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Dynamics of Major Milk-Producing States in India: Trends, Diversity and Disparities

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Abstract

This study examines India's milk production trends from 2018-19 to 2022-23, It highlights the focus on trends, diversity in milk types, and regional disparities. This paper highlights significant growth in top milk-producing states like Uttar Pradesh, Rajasthan, and Madhya Pradesh. It reveals variations in milk types, with Punjab leading in foreign cow milk, Haryana in buffalo milk, and Rajasthan in indigenous cow milk. The paper also discusses improvements in milk availability and the increase in cattle and buffalo populations. While states like Rajasthan and Punjab show higher productivity, challenges persist in sheep milk production in states like Andhra Pradesh and Karnataka. The research calls for further investment in technology and feed to sustain this growth and address regional disparities in milk production.

Keywords: Milk Production, Animal Husbandry, Livestock Growth, Productivity, Average Productivity, Comparative Productivity.

INTRODUCTION

Although the Indian economy is predominantly agrarian, its structure has been transforming in recent years. The contribution of agriculture and allied sectors to national income and overall employment generation in the country is gradually declining. Nevertheless, the rural economy and the livelihood of the rural population are still largely dependent on agriculture and allied activities. The Indian rural system heavily relies on crop production, agro-processing, allied businesses, and various services related to these sectors (Biradar et al., 2013).

Dairy farming is a significant allied agricultural activity, and Indian farmers widely practice animal husbandry alongside their primary occupations (Patel and Kumbhare, 1980). Observing the operations of dairy production and its by-product industries across the country reveals that dairy farming is not just a critical supplementary occupation to agriculture but also provides diverse employment opportunities directly and indirectly to rural and urban populations.

REVIEW OF MILK PRODUCTION IN INDIA

India's dairy industry has experienced remarkable growth, establishing the country as the largest milk producer globally. This review focuses on recent literature (2020-2024)

that explores various facets of milk production in India, including productivity, yield, and the performance of major milk-producing states.

Milk Production and Productivity

India's milk production has increased steadily, from 17 million tonnes in 1950-51 to 209.96 million tonnes in 2020-21, making it the largest producer globally (Government of India, 2022). This growth can be attributed to improvements in cattle management, genetic advancements, and government schemes that aim to modernize the dairy sector. Despite this progress, milk productivity (per animal) remains relatively low in India when compared to global standards, with a productivity of approximately 1,000 liters per cow per year, which is far below that of leading dairy producers like the U.S. and Europe (Suganthi et al., 2023; Bagchi, 2020).

Recent studies suggest that increasing the genetic potential of livestock through improved breeding programs and better feed management practices can significantly boost milk yields (Sarkar & Dutta, 2020). However, challenges such as inadequate veterinary care, poor feed quality, and limited access to modern farming technologies continue to hinder optimal productivity in several regions (Kanak Kanti Bagchi, 2020; Suganthi et al., 2023).

Yield and Technological Advancements

Technological innovations have played a crucial role in improving milk yield in India. The introduction of artificial insemination, better dairy farm management practices, and automated milking systems has been beneficial, particularly in larger commercial dairies (Suganthi et al., 2023). However, the adoption of such technologies remains slow in smaller, rural dairy farms, where traditional methods still dominate. This disparity in technological access has led to uneven growth in milk productivity across the country.

Furthermore, nutritional improvements and better veterinary care have been identified as key areas for enhancing productivity. Government programs such as the National Dairy Development Board (NDDB)'s interventions and the Dairy Processing and Infrastructure Development Fund (DIDF) aim to provide farmers with the resources to improve both the quantity and quality of milk produced (Sarkar & Ghosh, 2020).

Major Milk-Producing States in India

India's milk production is highly concentrated in a few states. According to the National Dairy Development Board (2022), Uttar Pradesh, Maharashtra, Punjab, Rajasthan, and Gujarat are the top milk-producing states, contributing over 60% of the country's total milk output. Uttar Pradesh leads the pack, followed by Maharashtra and Punjab. The dairy sector in these states benefits from well-established cooperative systems, such as Amul in Gujarat and the Punjab State Cooperative Milk Producers Federation (MILKFED) in Punjab, which have played a significant role in enhancing milk production and stabilizing prices (Suganthi et al., 2023).

In contrast, states like West Bengal, Bihar, and Assam face challenges such as inadequate infrastructure, limited access to quality feed, and low levels of mechanization, which result in lower milk yields (Bagchi, 2020). Despite these disparities, the government has focused on improving dairy infrastructure and providing financial support to boost production in lagging regions through initiatives like the National Programme for Dairy Development (Bagchi, 2020).

