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Milk Production and Availability in India: A State Level Analysis

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Abstract:
Dairy farming constitutes a cornerstone of India's rural economy, offering livelihood support to millions and contributing significantly to the nation's nutritional security and GDP. Despite India's position as the world's largest milk producer, stark inter-state disparities persist in productivity, infrastructure, and market accessibility. This study presents a comprehensive state-wise analysis of Milk Production in India, drawing on data from 2016-17 to 2022-23, sourced from the Basic Animal Husbandry Statistics 2023. The analysis focuses on key indicators including total milk production, average yield per animal, livestock population, and the relative contributions of crossbred and non-descript indigenous cattle. The findings reveal that states such as Uttar Pradesh, Rajasthan, Madhya Pradesh, and Gujarat consistently lead in total milk production, while states like Punjab and Haryana show high per capita milk availability. Conversely, northeastern and smaller states demonstrate persistently low production levels, underscoring infrastructural and policy challenges. Crossbred cattle show significantly higher productivity compared to indigenous breeds, emphasizing the potential for genetic improvement and targeted interventions .By highlighting the regional imbalances and identifying high- and low-performing states, the study underscores the need for region-specific strategies to boost productivity, enhance veterinary and cold-chain infrastructure, and support sustainable dairy development. These insights can inform policy formulation aimed at bridging the performance gap and fostering inclusive growth in India's dairy sector.

Keywords: Milk production, Crossbred cows, Indigenous cattle, Livestock productivity, Dairy infrastructure, Animal husbandry, Per capita milk availability

Introduction:

Dairy farming holds a pivotal role in India's agrarian economy, serving as a vital source of livelihood for millions of rural households. With India being the world's largest milk producer, the dairy sector contributes significantly to the national GDP, rural employment, and nutritional security. Despite its robust growth, the sector exhibits stark regional disparities in productivity, infrastructure, and market access.A state-level analysis of milk production in India reveals a complex and diverse landscape influenced by agro-climatic conditions, socio-economic factors, policy interventions, and cooperative structures. States such as Gujarat, Punjab, and Maharashtra have demonstrated high levels of dairy development, driven by efficient milk cooperatives and supportive infrastructure, while others continue

to grapple with issues like low yield per animal, inadequate veterinary care, and lack of cold-chain facilities.

This study aims to provide a comprehensive state-wise assessment of the dairy sector, focusing on key indicators such as milk production, livestock population, productivity, institutional support, and market linkages. Understanding these regional dynamics is essential for designing targeted interventions and policy measures that can bridge the existing gaps and enhance the overall efficiency and sustainability of dairy farming in India.

Objectives of Study

- To analyze the total milk production from crossbred and non-descript/indigenous cows on a state-wise basis, and compare their patterns
- To evaluate the average daily milk yield per milking non-descript indigenous cow across states.
- To identify performance gaps and scope for genetic improvement and policy support.

Methodology:

This study employs a quantitative, descriptive approach to analyze dairy farming trends across Indian states from 2016–17 to 2022–23. The analysis is based on secondary data sourced from the *Basic Animal Husbandry Statistics 2023*, published by the Department of Animal Husbandry & Dairying, Government of India. The data were compiled and categorized by state and year to facilitate trend analysis. States were classified into high, medium, and low performers based on milk production, yield, and per capita availability. Data visualization techniques such as bar charts and stacked graphs were used to present trends in milk production, yield, and per capita availability. The analysis aimed to link quantitative findings with qualitative insights to recommend region-specific policy measures.

Discussion and Analysis:

This paper focuses on a state-level analysis of milk production, per capita availability, average milk production, and the yield of indigenous and crossbred cows in India for the years 2016 to 2023. Among the states, Punjab has the highest per capita availability of milk, while Mizoram has the lowest. Uttar Pradesh is the largest milk-producing state in the country. Tamil Nadu consistently ranks highest in milk production from exotic/crossbred cows. Madhya Pradesh recorded the highest average milk yield from non-descriptive/indigenous cows during the period 2016–2017 to 2022–2023. This paper analyzes dairy farming in India with a focus on state-level trends in milk production and per capita milk availability.

