

STATUS OF MILK PRODUCTION IN MAHARASHTRA

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Abstract

The state of Maharashtra has maximum area under rainfed even though it is one of the leading states in terms of livestock population and milk production in the country. Dairy farming industry in Maharashtra has shown tremendous growth in terms of milk production from 6,002 MT (2001-02) to 11,655 MT (2018-19). Small and marginal farmers and landless laborer's, who derive a substantial part of their livelihood from sale of milk, own about 82 percent of cattle in the rural areas. Besides its vast employment potential, this sector has helped in stabilizing the farm income. In the present paper, the contribution of number of milch animals and trend of milk production in Maharashtra has been studied with a view to analyze the relative importance of these determinants and their interactions towards the increase in total milk production in the Maharashtra state. The White Revolution has transformed Maharashtra's dairy industry. It has increased the availability of milk as well as provided a reliable source of income and employment to millions of rural families, thus improving the quality of their life. A structural change in the composition of milk production has taken place in the Maharashtra. The dominant factor contributing to the growth in milk production was the productivity of animals. The relative contribution of yield effect in the growth of cow and buffalo milk production increased and that of population declined overtime.

** Project Director of Research Project sanctioned under ICSSR's IMPRESS Scheme*

Introduction:

Agriculture is the backbone of Indian economy as roughly 70-75% of the population depends directly or indirectly on agriculture. The Indian economic growth is directly proportional to the agriculture industry growth. The agriculture growth has been stagnant in India as a dairy product and needs a technology revolution to be able to meet the growing population requirements of the country. Dairy farming is an **indispensable** economic activity in the rural region of India which is closely intervened with farming systems. Despite its relative importance contradicting facts appear in case of milk production and milk productivity in hill region India. Maharashtra has a geographical area of about 3 lakh sq km which makes it third largest state in the country. It is divided into seven regions and 35 districts. With a population of 112.4 million people, it has second largest population amongst all states and union territories in India. Maharashtra is one of the most industrialized and urbanized state in India with 55 per cent population residing in rural areas. Maharashtra is the leading agrarian state of the country. It not only

contributes a large chunk in the pool of grain stock but its contribution towards milk production in the country is also very significant. Various factors like per capita incomes of the people, development of processing facilities as well as expansion in the milk collecting facilities at the door steps of the farmers through village level milk cooperative societies and increase in the milk prices due to increased demand which provided incentives to the farmers to adopt dairy for enhancing incomes significantly influenced the increase in milk production. with just three percent of India's milch animals.

India ranks first in milk production, accounting for 18.5 per cent of world production, achieving an annual output of 146.3 million tonnes during 2014-15 as compared to 137.69 million tonnes during 2013-14 recording a growth of 6.26 per cent whereas, the Food and Agriculture Organization (FAO) has reported a 3.1 per cent increase in world milk production from 765 million tonnes in 2013 to 789 million tonnes in 2014. (Economic survey, 2015-16) States like Uttar Pradesh, Rajasthan, Andhra Pradesh, Gujarat, Madhya Pradesh, Maharashtra (stands at 7th rank with 6.60 per cent of milk production) Haryana, Karnataka, Bihar and West Bengal, had a progressive trend in production of milk while Uttar Pradesh remained the largest producer of milk during the entire period. (BAHS, 2015)

Such a big leap in the milk production may be attributed through increase in the number of animals or through effective improvement in the productivity and better utilization of stock. So the contribution of these components viz. number of milch animals and productivity of these animals has been studied with a view to analyze the relative importance of these two determinants of milk production. Therefore, the present study is an attempt to examine (a) compositional changes in bovine population, (b) the trends in the growth of milk output and the sources of milk output growth.

METHODOLOGY:

The study would be based on the secondary data available from published and unpublished sources. The chief sources of figures and indicators would be central and State government publications like Economic Surveys of Government of India, Reports and data from Department of Animal Husbandry Ministry of Agriculture Government of India, Directorate of Animal Husbandry Government of Rajasthan, Co-operative Dairy Federation. Statistics for comparison between states and between different years would be taken from All India Livestock Census Reports, Statistical Outline of India of various years, National Accounts Statistics, Central Statistical Organization, Government of India and NDDB.

Table-1. Trend of Milk Production in Maharashtra (In Tonnes)

Year	Maharashtra	All India	%
2001-02	6,094	84,406	7.21
2002-03	6,238	86,159	7.24
2003-04	6,379	88,082	7.24
2004-05	6,567	92,484	7.10

2005-06	6,769	97,066	6.97
2006-07	6,978	102,580	6.80
2007-08	7,210	107,934	6.68
2008-09	7,455	112,183	6.64
2009-10	7,679	116,425	6.59
2010-11	8,044	121,848	6.60
2011-12	8,469	127,904	6.62
2012-13	8,734	132,431	6.59
2013-14	9,089	137,685	6.60
2014-15	9,542	146,314	6.52
2015-16	10,153	155,491	6.52
2016-17	10,402	165,404	6.28
2017-18	11,102	176,347	6.29
2018-19	11,655	187,749	6.20

Source : Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare, GoI.

