives to attract investments in this sector. The southern states of India are also foremost in milk production with the key role taken up by Cooperatives.

Dairy Farming in India

India has the highest level of milk production and consumption of all countries. The annual production was 186 million tonnes as of 2018. As of 2020, approximately 4.2% of India's gross domestic product was due to dairy production. In 2019, the Indian dairy sector was reported to be growing at 4.9% yearly. In 2018–19, the Government of India reported that 187.7 million tonnes of milk had been produced, and that the per capita availability of milk in India was 394 grams per day. India has a population of over 300 million bovines as per the 2019 livestock census, including 192.49 million cattle and 109.85 million buffaloes.

Nearly half of the milk produced in India comes from water buffaloes, as opposed to cows; previously, water buffalo produced the majority of milk in India. As of 2019, buffaloes produced 91.82 million tonnes of milk. Goat milk is the third-most produced variety of milk, with a contribution of 4% as of 2017–18. The predominant genotype in Indian native breeds of cows and buffaloes is described as A2A2, meaning they produce A2 milk. The populations of indigenous breeds of cattle have steadily been decreasing, while that of the more productive exotic and cross-bred breeds has been increasing. Indigenous cows produce about 3.73 kilograms (8.2 lb) of milk per day, compared to 7.61 kilograms (16.8 lb) per day for cross-bred cows and 11.48 kilograms (25.3 lb) per day for exotic cows. However, according to some experts, the milk of indigenous cows have higher nutritional value and thus their declining population can have long-term health and environmental effects.

Today, India is largely self-sufficient in milk production. Until the country's independence in 1947, dairy production and trade were almost entirely in the household sector. Isolated attempts at forming milk production co-operatives were made in the 1930s and 1940s, but this was successful only after independence. Milk production in India increased approximately threefold between 1968 and 2001, when it reached 80 million metric tonnes per year. As of 2004–05, milk production was estimated to be of 90.7 million metric tonnes. As of 2010, the dairy industry accounted for 20% of India's gross agricultural output.

In Maharashtra alone, there are approximately 4 million dairy farmers, although as of 2014 Gujarat had the highest dairy output of the states and union territories of India. The livestock sector in India is characterized by large numbers but little productivity across species. As of 1992, the number of cattle, the most populous species, was 204 million. Dairy production in India comes primarily from small-scale dairy farmers; most of India's 75 million rural dairy farms consist of 10 cattle or less and are family-owned and operated.

Dairy Farming in Southern States of India

Self-sufficiency in milk Production has been one of the critical issues in South Indian states due to insufficient multi-cut green fodder crops in time and a lack of knowledge about unconventional fodder sources. The study area's dairy farmers successfully selected an optimal set of livestock inputs consistent with relative dairy product prices. Although necessary, technical efficiency studies are insufficient to explain why dairy farmers exit the dairy sector (Bahta et al., 2021). Small dairy farms in Andhra Pradesh confront different production risks due to increasing dependence on external fodder suppliers, which usually undermines the farm's profitability (Drews et al., 2020). The profitability and resource efficiency of dairy farms depends on various aspects such as the quality of fodder, adoption of technology etc. (Toma et al., 2013). This scenario provides little understanding of the profit efficiency elements in the study area and suggests the need for additional research, particularly on revenue components (Adenuga et al., 2018). The objective in the present study is that optimal use of inputs could contribute to improvements in dairy production and efficiency in profit. Due to this, the present study was carried out to gain insight into the performance of production of milk in Southern India.