Review of Literature

- N. Taibangnabi et al. (2024) critically discuss a comparative analysis of milk production in the southern states of India. Their study highlights that India's dairy industry requires significant infrastructure development and investment. The southern states of India continue to play a prominent role in milk production, with cooperatives playing a key role in driving this growth.
- Evana Kamboi et al. (2020) assessed the milk yield gap and the factors affecting it in the Ri-Bhoi district of Meghalaya. Their study focused on exploring the possibilities for improving dairy production in the state, while also contributing to the literature by incorporating crucial determinants responsible for the milk yield gap.

- N. Munishami Gowda and Yogish (2024) critically reviewed the economic aspects of the dairy sector in India. Their study discussed how, among allied agricultural activities, dairying is one of the most prominent for farmers. Dairying is not only cost-effective but also provides higher returns, especially in areas where a significant number of women are engaged in this activity. The study is particularly relevant as it identifies various issues within the cooperative dairy sector in both Karnataka and Tamil Nadu. It emphasizes that dairy activities play a crucial role in rural areas, where the majority of the rural poor undertake dairy farming as a means of livelihood. In this context, both dairy cooperatives and government intervention are essential to support the rural economy. The study also suggests eliminating the role of middlemen in the sale of dairy milk. Furthermore, it recommends that the government provide free veterinary facilities in every village block to support dairy activities
- Patibandla Lakshmipriya et al. (2022) focused their study on the *Economic Analysis of Milk Production: A Study of South India*. The study revealed that the average gross maintenance cost of milk production per milch animal per day was highest for crossbred cows), followed by buffaloes and local cows Similarly, the net maintenance cost per milch animal per day was also highest for crossbred cows followed by buffaloes and local cows The cost of milk production per liter showed that the average cost was highest for local cows followed by buffaloes) and crossbred cows The study concluded that regular training and updates for dairy farmers on dairy management practices should be provided to improve animal health, productivity, and longevity. This would help enhance farmers' incomes and contribute positively to the national economy.

Figure 1. Per capita milk availability in different states of India: 2016-17 to 2022-23.

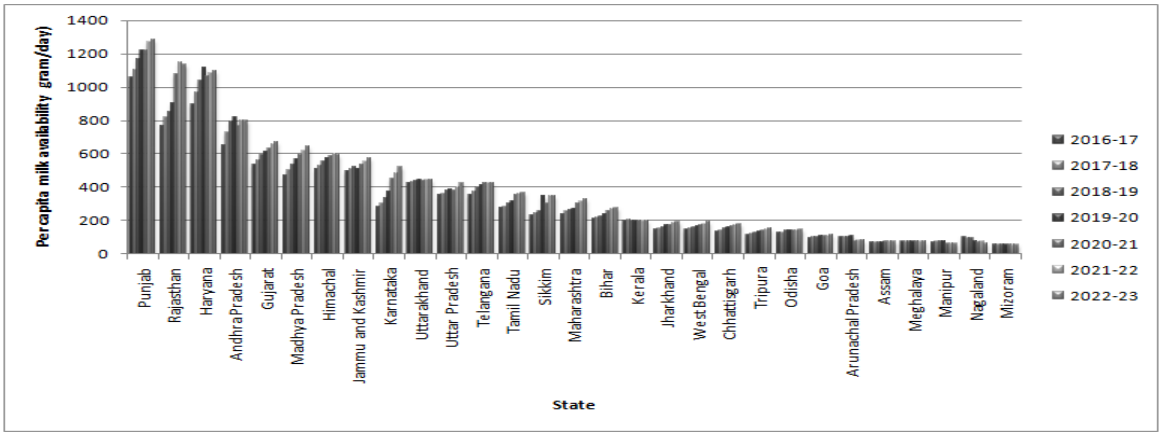

Image credits: Authors. **Source**: Basic Animal Husbandry Statistics 2023, Government of India 2023