Trend of milk production in Maharashtra is presented in Table 1. Over the last decades, the state has progressed leaps and bound in its milk production. The state currently occupies a much higher position in milk production owing to sustained and concerted efforts towards total dairy development in the state. It is remarkable to note that the per capita per day availability showed a substantial increase from 541 gms to 944 gms during the said period which is much higher as compared to the national average of 258 gms per day. Further increases in per capita income and changing consumption pattern would lead to acceleration in demand for milk and milk products in the state and thus would give a boost to this sector. A significant growth in total milk production in Maharashtra was observed during the last decades. The total milk production in 2000-01 was 6,094 tonnes which increased to 11,655 tonnes during 2018-19. Punjab produces about 8.64 per cent of the country's total milk production. The growth is on account of both improvements in productivity and shift in priorities towards buffalo and crossbred cattle.

Table-2. Trend of Livestock Population in Maharashtra

(In Million)

Livestock Population	2007	2011
Bovine	22.3	21.1
Indigenous Cattle	13.1	11.8
Crossbred Cattle	3.1	3.7

Buffaloes	6.1	5.6
Small Ruminants	13.3	11.0
Poultry	64.7	77.8

Sources: Census 2001 & 2011, Office of the Registrar General and Census Commissioner, Govt. of India, New Delhi.

Table 2 examines the growth and compositional changes in total bovine population. Bovine population in Maharashtra decreased from 22.3 million in 2007 to 21.1 million in 2011. Total bovine population declined at the rate of 0.29 percent per annum during 2007-11. Buffalo population in Maharashtra recorded 0.68 per cent annual growth rate during 2007-11. The composition of bovine population has also changed over the last two decades. The composition based on breed shows that due to fast growth of buffaloes and negative growth of cattle, in the total bovine population. The trends in the size and composition of the bovine stock in the state shows that a shift has taken place in favor of more productive milch animals. The population of less productive bovines (indigenous cattle) has declined whereas that of productive animals like crossbred cows and buffaloes has increased.

Table 3 : Milk production and per capita availability of milk in Maharashtra

Year	Maharashtra		India	
	Milk production (million tonnes)	Per capita availability (gms/day)	Milk production (million tonnes)	Per capita availability (gms/day)
1990-91	5.14 (9.53)	682	53.9	176
1995-96	6.42 (9.69)	798	66.2	197
2000-01	7.77 (9.64)	870	80.6	220
2005-06	8.90 (9.16)	930	97.1	241
2009-10	9.38 (8.64)	944	108.46	258
2010-15	10.12 (9.61)	1010	111.45	368
2015-19	12.44 (10.11)	1177	114.14	385

(Figures in parentheses are percentages to all India milk production)

Source: Livestock Census Report.

Over the last decades, the state has progressed leaps and bound in its milk production. The state currently occupies a much higher position in milk production owing to sustained and concerted efforts towards total dairy development in Maharashtra. A significant growth in total milk production in the state was observed during the last decades. The total milk production in 1990-91 was 5.14 million tonnes which increased to 12.44 million tonnes during 2015-19. Maharashtra produces about 10.11 per cent of the country's total milk production. The growth is on account of both improvements in productivity and shift in priorities towards buffalo and crossbred cattle. It is remarkable to note that the per capita per day

availability showed a substantial increase from 682 gms to 1177 gms during the said period which is much higher as compared to the national average of 385 gms per day. Further increases in per capita income and changing consumption pattern would lead to acceleration in demand for milk and milk products in the state and thus would give a boost to this sector.

(a) average milk yield per milch animal

(b) ratio of adult females in milk to total adult females known as lactation efficiency.

It can be inferred that the average productivity went up substantially in case of cows. There is an increase in the yield of buffaloes also but it is less sharp than that of crossbred cows. Buffaloes have higher yields than indigenous cows but crossbred cows are more productive than either indigenous cows or buffaloes. The lactation efficiency of dairy animals has also improved overtime in state. Among these milch animals, buffaloes and crossbred cows had the highest lactation efficiency as compared to indigenous cows. It is indicating qualitative improvement in the breeds of milch animals.