Importance of Dairy Farming

Milk is a wholesome food among all the animal products. It contains in proper proportions the various essential food ingredients required by human body in an easily digestible form. Inclusion of milk in the human diet increases the digestibility of other types of food as well. The productivity of milk varies in different countries, as some countries are surplus in production, some are deficit in production, and in some of the countries, Goat milk 3% Buffalo milk 49% Crossbred and exotic cow milk 27% Indigenous cow milk 21% Milk production from dairy animals in India availability matches their requirement. The annual milk production in India in 2015–16 was 155.5 million tonnes and the per capita availability of milk was 337 grams per day. In India, milk is produced by a vast number of small, medium and large-sized farms. There is exponential growth in the number of the commercial dairy farms in the urban and semi-urban areas of the metros and big cities. It is clear from Fig.1.1 that 49 per cent of milk production comes from buffaloes, followed by 27 per cent, 21 per cent and 3 per cent from crossbred and exotic cows, indigenous cows and goats, respectively. Small quantity of milk is also procured from camel, sheep and yak. Uttar Pradesh is the largest milk producer in India, followed by Rajasthan.

The per capita availability of milk is highest in Punjab, followed by Haryana (Basic Animal Husbandry Statistics, Government of India, 2017). It is interesting to note that in 2016–17, the per capita availability of milk was highest in Punjab at 1075 grams, followed by Haryana at 930 grams, whereas Delhi recorded a dismal 35 grams. The demand for milk is constantly increasing in cities as well as small towns and rural areas. The factors influencing this increased demand are – rapid increase in population, spread of education, growing nutritional awareness and improved purchasing power of consumers. Dairy farming in India has evolved from just an agrarian way of life to a professionally managed industry. A large number of rural families in India are engaged in dairy production, for whom this is an important source of secondary income. In India, raw milk is perceived to be fresh by most consumers and has a large market. Conventional dietary habits in India account for about 60 per cent of milk consumption in liquid form, and the remaining in the form of ghee, cheese, curd, paneer, ice cream, dairy whiteners and traditional sweets. Dairying provides a source of daily income with a relatively low level of risk. Most of the dairy farmers in India raise animals at a small scale in traditional ways. The productivity of these farmers can be enhanced if they run their business in a scientific manner. Most of such farmers are not aware of the modern methods of dairy farming. As a result, some farmers lose their investment instead of making profit. To ensure maximum production and profits from dairy farming, it is essential that these farmers adopt proper business plans and good dairy management practices. Nearly 43 per cent of Indian farmers are small cultivators, and about 26 per cent are agricultural labourers who have one or two milch animals (Planning Commission, GOI, 2009). This indicates that dairy sector provides basic sustenance for small farmers, landless people and agricultural labourers, especially for people in draught affected areas in Rajasthan and Gujarat

Objectives of the study

1. To study the growth of milk production in southern states of India during 2011-12 to 2021-22.
2. To analyze the structural changes on milk production in southern states of India during 2011-12 to 2021-22.
3. To give measures and policy recommendations of the study.

Data Analysis

For study periods, the Annual increases, Simple Aggregates Annual Growth Rates (AGR) and the Simple Regression analysis have been worked out.

Table.1 Total Production of Milk in Southern States of India (Thousand Tonnes)

Year	Southern States of India				Over all India
	Tamil Nadu	Andhra Pradesh	Karnataka	Kerala	
2011-12	6968	12088	5447	2716	127904
2012-13	7005	12762	5718	2791	132431
2013-14	7049	13007	5997	2655	137686
2014-15	7132	9656	6121	2711	146314
2015-16	7244	10817	6344	2650	155491
2016-17	7556	12178	6562	2520	165404
2017-18	7742	13725	7137	2576	176347
2018-19	8362	15044	7901	2548	187749
2019-20	8759	15263	9031	2544	198440
2020-21	9790	14714	10936	2534	209960
2021-22	10108	15403	11796	2533	221064

Source: Hand Book of Statistics on Indian Economy, 2023.

Growth of Production of Milk in India and Southern states

The data on the value of production of milk expressed in thousand tonnes over the period from 2011-12 to 2021-22 are given in Table 1. The value of production of milk in India was 127904 tonnes in 2011-12. It increased with fluctuations and reached 221064 tonnes in 2021-22. The production of milk was increased by 1.34 times in this period. The average value of production of milk is 168980.9 tonnes per year. The linear growth rate comes about 42.14 per cent.