Figure 1 Explanation: The bar chart illustrates the per capita milk availability (grams/day**)** across various Indian states from. The data shows considerable variation between states, with some consistently performing better than others over the years .Punjab leads all states with the highest per capita milk availability, exceeding 1200 grams/day in recent years, followed by Rajasthan, Haryana, and Andhra Pradesh, all of which maintain figures above 900 grams/day. These states show a generally upward trend over the seven-year period, indicating strong and growing dairy sectors. In contrast, states like Mizoram, Nagaland, Manipur, and Meghalaya have the lowest milk availability, consistently staying below 200grams/day, highlighting challenges in dairy production and distribution in these regions. States like Karnataka, Uttar Pradesh, Gujarat, and Madhya Pradesh show moderate availability, ranging from 500 to 800 grams/day, with slight growth or stability over the years. Overall, the figure indicates regional

disparities in milk production and availability, with northern and some western states outperforming their northeastern and eastern counterparts. This could be due to differences in dairy infrastructure, cattle population, feed availability, and government support.

Figure 2. Total Milk production in different states of India: 2016-17 to 2022-23.

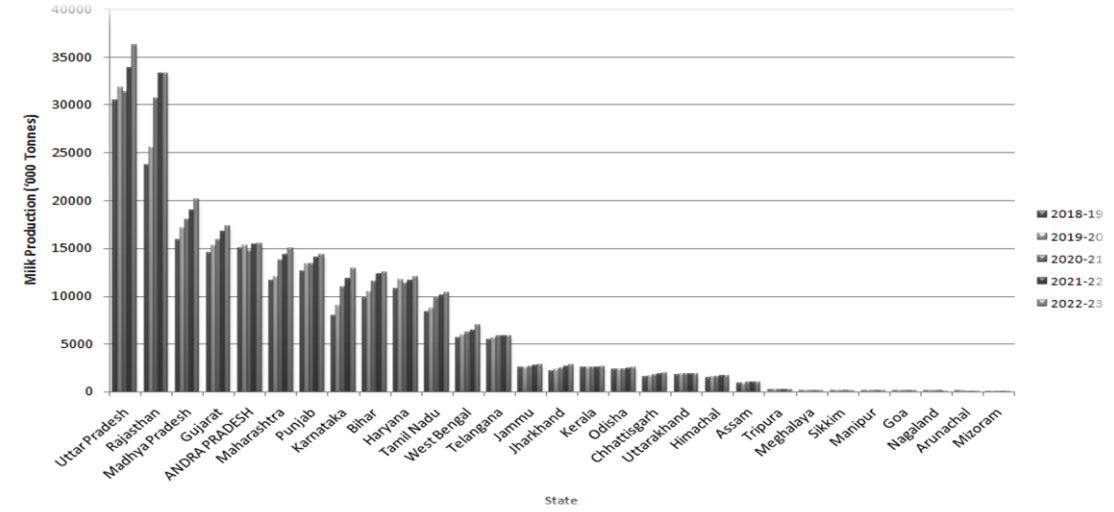

Image credits: Authors. Data source: Basic Animal Husbandry Statistics 2023, Government of India 2023