Economic Impact and Sustainability

The economic importance of milk production in India cannot be overstated, as it provides employment to over 80 million people, particularly in rural areas. Milk is a significant part of the rural economy, providing livelihood opportunities, especially for smallholder farmers (Suganthi et al., 2023). The dairy sector's contribution to India's GDP is substantial, and milk consumption per capita has risen, reflecting growing urbanization and changing dietary patterns (Government of India, 2022). However, sustainability remains a concern, as environmental factors like water usage and greenhouse gas emissions from livestock need to be managed to ensure long-term viability (Sarkar & Ghosh, 2020).

India's dairy industry has made significant strides in milk production, but challenges related to productivity, technological adoption, and regional disparities remain. The role of major milk-producing states in driving the sector's growth is critical, with ongoing efforts to modernize and improve infrastructure. Future growth in milk production will depend on continued investments in technology, genetic improvement, and targeted government interventions to support underperforming regions.

Trends in Milk Production and Key Milk-Producing States

The history of the dairy sector in India shows that total milk production in 1950-51 was about 17 million tons, which has risen to 230 million tons by 2022-23. India has emerged as the world's largest milk producer (Agrawal and Raju, 2021). Considering the growing population, the per capita daily milk availability has increased from 130 grams in 1950-51 to 460 grams in 2022-23. This indicates that despite rapid population growth, India has achieved substantial growth in milk production, leading to improved per capita milk availability (Bhattacharjee and Patel, 2016).

In terms of total milk production, Uttar Pradesh, Rajasthan, and Madhya Pradesh are the leading states. Between 2018-19 and 2022-23, India witnessed significant growth in milk production, increasing from 187.7 million tons to 230.5 million tons, representing an increment of 42.8 million tons over five years. Statistical data for 2022-23 indicate that Uttar Pradesh, Rajasthan, Madhya Pradesh, Gujarat, Andhra Pradesh, Maharashtra, Punjab, Karnataka, Bihar, and Haryana are the top milk-producing states. These states collectively produce 367.1 million tons of milk, accounting for 82% of the country's total milk production, underscoring their importance in India's dairy sector.

RESEARCH METHODOLOGY, DATA, AND OBJECTIVES

The data and information for this study were primarily obtained from the annual reports of the Ministry of Fisheries, Animal Husbandry, and Dairying. The analysis is based on secondary data. The findings and conclusions presented in this paper are derived from statistical data and insights from various research articles and publications. The statistical analysis covers the period from 2018-19 to 2022-23.

The primary objective of this paper is to review and compare the trends in animal husbandry and milk production across the major milk-producing states in India.

1. To review milk production trends in the major milk-producing states.
2. To conduct a comparative study of animal husbandry and milk production in these states.

3. To analyze the productivity of dairy animals across the major milk-producing states and provide recommendations.

Milk Production Trends in Major States of India

Analyzing India's total milk production reveals that approximately 82% of the country's milk output comes from Uttar Pradesh, Rajasthan, Madhya Pradesh, Gujarat, Andhra Pradesh, Maharashtra, Punjab, Karnataka, Bihar, and Haryana. Uttar Pradesh leads as the top milk-producing state, contributing 15.72% of the total milk production in 2022-23, followed by Rajasthan at 14.4%. Maharashtra ranks sixth, accounting for 6.52% of the nation's milk production (Biradar et al., 2013). Although Maharashtra is an advanced state in agriculture, its milk production lags behind other states.

Table 1: Milk Production Trends in Major States of India

Rank	State	2018-19	2019-20	2020-21	2021-22	2022-23
1	Uttar Pradesh	30,518,910	31,863,910	31,359,100	33,873,610	36,241,740
2	Rajasthan	23,668,070	25,573,090	30,723,110	33,264,700	33,306,800
3	Madhya Pradesh	15,911,130	17,108,960	17,999,300	19,004,250	20,122,430
4	Gujarat	14,492,770	15,292,350	15,852,690	16,722,110	17,280,570
5	Andhra Pradesh	15,044,370	15,263,100	14,713,840	15,403,080	15,448,420
6	Maharashtra	11,655,460	12,024,260	13,703,320	14,304,510	15,041,860
7	Punjab	12,598,820	13,347,560	13,393,990	14,076,760	14,301,450
8	Karnataka	7,900,630	9,031,490	10,936,440	11,795,790	12,829,290
9	Bihar	9,818,100	10,480,330	11,501,580	12,252,530	12,502,700
10	Haryana	10,726,090	11,734,720	11,283,550	11,629,520	11,965,790
Total (Top 10 States)		152,334,350	161,719,770	171,466,920	182,326,860	189,041,050
Percentage of Total		81.14%	81.50%	81.67%	82.10%	81.99%
India's Total Production		187,749,460	198,439,670	209,959,880	222,068,560	230,577,030

Source: Basic Animal Husbandry Statistics - 2023.