In Tamil Nadu, the value of milk production was 6968 tonnes in 2011-12 and it reached 10108 tonnes in 2021-22. The production of milk was increased by 2.20 times in this period. The average value of production of milk is 168980.9 tonnes per year. The linear growth rate comes about 4.50 per cent.

In Andhra Pradesh, the value of milk production was 12088 tonnes in 2011-12 and it reached 15403 tonnes in 2021-22. The production of milk was increased by 1.85 times in this period. The average value of production of milk is 13150.64 tonnes per year. The linear growth rate comes about 2.15 per cent.

In Karnataka, the value of milk production was 5447 tonnes in 2011-12 and it reached 11796 tonnes in 2021-22. The production of milk was increased by 1.05 times in this period. The average value of production of milk is 7544.55 tonnes per year. The linear growth rate comes about 5.38 per cent.

In Kerala, the value of milk production was 2716 tonnes in 2011-12 and it reached 2533 tonnes in 2021-22. The production of milk was increased by 2.10 times in this period. The average value of production of milk is 2616 tonnes per year. The linear growth rate comes about -0.72 per cent.

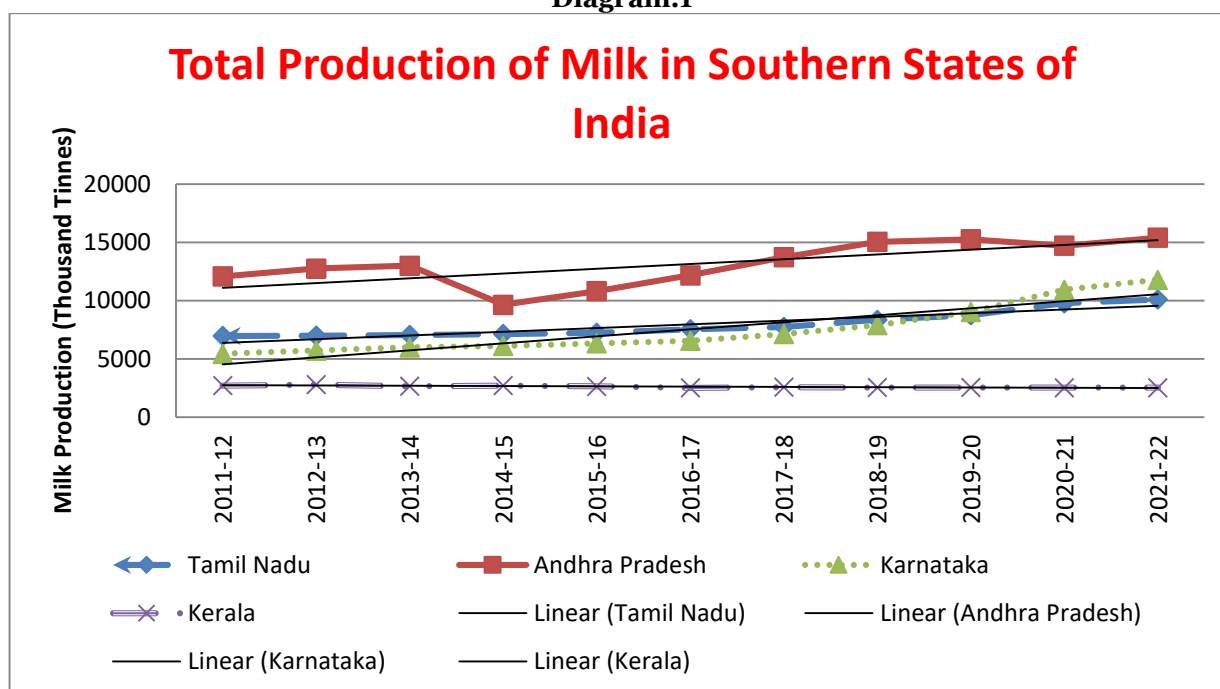
Diagram.1

Table.2 Annual increases of Total Production of Milk in Southern States of India (Thousand Tonnes)

