



*Original Research*

## An Outlook on Growth of Dairy Sector and its Contribution to Indian Economy

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### Abstract

The present research paper was carried out to assess the growth of dairy sector and its contribution to Indian economy. The study is descriptive in nature and based on secondary data which obtained from various secondary sources like Economic Survey, Ministry of Finance, GoI; BAHS, Ministry of Agriculture, GoI and ISS Report, Directorate of Animal and Veterinary Services, Government of Tamil Nadu. The basic statistical tools such as percentage analysis and continuous annual growth rate were used. The results revealed that the percentage change in bovine population of India and Tamil Nadu showed negative trend over the period except during the year 2007. The annual compound growth rate for milk production in India showed the increasing trend for the period 1983-84 to 1992-93 and was at 4.56 and was 5.44 for the period 2012-2013 to 2016-17. The annual compound growth rate for milk production in Tamil Nadu for the period 1987-88 to 1996-97 was 2.77 and was 1.62 for the period 2007-2008 to 2016-2017. The value of output from dairy sector was more than Rs. 549 billions and accounts for 67.69 per cent of the value of the livestock sector output in the year 2015-16.

**Key words:** Dairying, India, Milk, Growth Rate, Trend

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### Introduction

Animal husbandry is the most important economic activity in rural areas as livestock plays a vital role in the economy. Over 90 per cent of the milk production comes from small farmers, who are located in rural areas. Growing human population, increasing urbanisation, rising domestic incomes and changing lifestyles in the country have led to increasing demand for dairy products (Anita and John, 2001). The dairy sector stretches its hand to 150 million farm households by providing nutritive food, supplementary income and productive employment for family labour, mainly for women (Payal *et al.*, 2018 and Rais *et al.*, 2007).





Dairying is also an important secondary source of income for millions of rural families. Indian dairying is unique in more than one way, contributing about 5.3 per cent to India's agricultural GDP with milk as a leading agricultural produce of the country (Satish and Soumyakant, 2016). During the post-independence period, the dairy sector showed increase in growth rate (Ashish, 2017). This impressive growth effort speaks volumes about the co-coordinated efforts of large number of milk producing farmers, scientists, planners, NGO's and industry in achieving self-sufficiency in milk production. The country is the world largest milk producer, contributing 18.5% of the world's total milk production (FAO, Agricultural Outlook 2016-2025, Economic Survey 2015-16). It is the world's largest consumer of dairy products, consuming almost 100% of its own milk production. Dairy products are considered as cheap and nutritious food to millions of people in India and is the only acceptable source of animal protein for large vegetarian segment of Indian population (Amit and Monojit, 2015). In India, dairy sector helps in alleviating the poverty and unemployment status. Livestock sector provides employment to 18 million people and nearly 70 per cent of them are women (Ramesh *et al.*, 2018). Further, dairy sector is the major source of income for an estimated 27.6 million people. Among these, 65 to 70 per cent are small, marginal farmers and land-less labor (Satish and Soumyakant, 2016). The dairy sector supports around 10 million members / farmers through one lakh cooperative societies existing in the country (Amarja, 2013). Apart from employment generated by rearing of animals, the procurement of milk and its processing also provides substantial employment. Further, Tamil Nadu Cooperative Milk Producers' Federation Ltd and its units have a work force of about 5,000 employees and gives employment to another 10,000 workers who are engaged in milk procurement and technical input supply, etc. Dairy industry showed its impact on society, increase in economic status of farmers, better infrastructure facilities, improved food aid security and nutrition. The need for dairy products are increasing day to day life which in turn made India to import dairy products though being as top producer of milk. With this background, the study was attempted to assess the growth in dairy sector and its contribution to Indian economy.