Among the top 10 milk-producing states, Uttar Pradesh maintains its position as the highest contributor. Its milk production increased from 30.52 million tons in 2018-19 to 36.24 million tons in 2022-23, reflecting a 19% growth. Rajasthan also witnessed significant growth, with production rising from 23.67 million tons to 33.30 million tons, a 40% increase. Madhya Pradesh, Gujarat, and Maharashtra recorded growth rates of 26%, 19%, and 29%, respectively, boosting their milk production capacities.

Conversely, Andhra Pradesh showed only a 3% increase in production, lagging behind other states. Karnataka demonstrated exceptional progress with a 62% growth, while Bihar and Punjab registered stable growth rates of 27% and 13%, respectively. Haryana achieved an 11% increase during the same period. Overall, India's milk production increased from 187.74 million tons in 2018-19 to 230.57 million tons in 2022-23, marking a 22% growth. The contribution of these 10 states to the country's total milk production remained steady at approximately 82% throughout the period.

Number of Foreign/Crossbred Milch Cows in Major States

According to Table 2, the total number of foreign/crossbred milch cows in India increased from **17,675,040 in 2018-19 to 23,407,760 in 2022-23**, marking an overall growth of **5,762,504**. However, the increase in the number of foreign/crossbred milch cows in the major milk-producing states during the same period was **4,279,970 (BAHS 2023)**. This indicates that **74.66%** of the country's total growth in foreign/crossbred milch cows over five years occurred in just ten states. By 2022-23, **64.40%** of the total foreign/crossbred milch cows in the country were concentrated in ten states: Uttar

Pradesh, Rajasthan, Madhya Pradesh, Gujarat, Andhra Pradesh, Maharashtra, Punjab, Karnataka, Bihar, and Haryana.

Table 2: Number of Foreign/Crossbred Milch Cows in Major States						
Sr. No.	**State**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**
1	Uttar Pradesh	1,409,680	1,466,990	1,762,640	1,849,270	1,643,340
2	Rajasthan	820,770	1,184,500	1,474,150	1,438,250	1,902,040
3	Madhya Pradesh	539,760	572,760	648,200	733,070	836,090
4	Gujarat	1,089,220	1,229,170	1,456,710	1,636,470	1,660,560
5	Andhra Pradesh	1,019,410	1,239,560	1,240,960	1,289,810	1,319,300
6	Maharashtra	1,602,600	1,650,940	1,987,920	2,020,680	2,184,030
7	Punjab	663,130	693,810	1,049,800	1,060,730	1,064,430
8	Karnataka	1,884,930	1,952,600	2,122,100	2,343,950	2,310,910
9	Bihar	1,291,770	1,362,000	1,498,810	1,586,390	1,606,490
10	Haryana	473,100	502,280	514,410	536,300	547,150
Total (10 States)		**10,794,370**	**11,855,610**	**13,755,700**	**14,494,920**	**15,074,340**
Share (%)		**61.07%**	**61.39%**	**63.58%**	**61.01%**	**64.40%**
India Total		**17,675,040**	**19,003,150**	**21,634,410**	**22,642,170**	**23,407,760**

India's top ten milk-producing states, including Uttar Pradesh, Maharashtra, Karnataka, Bihar, Andhra Pradesh, Gujarat, Rajasthan, Madhya Pradesh, Punjab, and Haryana, play a significant role in the population of foreign/crossbred milch cows. In **2018-19**, these states collectively accounted for **10.79 million foreign/crossbred cows**, representing **61.07% of the country's total 17.67 million cows**.

Number of Indigenous Milch Cows in Major States

According to Table 3, the total number of indigenous milch cows in India increased from **35,166,840 in 2018-19 to 37,154,640 in 2022-23**, reflecting an overall growth of **1,987,800** over five years. Among the major milk-producing states, the number of indigenous milch cows grew by **1,569,170** during the same period (BAHS 2023). In 2022-23, **66.75%** of the total indigenous milch cows in India were concentrated in ten states: Uttar Pradesh, Rajasthan, Madhya Pradesh, Gujarat, Andhra Pradesh, Maharashtra, Punjab, Karnataka, Bihar, and Haryana. The **highest number of indigenous milch cows** was reported in **Madhya Pradesh (5.78 million)**, followed by **Uttar Pradesh (4.98 million)** and **Rajasthan (4.27 million)**.