Year	Southern States of India			
	Tamil Nadu	Andhra Pradesh	Karnataka	Kerala
2011-12	-	-	-	-
2012-13	37	1.055758	271	75
2013-14	44	1.019198	279	-136
2014-15	83	0.742369	124	56
2015-16	112	1.120236	223	-61
2016-17	312	1.125820	218	-130
2017-18	186	1.127032	575	56
2018-19	620	1.096102	764	-28
2019-20	397	1.014557	1130	-4
2020-21	1031	0.964031	1905	-10
2021-22	318	1.046826	860	-1

Source: Calculated value

Table 2 shows southern states of india's milk production for the last eleven years. From the table it is understood that the milk production of Tamil Nadu was 300 tonnes (min=37 and max=1031), the Andhra Pradesh was 1 tonnes (min =0.74 and max = 1.12), the Karnataka was 200 (nin =124 and max = 1905) and Kerala was negative role on milk production.

Table.3 Simple Aggregate Results in Total Production of Milk in Southern States of India (Thousand Tonnes)

Year	Southern States of India			
	Tamil Nadu (%)	Andhra Pradesh (%)	Karnataka (%)	Kerala (%)
2011-12	100	100	100	100
2012-13	100.53	105.57	104.97	102.76
2013-14	101.16	107.60	110.09	97.75
2014-15	102.35	79.88	112.37	99.81
2015-16	103.96	89.48	116.46	97.56
2016-17	108.43	100.74	120.47	92.78
2017-18	111.10	113.54	131.02	94.84
2018-19	120.00	124.45	145.05	93.81
2019-20	125.70	126.26	165.79	93.66
2020-21	140.49	121.72	200.77	93.29
2021-22	145.06	127.42	216.55	93.26

Source: Calculated value

Table.4 Annual Growth Rate of Total Production of Milk in Southern States of India (Thousand Tonnes)

Year	Southern States of India			
	Tamil Nadu (%)	Andhra Pradesh (%)	Karnataka (%)	Kerala (%)
2011-12	-	-	-	-
2012-13	0.53	0.008734	4.98	2.76
2013-14	0.62	0.007986	4.88	-4.87
2014-15	1.17	0.005707	2.07	2.11
2015-16	1.57	0.011601	3.64	-2.25
2016-17	4.30	0.010408	3.44	-4.91
2017-18	2.46	0.009255	8.76	2.22
2018-19	8.00	0.007986	10.7	-1.09
2019-20	4.74	0.006744	14.3	-0.16
2020-21	11.77	0.006316	21.1	-0.39
2021-22	3.24	0.007114	7.86	-0.04

Source: Calculated value

During the year under study and the Annual growth rate of Tamil Nadu was 1 metric tonnes (min=0.53 and max=11.77), the Karnataka do the average level of milk production Andhra Pradesh was very poor performance and the Kerala was decreasing the production of milk.

Table.5 Estimated Regression Results of Total Production of Milk in Southern States of India

Year	State	Regression Equation	R ²	Adj R ²
2011-12 to 2021-22	Tamil Nadu	$y = 317.5x + 6068$	0.86	0.86
	Andhra Pradesh	$y = 407.5x + 10705$	0.85	0.85
	Karnataka	$y = 600.6x + 39$	0.51	0.51
	Kerala	$y = -24.32x + 2762$	0.75	0.75