### Materials and Methods

The present research paper is descriptive in nature and based on secondary data. The secondary data has been obtained from various sources such as Economic Survey, Ministry of Finance, Government of India; Basic Animal Husbandry Statistics (BAHS), Ministry of Agriculture, Government of India and Integrated sample survey report, Directorate of Animal and Veterinary services, Government of Tamil Nadu. To study the changes in the milk production over a period of time, the growth rate analysis was carried out using the following exponential function.

$$Y = AB^tU^t$$



Where, Y = Milk production, A = Intercept i.e., Y in the base year, t = Time period (Variable), U<sup>t</sup> = Disturbance (Error) term

On taking the logarithms so as to facilitate the use of linear regression, above equation becomes

$$\text{Log } Y_t = \text{Log } A + t \text{ Log } B + \text{Log } U_t$$

This can be written as,

$$Q_t = a + bt + V_t$$

Where,

$$Q_t = \log Y_t, a = \log A, b = \log B \text{ and } V_t = \log U_t$$

The values of 'a' and 'b' will be estimated by using the OLS technique.

$$Q_t = a + bX_t + U_t$$

The compound growth rate will be obtained by

$$g = (B-1) * 100$$

Where, B is the antilog of 'b'

### Bovine Population

The bovine population in both India and Tamil Nadu has increased continuously since 1950's and the growth was more prominent during the inter census period of 1977-1982 and 1997-2003. In India, the bovine population was 198.7millions in 1951 which had increased to 235.7millions in the year 1972, 288.8millions in 1992 and 299.6millions in 2012. In case of Tamil Nadu, the bovine population was 12.52millions in 1951, 13.88millions in 1977, 11.79millions in 1997, 13.20millions in 2007 and 9.59 millions in 2012.

**Table 1:** Bovine population in India and Tamil Nadu

Year	India (in millions)			% change	Year	Tamil Nadu (in millions)			% change
	Cattle	Buffalo	Total Bovine			Cattle	Buffalo	Total Bovine	
1951	155.3	43.4	198.7		1951	10.2	2.3	12.52	
1956	158.7	44.9	203.6	2.5	1956	9.7	2	11.74	-6.23
1961	175.6	51.2	226.8	11.4	1961	10.8	2.6	13.42	14.31
1966	176.2	53	229.2	1.1	1966	10.9	2.7	13.58	1.19
1972	178.3	57.4	235.7	2.8	1974	10.6	2.9	13.42	-1.18
1977	180	62	242	2.7	1977	10.8	3.1	13.88	3.43
1982	192.5	69.8	262.2	8.4	1982	10.4	3.2	13.58	-2.16
1987	199.7	76	275.7	5.2	1989	9.4	3.1	12.48	-8.1
1992	204.6	84.2	288.8	4.8	1994	9.1	2.9	12.03	-3.61
1997	198.9	89.9	288.8	0	1997	9.1	2.7	11.79	-2
2003	185.2	97.9	283.1	-2	2004	9.1	1.7	10.8	-8.38
2007	199.1	105.3	304.4	7.5	2007	11.2	2	13.2	22.21
2012	190.9	108.7	299.6	-1.6	2012	8.81	0.8	9.59	-27.3

The percentage change in bovine population of Tamil Nadu showed negative rate over the period except during the year 2007. The decline in bovine population was mainly because of the drastic reduction in the number of buffaloes in the state due to various reasons like decrease in riverine and water bodies, non-availability of labors, poor management, breeding problems etc.

### Milk Production Trend in India

Dairy development is one of the important activities in livestock sector. The total milk production in the country was at 17 million tonnes in the year 1950-51 and since then the production of milk continues to rise over the period. As can be observed in the graph, there is a steady increase in production of milk and it reached 163.7 million tonnes in the year 2016-17. The annual compound growth rate for the period 1983-84 to 1992-93 was 4.37 and was 4.01 for the period 1993-94 to 2002-2003 and was 4.64 for the period 2003-2004 to 2012-2013 and was 5.61 for the period 2012-2013 to 2016-17. The per capita availability of milk was 130 grams per day during the period 1950-51. There has been steady increase in per capita availability of milk since then till 1980-81 with marginal fluctuations in the intermittent periods. The per capita availability of milk in the year 2000-01 was 217 grams per day from against 128 grams per day in the year 1980-81. Further there is a substantially increasing trend has been observed in the per capita availability of milk from 2000-01 to 2016-17. As a result, the per capita availability of milk reached 352 grams per day in the year 2016-17. The reasons for the increase in the milk production was mainly due to operation flood which connected rural production centres with urban consumption centres followed by the liberalization policy which paved the way for the entry of private sectors in the dairy industry.