Table 3: Number of Indigenous Milch Cows in Major States						
Sr. No.	**State**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**
1	Uttar Pradesh	5,275,790	5,461,100	5,005,690	5,204,190	4,985,720
2	Rajasthan	3,400,100	3,232,030	4,229,050	4,691,620	4,272,450
3	Madhya Pradesh	5,547,870	5,794,930	5,468,060	5,578,800	5,787,460
4	Gujarat	1,997,890	1,981,370	1,700,220	1,729,480	1,763,720
5	Andhra Pradesh	1,190,350	1,077,520	721,530	762,050	798,170
6	Maharashtra	1,784,060	1,764,080	1,749,670	1,764,630	1,795,230
7	Punjab	115,490	117,440	134,450	140,110	145,480
8	Karnataka	1,538,780	1,455,680	1,598,980	1,464,360	1,497,660
9	Bihar	2,171,040	2,271,700	3,299,870	3,387,970	3,476,610
10	Haryana	209,870	218,210	231,490	254,870	277,910
Total (10 States)		**23,231,240**	**23,374,060**	**24,139,010**	**24,978,080**	**24,800,410**
Share (%)		**66.06%**	**66.04%**	**67.14%**	**67.56%**	**66.75%**
India Total		**35,166,840**	**35,391,350**	**35,951,120**	**36,972,464**	**37,154,640**

The number of indigenous milch cows in India has undergone significant changes between 2018-19 and 2022-23. The following trends and observations are noteworthy:

- **Uttar Pradesh**: The state maintained a leading position with **5.28 million cows in 2018-19**, but the number decreased to **4.99 million by 2022-23**.
- **Rajasthan**: Rajasthan witnessed an increase from **3.40 million to 4.27 million**, reflecting a substantial growth trend.
- **Madhya Pradesh**: A steady increase was observed, from **5.55 million to 5.78 million**, marking it as the state with the highest indigenous milch cow population in 2022-23.
- **Gujarat**: The cow population decreased from **1.99 million to 1.76 million**, indicating a declining trend.
- **Andhra Pradesh**: A significant decline was observed, from **1.19 million to 0.79 million**.
- **Maharashtra**: The numbers remained almost stable, with a marginal increase from **1.78 million to 1.79 million**.
- **Punjab, Karnataka, and Haryana**: These states exhibited consistent growth, with Punjab showing a modest rise from **0.11 million to 0.14 million**, Karnataka increasing from **1.53 million to 1.49 million**, and Haryana growing from **0.20 million to 0.28 million**.
- **Bihar**: Bihar recorded a significant increase, from **2.17 million to 3.47 million**, showing remarkable growth in its indigenous cow population.

Between 2018-19 and 2022-23, the ten major milk-producing states accounted for **66-67%** of India's indigenous milch cows. Madhya Pradesh, Uttar Pradesh, and Rajasthan emerged as the top contributors, while states like Bihar demonstrated significant growth. In contrast, Andhra Pradesh and Gujarat witnessed notable declines. These trends highlight the varying dynamics in indigenous cow populations across states and underscore the need for tailored interventions to support regions with declining populations and further enhance milk productivity in growing states.

Number of Indigenous Milch Buffaloes in Major States

Buffalo milk is a significant contributor to the overall milk production in India. According to Table 4, the total number of indigenous milch buffaloes has increased considerably from **44,767,050 in 2018-19 to 46,686,180 in 2022-23**, with an overall increase of **1,919,130** buffaloes during this period (BAHS 2023). In 2022-23, the highest number of milch buffaloes was recorded in **Uttar Pradesh (11.96 million)**, followed by **Rajasthan (6.21 million)** and **Madhya Pradesh (5.47 million)**. The ten major milk-producing states — Uttar Pradesh, Rajasthan, Madhya Pradesh, Gujarat, Andhra Pradesh, Maharashtra, Punjab, Karnataka, Bihar, and Haryana — account for **91.43%** of the total indigenous milch buffaloes in India.The **highest number of indigenous milch buffaloes** were in **Uttar Pradesh (11.96 million)**, **Rajasthan (6.21 million)**, and **Madhya Pradesh (5.47 million)**.