Source: Calculated Value

Table.6 Forecasting Future Trend of Production of Milk

Year	Production of Milk	Projected Year	Project Production of Milk
2011-12	127904	2022-23	224832.26
2012-13	132431	2023-24	223673.93
2013-14	137686	2024-25	222542.20
2014-15	146314	2025-26	221436.45
2015-16	155491	2026-27	220356.09
2016-17	165404	2027-28	219300.53
2017-18	176347	2028-29	218269.22
2018-19	187749	2029-30	217261.58
2019-20	198440	2030-31	216277.07
2020-21	209960	2030-32	215315.18
2021-22	221064		

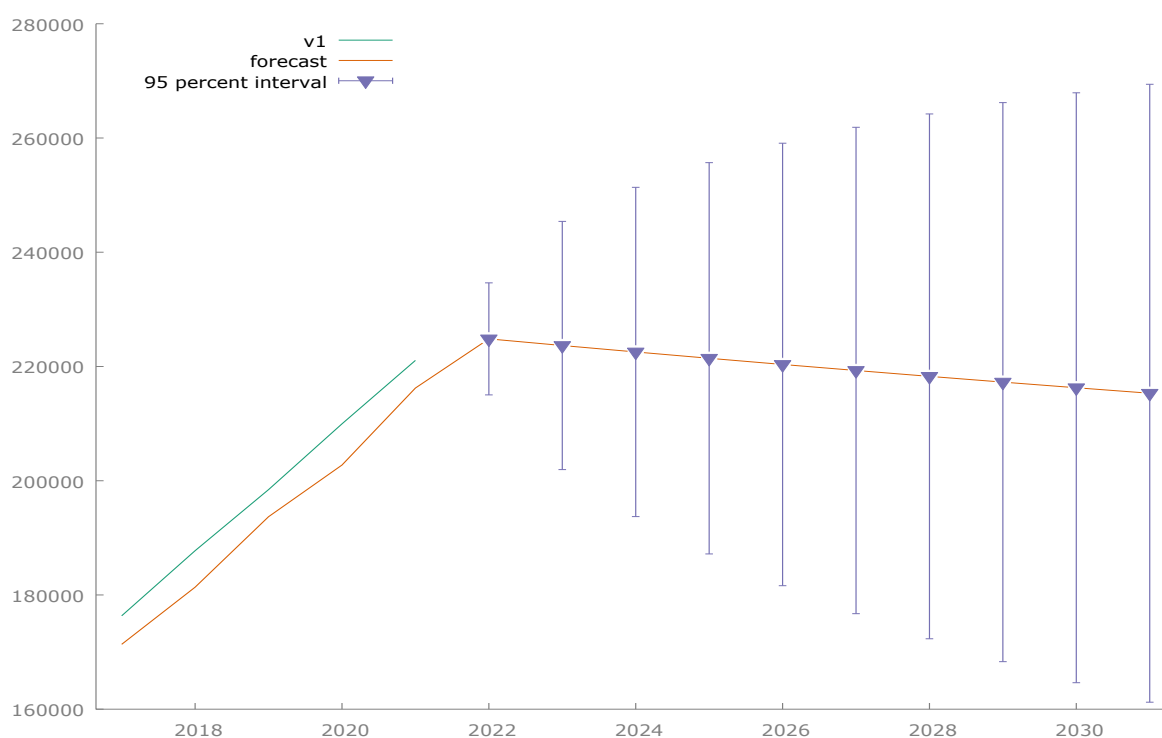


Table 6 showed the year wise estimated milk output until 2032 based on the production trend for the last eleven years using forecasting analysis in Gretl. As per the estimated data, it was found that the total output forecasted for the year 2032 is 215315.18 thousand tonnes, which is not incongruent with the projection for the demand of milk made by the National Dairy Development Board by 2021-2022 which stands at 200 million tonnes. To meet the domestic consumption needs, livelihood to more than 90 million farm families and also generate revenue through export to the milk deficient countries, and we have a long way to go in producing milk through innovative farming models by promoting and motivating large numbers of small milk entrepreneurs in the country.