Table 4 : Percentage contribution of in-milk bovine population, productivity growth and the interaction between productivity and population to growth in milk production-

Output	Source of contribution	1990-2000	2000-2005	2005-2010	2010-2019
Bovine milk	Population effect	22.20	1.45	-237.10	-7.05
	Yield effect	72.68	88.44	583.17	207.72
	Interaction effect	8.08	1.11	-34.17	-4.67
Cow milk	Population effect	-22.18	-32.09	27.22	-6.83
	Yield effect	234.30	150.40	67.26	115.71
	Interaction effect	-14.16	-10.71	7.32	-8.87
Buffalo milk	Population effect	48.05	9.10	-831.07	-5.80
	Yield effect	47.40	93.05	654.44	208.55
	Interaction effect	11.00	3.89	-123.37	-2.95

Source: Government of India, Ministry of Agriculture, New Delhi.

In case of Bovine milk and Cow milk both population and yield were major contributing factors during 1990-2000 but its contribution declined in subsequent periods. As same as in other hand buffalo milk, both population and yield were major contributing factors during 1990-2000 but its contribution declined in subsequent periods. During 1990-2000 the contribution of population effect was 48.05 per cent, it then declined to 9.10 per cent during 2000-2005 and became negative (-831.07%) during 2005-10. The per cent contribution of yield effect in case of buffalo milk during 1990-2000 was 45.38 per cent and it increased to 91.03 percent and 657.44 percent during 2000-2005 and 2005-2010 respectively. Overall, the contribution of yield effect was 208.55 per cent during 2010-2019 and that of population

effect was negative i.e.-5.80 per cent during the same period. The contribution of interaction effect was observed to be negative (-2.95%) for buffalo milk production during 2010-19.

Regional wise Trends of Milk Production in Maharashtra :

Maharashtra has five main regions: Vidarbha, Marathwada, Western Maharashtra, Khandesh and Konkan (Singh et al. 2004). All the regions of Maharashtra shows negative growth in local cow population and positive growth in both the crossbred and buffalo population except Konkan. Buffalo contributes maximum to the milk production in the state followed by crossbred and local cow, except in Vidarbha and Marathwada region, where local cow contributes more. The significant contributor to the increase in milk production in the state is increase in inmilk population followed by increase in milch population. The major descript breeds found in the state of local cow are Red Kandhari, Khillari and buffalo breeds are Murrah and Pandharpuri.

Table 6:- Region-Wise Proportional of In-Milk to Milch Animals in Maharashtra

Region	Local Cow				Buffalo			
	1992-93	2005-06	2010-11	2014-15	1992-93	2005-06	2010-11	2014-15
Konkan	43.23	49.29	55.38	62.47	67.60	73.19	76.11	76.27
Western	57.03	64.00	63.57	67.22	68.40	72.27	71.84	72.69
Khandesh	46.95	51.84	54.62	60.05	54.70	59.05	61.22	64.69
Marathwada	52.48	52.13	59.71	63.43	58.77	62.63	68.74	69.17
Vidarbha	36.41	46.29	48.31	55.65	51.36	56.73	58.36	63.47
Maharashtra	45.00	46.55	54.55	60.67	61.18	65.82	67.78	69.40

Source: National dairy development board, annual report, A statistical profile, 2015.

The growth analysis of buffalo have shown the growth rate of milk production to be 1.36 % per annum and all the three factors shown almost same positive effect. except in Konkan region where inmilk and milch animals have shown negative effect on milk production. If the growth enhancing factors are carefully studied it is found that for local cows in state both the in milk animals and milch animals have negative effect and in milk yield have positive effect on milk production. While in Western and Vidarbha region, in milk animals have shown positive effect on milk production.

The total milk production in the state registered a much faster growth rate as compared to that for India

as a whole. In the year 2010-11, milk production in Maharashtra state was 8.0 million tonnes, per capita milk availability was 196 gm while at the national level milk production was 121.8 MMT and per capita milk availability was 281 gm, (Economic Survey of Maharashtra, 2011-12).

CONCLUSION:

The Maharashtra state due to its many favourable endowments structural shift in the composition of milk production has also taken a possess a very high milk production potential. Animal husbandry is an important agriculture related activity in Maharashtra. The State's share of livestock in India is 6.8% and ranks sixth. The trends in the size and composition of the bovine stock in the state indicate that a shift has taken place in favour of more productive milch animals. The proportion of female bovines in the total bovine population has increased steadily. The state is pioneer in the field of dairy development and it is one of the leading states in terms of milk production in the country. Milk production grew at the compound growth rate of 4.96 percent per annum during 1998-99 and 2018-19. The proportion of crossbred cattle in the total cattle was found to be about 76 percent during 2019. Lactation efficiency in crossbred cows was 72.29 percent in 2017 while in case of buffaloes it was 70.71 percent, indicating qualitative improvement in the breeds of milch animals. The state currently occupies a much higher position in milk production owing to sustained and concerted efforts towards dairy development in the region..

The contribution of yield effect was found most pronounced in the growth of milk production from cows as well as buffaloes. The productivity of milch animals, as measured by their yields, indicated a steady increase, reflecting the positive contribution of technological change in breeding and feeding.

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