Table 4: Number of Indigenous Milch Buffaloes in Major States

Sr. No.	State	2018-19	2019-20	2020-21	2021-22	2022-23
1	Uttar Pradesh	11,759,060	12,126,080	11,986,550	11,878,920	11,958,040
2	Rajasthan	5,010,150	4,961,450	5,093,750	6,140,340	6,213,510
3	Madhya Pradesh	4,400,740	4,645,480	4,921,730	5,176,450	5,473,000
4	Gujarat	3,865,020	3,922,560	3,954,310	4,065,360	4,100,940
5	Andhra Pradesh	3,617,610	3,768,330	3,259,780	3,398,720	3,369,960
6	Maharashtra	2,307,350	2,313,840	2,436,280	2,473,540	2,520,610
7	Punjab	2,917,510	2,987,390	2,186,820	2,333,240	2,446,110
8	Karnataka	1,558,390	1,472,890	1,455,780	1,429,090	1,726,300

9	Bihar	2,400,980	2,546,010	2,448,620	2,487,240	2,523,480
10	Haryana	2,610,310	2,729,560	2,536,900	2,391,840	2,352,990
Total (10 States)		**40,447,120**	**41,473,590**	**40,280,520**	**41,774,740**	**42,684,940**
Share (%)		**90.35%**	**90.72%**	**91.00%**	**91.19%**	**91.43%**
India Total		**44,767,050**	**45,718,410**	**44,263,620**	**45,810,130**	**46,686,180**

The number of indigenous milch buffaloes in India has grown steadily between 2018-19 and 2022-23. The following trends and observations are noteworthy: Uttar Pradesh remains the top state with the largest number of milch buffaloes, maintaining a stable number from **11.76 million in 2018-19 to 11.96 million in 2022-23**. Rajasthan has seen significant growth in the buffalo population, from **5.01 million to 6.21 million** during the period. Madhya Pradesh has shown steady growth from **4.40 million to 5.47 million** buffaloes, ranking third in the country. The buffalo population in Gujarat remained fairly stable, increasing from **3.86 million to 4.10 million**. Andhra Pradesh saw a decline in buffalo population, from **3.62 million to 3.37 million**. The buffalo population in Maharashtra increased from **2.30 million to 2.52 million**. Punjab witnessed a decline in buffalo numbers, from **2.92 million to 2.44 million**. Karnataka experienced a notable increase, from **1.56 million to 1.73 million** buffaloes. Bihar showed a modest but steady increase, from **2.40 million to 2.52 million**. Haryana's buffalo population decreased, from **2.61 million to 2.35 million**.

Between 2018-19 and 2022-23, the total number of indigenous milch buffaloes in India increased by around **1.92 million**, with the **top 10 states** contributing **91.43%** of the country's total buffalo population. Uttar Pradesh, Rajasthan, and Madhya Pradesh lead the country in milch buffalo numbers, while states like Punjab, Andhra Pradesh, and Haryana showed declines. The data underscores the importance of these top milk-producing states in India's dairy sector and highlights regional variations in buffalo population growth and stability.

Number of Dairy Sheep in Major States

From Table No. 5, it is evident that there has been a significant increase in the total number of dairy sheep in India. Between the years 2018-19 and 2022-23, the total number of sheep in the country has increased from 36,834,310 to 41,928,250. Considering the major states of Uttar Pradesh, Rajasthan, Madhya Pradesh, Gujarat, Andhra Pradesh, Maharashtra, Punjab, Karnataka, Bihar, and Haryana, it is observed that the total number of sheep in these states has grown from 26,396,160 in 2018-19 to 29,666,200 in 2022-23. These 10 states account for 70.75% of the total sheep population in the country. According to the statistical data of 2022-23, Rajasthan has the highest number of sheep (8,908,900), followed by Bihar (4,538,710) and Madhya Pradesh (4,535,300).

Table No. 5 : Number of Dairy Sheep in Major States (2018-19 to 2022-23)

Sr. No.	State	2018-19	2019-20	2020-21	2021-22	2022-23
1	Uttar Pradesh	4,789,940	4,921,150	4,612,650	4,444,090	4,391,140
2	Rajasthan	7,316,230	5,997,250	6,793,510	7,167,220	8,908,900
3	Madhya Pradesh	3,659,830	3,925,850	4,113,640	4,346,850	4,535,300
4	Gujarat	1,820,570	1,865,710	1,844,690	1,851,980	1,859,200
5	Andhra Pradesh	76,660	83,450	83,260	84,440	102,300
6	Maharashtra	2,791,870	2,839,440	3,719,420	3,714,070	3,809,290
7	Punjab	126,990	130,680	132,640	138,490	147,200
8	Karnataka	2,205,130	2,042,040	1,983,970	2,294,790	1,225,400
9	Bihar	3,473,150	3,710,530	2,068,050	4,458,690	4,538,710
10	Haryana	135,790	140,340	142,060	146,420	148,760