Suggestions for above from analysis

After extensive research on the study area, few suggestions can be made on entrepreneurship development on milk production of the country. Firstly, Electricity charges should be given at a subsidized rate to the small farmer. Secondly, credit facilities at a concessional rate with a more extended moratorium period and the longer repayment schedule should be arranged for the rural entrepreneur. Thirdly high-quality local breed

cattle with high lactation yield must be made available to the farmers by the government, which will also include insurance cover to their cattle. Fourthly, a Milking machine should be provided to the small entrepreneur at an affordable price. Lastly, training on feed management, value addition on milk products, marketing, and also providing suitable marketing for their processed items will be a boon for the small producer, which will, in turn, help us in realizing our dreams of not only milk sufficient countries but also milk surplus country

Conclusion

Although the period and amount of data were deemed acceptable, a more extended period and more extensive data would have allowed us to run more analyses. The current study was limited to the overall milk production scenario of the country. An in-depth study can be undertaken on a specific area like consumption, Export and Import, management of feeds, breeds, marketing by the future researcher.

Reference

1. Anil Chawla, Nidhi Chawla, Y. P. & P. K. (2009). Milk and Dairy Products in India-Production, Consumption and Exports. Hindustan Studies and Services (Second Edi). Hindustan Studies & Services Ltd and Infolitics.
2. APEDA. (2016). Agricultural & Processed Food Products Export Development Authority, Ministry of Commerce & Industry, GOI. Retrieved August 29, 2018, from <http://apeda.gov.in/apedawebsite/>
3. Avhad, S. R., Kadian, K. S., Verma, A. K., & Kale, R. B. (2015). Entrepreneurial behaviour of dairy farmers in Ahmednagar district of Maharashtra, India. *Agricultural Science Digest - A Research Journal*, 35(1), 56. <https://doi.org/10.5958/0976-0547.2015.00011.7>
4. Birthal, P. S., & Negi, D. S. (2012). Livestock for Higher, Sustainable, and Inclusive Agricultural Growth. *Economic and Political Weekly*, XLVII(26), 89–99.
5. Business Standard. (2017). Retrieved from https://www.business-standard.com/article/news-cm/per-capita-availability-of-milk-in-india-is-337-gram-day-as-compared-to-the-average-world-per-capita-availability-of-229-gram-day-117011300843_1.html
6. Chakravarty, D. A. K. (2017). Sustainable development of indigenous dairy cattle in India. In *Kurukshetra* (Vol. 65 (3), pp. 9–12).
7. Dairy sector: Dairy sector to grow at 15% CAGR till 2020 to Rs 9.4 trillion: Report - The Economic Times. (2017). Retrieved August 29, 2018, from <https://economictimes.indiatimes.com/news/economy/agriculture/dairy-sector-to-grow-at-15-cagr-till-2020-to-rs-9-4-trillion-report/articleshow/62105938.cms>
8. Dhawan, S. (2016). A study of consumer behaviour towards various branded and non-branded milk with special reference to Jabalpur District in Madhya Pradesh. *Imperial Journal of Interdisciplinary Research (IJIR)*, 2(12), 1582–1586.
8. Imam, A., Zadeh, M. N., & Dubey, L. R. (2011). Dairy Marketing Strategies in the Context of Globalization: Issues and Challenges. *International Journal of Trade, Economics and Finance*, 2(2), 138–144.
9. K. Jha, A. R. & S. (2005). Entrepreneurship Development in Dairy sector. In M. A. P. and M. P. K. S. Dr Alok Jha (Ed.), *Souvenir: National workshop on Entrepreneurship Development in Dairy and Food Industry* (pp. 95–96).
10. Karnal: Dr S. Singh. <https://doi.org/10.15713/ins.mmj.3>
11. Khamkar, S. K. (2014). The Consumption Pattern of Dairy Products by Indian Consumers Since 2000. *Asian Journal of Management Sciences*, 02(March), 170–172