**Table 2:** Milk production trend in India

Year	Milk Production (in Million Tonnes)	Percapita Availability (grams/day)
1950-51	17	130
1955-56	19	132
1960-61	20	126
1968-69	21.2	112
1973-74	23.2	110
1979-80	30.4	125
1980-81	31.6	128
1981-82	34.3	136
1982-83	35.8	139
1983-84	38.8	147
1984-85	41.5	154
1985-86	44	160
1986-87	46.1	164
1987-88	46.7	162
1988-89	48.4	165
1989-90	51.4	171

1990-91	53.9	176
1991-92	55.7	178
1992-93	58	182
1993-94	60.6	186
1994-95	63.8	192
1995-96	66.2	195
1996-97	69.1	200
1997-98	72.1	205
1998-99	75.4	210
1999-2000	78.3	214
2000-01	80.6	217
2001-02	84.4	222
2002-03	86.2	224
2003-04	88.1	225
2004-05	92.5	233
2005-06	97.1	241
2006-07	102.6	251
2007-08	107.9	260
2008-09	112.2	266
2009-10	116.4	273
2010-11	121.8	281
2011-12	127.9	290
2012-13	132.4	299
2013-14	137.7	307
2014-15	146.3	322
2015-16	155.5	337
2016-17	163.7	352
ACGR for the period 1983-84 to 1992-93	4.37	
ACGR for the period 1993-94 to 2002-2003	4.01	
ACGR for the period 2003-2004 to 2012-2013	4.64	
ACGR for the period 2012-2013 to 2016-2017	5.61	

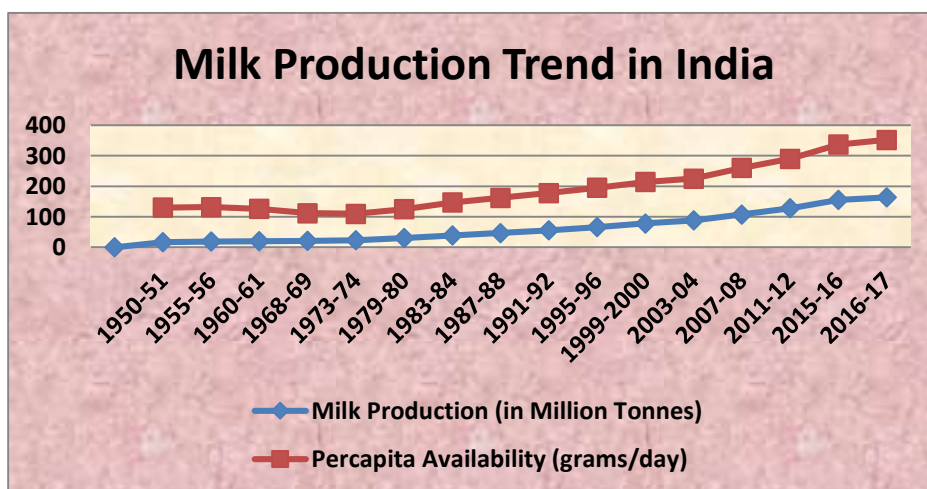


Fig. 1: Milk production trend in India

### Milk Production Trend in Tamil Nadu

Tamil Nadu is one of the major milk production state in the country occupying ninth position with the milk production of 7 million tonnes. Milk production in the state was 3.10 million tonnes in the year 1987-88 which increased to 3.52 million tonnes in the year 1993-94 and reached 3.69 million in the year 1994-95 and from thereafter the milk production witnessed constant increase and in the year 2006 -07, there was a sudden increase to 6.27 million. In the year 2009-10, it was 6.78 million and was 7.55 million in the year 2016-17.