Total of these 10 states	26,396,160	25,656,440	25,493,890	28,647,040	29,666,200
Percentage of total sheep in India	71.66%	70.59%	70.19%	72.37%	70.75%
Total Sheep in India	36,834,310	36,346,010	36,320,870	39,585,710	41,928,250

Source: Basic Animal Husbandry Statistics-2023

The number of dairy sheep in India has varied from 2018-19 to 2022-23 across various states. The 10 major states (Uttar Pradesh, Rajasthan, Madhya Pradesh, Gujarat, Andhra Pradesh, Maharashtra, Punjab, Karnataka, Bihar, and Haryana) account for over 70% of the total sheep population in India. Rajasthan has seen significant growth in the number of sheep, rising from 7.31 million in 2018-19 to 8.90 million in 2022-23, which is a notable increase. Madhya Pradesh has also witnessed continuous growth, with the number of sheep increasing from 3.65 million to 4.53 million. In contrast, Uttar Pradesh saw a decline in sheep numbers, from 4.78 million in 2018-19 to 4.39 million in 2022-23. The number of sheep in Gujarat has remained nearly stable, while Andhra Pradesh saw a small change. Maharashtra has experienced a significant increase, with sheep numbers growing from 2.79 million to 3.80 million. In Punjab and Haryana, sheep numbers remained stable but showed slight growth. Bihar experienced a drop in numbers in 2020-21, but the population recovered to 4.53 million by 2022-23. Karnataka's sheep population decreased from 2.20 million in 2018-19 to 1.22 million in 2022-23. Overall, these 10 states contribute significantly to the sheep farming sector in India, accounting for more than 70% of the total sheep population.

Daily Productivity of Dairy Animals in Major States

Table No. 6 presents the daily milk productivity per animal (in kilograms) for dairy animals in the major 10 states of India. Among these states, Punjab has the highest productivity for foreign cows (13.49 kg), while Bihar has the lowest (6.49 kg). For indigenous cows, Punjab again leads with 8.68 kg per animal, while Maharashtra has the lowest at 2.35 kg. Haryana tops in buffalo milk production, with 10.61 kg per buffalo, while Karnataka has the lowest productivity at 4.24 kg. For sheep, Punjab has the highest milk yield at 1.83 kg per animal, while Karnataka has the lowest at just 0.09 kg. According to **Biradar et al., 2013**, Maharashtra's milk productivity for all types of dairy animals is below the national average for major dairy-producing states.

Table No. 6 : Daily Productivity of Dairy Animals in Major States (2022-23)

Sr. No.	State	Foreign Cows (kg)	Indigenous Cows (kg)	Buffaloes (kg)	Sheep (kg)
1	Uttar Pradesh	8.44	3.78	5.27	0.82
2	Rajasthan	7.08	5.91	7.09	0.96
3	Madhya Pradesh	8.52	3.27	4.80	0.61
4	Gujarat	9.66	4.72	5.36	0.54
5	Andhra Pradesh	9.92	3.83	7.77	0.11
6	Maharashtra	10.34	2.35	5.34	0.25
7	Punjab	13.49	8.68	9.52	1.83
8	Karnataka	9.85	3.30	4.24	0.09
9	Bihar	6.49	3.28	4.63	0.16
10	Haryana	10.51	6.83	10.61	1.07
	Average	**9.43**	**4.60**	**6.46**	**0.64**

Source: Basic Animal Husbandry Statistics-2023

- **Foreign Cows**: Punjab leads with 13.49 kg of milk per foreign cow daily, while Bihar has the lowest productivity at 6.49 kg.
- **Indigenous Cows**: Punjab also leads in indigenous cow productivity with 8.68 kg per cow per day, while Maharashtra has the lowest at 2.35 kg.

- **Buffaloes**: Haryana leads with 10.61 kg of milk per buffalo daily, followed by Punjab and Andhra Pradesh with 9.52 kg and 7.77 kg, respectively. Other states show lower buffalo milk productivity, with Madhya Pradesh at 4.80 kg.
- **Sheep**: Punjab has the highest sheep milk productivity at 1.83 kg per sheep, while Karnataka has the lowest at just 0.09 kg, followed by Andhra Pradesh at 0.11 kg.
- The average milk productivity across the 10 major states is 9.43 kg for foreign cows, 4.60 kg for indigenous cows, 6.46 kg for buffaloes, and 0.64 kg for sheep.

Availability of Milk Per Capita in Major States

According to **Table No. 7**, the availability of milk per capita in India increased from 390 grams per day per person in 2018-19 to 459 grams per day per person in 2022-23. However, when comparing this national average with the major milk-producing states, significant variations are observed. The average daily milk availability per capita in the top milk-producing states was 618 grams in 2018-19, and it increased to 718 grams by 2022-23. Currently, Punjab and Haryana have the highest per capita daily milk availability, while Maharashtra and Bihar have lower availability compared to the national average.

Table No. 7 Availability of Milk Per Capita in Major States

Sr. No.	State	2018-19	2019-20	2020-21	2021-22	2022-23
1	Uttar Pradesh	377	387	377	402	426
2	Rajasthan	850	904	1075	1150	1138
3	Madhya Pradesh	538	568	591	616	644
4	Gujarat	593	615	631	656	670
5	Andhra Pradesh	794	816	768	799	799
6	Maharashtra	264	269	305	315	329
7	Punjab	1165	1221	1219	1271	1283
8	Karnataka	332	375	452	483	523
9	Bihar	228	240	260	273	274
10	Haryana	1040	1118	1063	1081	1098
Average		**618**	**651**	**674**	**705**	**718**
National Comparison (+-)		+228	+244	+247	+259	+259
India		**390**	**407**	**427**	**446**	**459**

Source: Basic Animal Husbandry Statistics-2023

- The availability of milk per capita in India has increased significantly from 390 grams per person per day in 2018-19 to 459 grams per person per day in 2022-23.
- Among the major milk-producing states, **Uttar Pradesh** saw a notable increase in milk availability, rising from 377 grams per person per day in 2018-19 to 426 grams in 2022-23.
- **Rajasthan** also experienced a significant rise, from 850 grams in 2018-19 to 1138 grams in 2022-23. **Madhya Pradesh** increased from 538 grams to 644 grams, and **Gujarat** showed an increase from 593 grams to 670 grams. **Andhra Pradesh** remained stable at 799 grams per person per day.
- **Maharashtra** saw an increase from 264 grams to 329 grams, while **Punjab** had the highest increase, from 1165 grams to 1283 grams. **Karnataka** also experienced a notable increase from 332 grams to 523 grams. **Bihar** showed a steady increase from 228 grams to 274 grams.
- **Haryana** showed an increase from 1040 grams to 1098 grams. On average, the top 10 states saw an increase in milk availability from 618 grams to 718

grams, which is significantly higher than the national average of 459 grams. The milk production and management capacity in these states have improved over time, reflecting better dairy production and distribution systems.

MAJOR FINDINGS:

Analysis of the data on animal husbandry and milk production at the national level for the period 2018-19 to 2022-23 reveals the following key findings:

1. **Increase in Milk Production**: There has been a significant increase in milk production across the top ten milk-producing states in India. Notably, states like Uttar Pradesh, Rajasthan, and Madhya Pradesh have shown an increase in milk production. For example, Uttar Pradesh's milk production increased from 30,518,910 tons in 2018-19 to 36,241,740 tons in 2022-23, indicating a clear upward trend in production.
2. **Diversity in Milk Types**: There is a wide variation in the types of milk produced in major states. Punjab leads in the production of milk from foreign cows, while Rajasthan ranks highest in the production from indigenous cows. Haryana is the leader in buffalo milk production, and Punjab plays an important role in sheep milk production.
3. **Cattle and Buffalo Numbers and Productivity**: Maharashtra and Karnataka are leading in the number of milch cows, with Maharashtra's cow population increasing from 11,655,460 in 2018-19 to 15,041,860 in 2022-23. Punjab, Rajasthan, and Madhya Pradesh dominate buffalo production.
4. **Increase in Milk Availability**: There has been a significant improvement in milk availability. In particular, Punjab saw an increase in per capita milk availability from 1,165 liters in 2018-19 to 1,283 liters in 2022-23. States like Gujarat, Karnataka, and Haryana also showed improvements in milk availability.
5. **Productivity of Indigenous Cows**: The milk productivity of indigenous cows varies by state. Rajasthan and Punjab have higher productivity with their indigenous cows, while Maharashtra has lower productivity among indigenous cows.
6. **Improvement in Buffalo Milk Production**: There has been an increase in buffalo milk production in Haryana, Punjab, and Andhra Pradesh. In particular, Haryana's per buffalo milk production is 10.61 kg, which is highly favorable.
7. **Decline in Sheep Milk Production**: Sheep milk production is lowest in Andhra Pradesh and Karnataka. These states have lower milk availability, raising questions about the condition of sheep farming.
8. **Reasons for Variation in Production Capacities**: The differences in milk production across states can be attributed to factors such as animal breeds, feed, and management practices. For example, Gujarat and Punjab have more advanced production methods.
9. **Energy and Resource Use in Milk Production**: To continue increasing milk production, farmers need to use more resources and energy. This includes the use of modern technology and quality feed.
10. **Overall Perspective**: In general, the data on milk production and availability in these ten states indicates that India's milk production has improved, though some states still require further improvement. More