**Table 3:** Milk production trend in Tamil Nadu

Year	Milk Production (in '000 Tonnes per annum)	Percapita Availability (gms/day)
1987-88	3109.1	
1988-89	3237.8	
1989-90	3410	
1990-91	3374.7	176
1991-92	3356.8	165
1992-93	3468.2	168
1993-94	3524.3	169
1994-95	3693.8	176
1995-96	3790.8	178
1996-97	3976.5	185
1997-98	4060.6	187
1998-99	4272.8	195
1999-2000	4573.8	192
2000-01	4907	197
2001-02	4988	219
2002-03	4622.3	198
2003-04	4752	198
2004-05	4783.8	204
2005-06	5473.6	231
2006-07	6276	263
2007-08	6540	272
2008-09	6651	274
2009-10	6787	278
2010-11	6831.3	278
2011-12	6967.9	265
2012-13	7004.7	262
2013-14	7049.2	280
2014-15	7132.5	282
2015-16	7243.5	283
2016-17	7556.4	294
ACGR for the period 1987-88 to 1996-97	2.38	
ACGR for the period 1997-98 to 2006-2007	3.52	
ACGR for the period 2007-2008 to 2016-2017	1.37	

The annual compound growth rate for the period 1987-88 to 1996-97 was 2.38 and was 3.52 for the period 1997-98 to 2006-2007 and was 1.37 for the period 2007-2008 to 2016-2017. Because of the increase in milk production, the per capita availability of milk in the state has increased continuously. The per capita availability of milk in the state was 165 grams per day in the year 1991-92, 197 grams per day in the year 2000-01, 278 grams per day in the year 2009-10, 262 grams per day in the year 2012-13 and was 294 grams per day in the year 2016-17. Tamil Nadu in the last financial year witnessed a growth of more than 10% in milk production. Tamil Nadu contributes more than 5 % in the total milk production in the country and daily milk procurement of dairy cooperative societies in the state is more than 24 lakhs liters. There are more than 11,000 milk cooperative societies in the state and 17 milk producers union that gives employment to more than 4 lakhs milk producers. Though there is a negative % change in Bovine population, the milk production in the state kept increasing. This might be due to the changes in technologies and dairy herd management practices which have positively contributed in rising the productivity of milk animals and thereby increase in milk production in the state.

#### Contribution of Dairy Sector to the National Economy

Milk contributes more than 60 per cent of the total livestock production and accounts for nearly 67.69 per cent of the value of the output of the livestock sector's contribution to the national GDP. Likewise, Beef contributes 2.92 per cent of the value of the output of the livestock sector's contribution to the national GDP. The value of output from dairy sector was more than Rs. 549 billion and accounts for 67.69 per cent of the value of the livestock sector output in the year 2015-16.

**Table 4:** Value of output from dairy sector - at current prices

Year	Value of Milk group produced in Crores	Percentage share of Milk group in Livestock Sector	Value of Beef produced in Crores	Percentage share of Beef in Livestock Sector	Value of Output from Livestock Sector in Crores
2011-12	327767	67.19	11754	2.4	487751
2012-13	372228	65.88	14324	2.53	564937
2013-14	423150	65.48	16596	2.56	646178
2014-15	495841	66.78	20600	2.77	742414
2015-16	549587	67.69	23727	2.92	811847

Source: National Accounts Division, Central Statistical Office, GoI

#### Conclusion

Dairy sector has been recognized by the government as one of the growth engines of the Indian economy. Growing human population, increasing urbanization, rising domestic incomes and changing lifestyles in the country have led to increasing demand for livestock products. Milk consumption is rising across the globe due to rising economic prosperity amid the rising middle class together with growth in overall population and demographics, relative cost advantage, evolution of fast-food chains leading to broader



acceptability and with milk and eggs being a high nutrition value, affordable and quality source of animal protein. To improve the milk production and productivity of dairy animals, Central and State Government took initiatives through implementation of various dairy development programmes over the years. Provision of necessary infra structural facilities would provide the necessary impetus for the dairy farmers to pursue value addition and dairy processing activities and thereby increase their income by several times. Hence serious efforts should be taken by the government to create these facilities gradually so as to capture the momentum.

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