investment in technology and research is needed for better milk production and availability across the country.

11. **Trend of Increase in Milk Production**: A steady increase in milk production is observed in the top ten states. Uttar Pradesh, Rajasthan, and Madhya Pradesh have all seen an increase. From 15,233,350 tons in 2018-19, the total milk production increased to 18,904,1050 tons in 2022-23, showing a statistically significant growth of 24.13%.
12. **Production Capacity of Different Milk Types**: Punjab leads in milk production from foreign cows, with 13.49 kg per foreign cow in 2022-23. Rajasthan's productivity for indigenous cows is 5.91 kg, and Haryana's buffalo milk production stands at 10.61 kg per buffalo. This highlights the specific trends in milk production for each type of milk.
13. **Growth Rate in Milk Availability**: There is a notable increase in per capita milk availability. From 618 liters per person per day in 2018-19, the availability rose to 718 liters in 2022-23. This represents an average annual increase of 15.96 liters, reflecting a positive trend in milk availability.
14. **Cattle and Buffalo Numbers and Production**: Maharashtra and Karnataka are leading in the number of milch cows, while Punjab, Rajasthan, and Madhya Pradesh are ahead in buffalo production. Maharashtra's milch cow population grew from 11,655,460 in 2018-19 to 15,041,860 in 2022-23, showing a 29.10% increase.
15. **Variation in Indigenous Cow Production**: There is considerable variation in the milk production from indigenous cows. Rajasthan and Punjab exhibit higher productivity, whereas Maharashtra has lower productivity. In 2022-23, Rajasthan produced 5.91 kg of milk per indigenous cow, which is higher than other states.
16. **Initiation and Growth of Milk Production**: The differences in the start and growth of milk production can vary across states. For example, Gujarat's milk availability increased from 593 liters in 2018-19 to 670 liters in 2022-23.
17. **Decline in Sheep Milk Production**: The production of sheep milk is particularly low in Andhra Pradesh and Karnataka. In 2022-23, Karnataka reported 12,254,000 sheep, with low production levels.

RECOMMENDATIONS

1. **Increasing Livestock in Major Milk-Producing States**: The livestock population in the country's major milk-producing states is continuously increasing, and accordingly, it is essential for the governments in other states to make efforts to increase livestock and milk production.
2. **Providing Employment Opportunities**: Animal husbandry and dairy businesses are crucial for providing direct and indirect employment opportunities to farmers and rural populations in the state. Therefore, special policies should be implemented in other states to encourage more investment in this sector.
3. **Increasing Productivity in Other States**: Punjab and Haryana have the highest milk productivity in the country. It is necessary for other states to make special efforts to increase productivity, similar to these states.
4. **Implementation of National Gokul Scheme**: The National Gokul Scheme has been effectively implemented in major milk-producing states. Similarly, it

is essential to implement this scheme in other states to achieve similar progress.

5. **Use of Advanced Technologies**: Embryo Transfer Technology (ETT) and Artificial Insemination (AI) are effectively used in major milk-producing states. It would be beneficial to extend the use of these technologies to other states as well.
6. **Improvement in Maharashtra's Dairy Sector**: While Maharashtra is an advanced state in terms of agriculture, there is still significant potential for growth in animal husbandry and the dairy business. The state government, cooperative institutions, and agricultural universities should take special initiatives to increase livestock and overall milk production.
7. **Study of Livestock Practices in Uttar Pradesh and Rajasthan**: It is necessary to form selected study groups from other states and organize study tours to learn about livestock breeding, care, feeding, and management practices for cows and buffaloes in Uttar Pradesh and Rajasthan, where animal husbandry practices are well-established.
8. **Improving Livestock Productivity**: To increase livestock productivity, it is important for livestock owners to maintain good care of their animals, enhance the yield of high-productivity breeds, and promote the breeding of new, improved, and crossbred cows, buffaloes, and goats.

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