Figure 2 Explanation: The bar chart presents milk production (in '000 tones) across various Indian states from 2018-19 to 2022-23. It highlights both the volume of milk produced and the changes in production levels over the five-year period. Uttar Pradesh is the largest milk-producing state, consistently producing over 35,000 thousand tones annually, maintaining a clear lead over other states. Following Uttar Pradesh are Rajasthan, Madhya Pradesh, Gujarat, and Andhra Pradesh, each contributing significantly to the country's overall milk output with steady increases observed year-on-year. States like Maharashtra, Punjab, Karnataka, and Bihar also show substantial production, typically ranging between 10,000 to 15,000 thousand tones. These states demonstrate either growth or stability in production, reflecting a well-established dairy sector. On the other hand, states from the northeast region and smaller states like Goa, Mizoram, Nagaland, Arunachal Pradesh, Manipur, and Sikkim produce much lower quantities of milk, typically under 1,000 thousand tonnes, suggesting limitations in dairy infrastructure, cattle population, or other regional constraints .Overall, the chart reveals that milk production is heavily concentrated in a few key states, especially in the northern and western regions, while several eastern and northeastern states lag significantly. The consistent growth in many states indicates expanding dairy development and increased investment in livestock production over the observed years.

Figure 3. State -wise Estimates of Milk Production of Exotic/Crossbred Cows during 2016-17 to 2022-23.

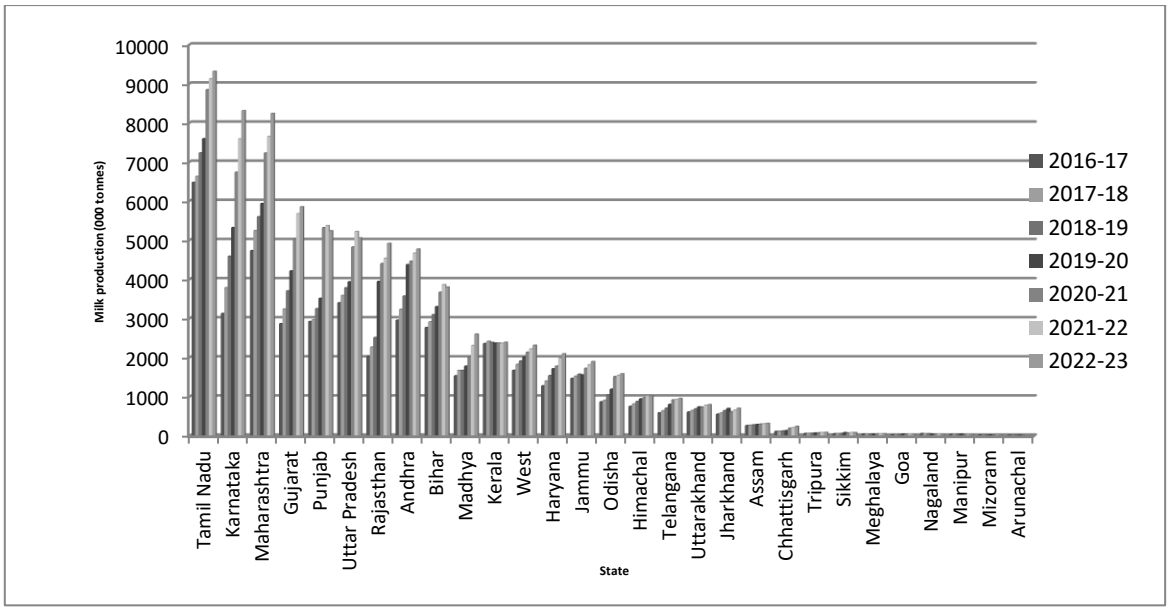

Image credits: Authors. Data source: Basic Animal Husbandry Statistics 2023, Government of India 2023

Figure 3 Explanation: The bar chart displays milk production (in '000 tones**)** for various Indian states and union territories from 2016-17 to 2022-23. It highlights both the level and trends of milk production over seven years, offering a clear view of regional contributions to the dairy sector .Tamil Nadu stands out as the leading milk producer among the listed states and UTs, with production consistently exceeding 8,000 thousand tones, followed closely by Maharashtra, Uttar Pradesh, and Gujarat. These states show a generally increasing trend, suggesting growth and development in dairy infrastructure and livestock management .Other states such as Punjab, Rajasthan, Andhra Pradesh, and Bihar also contribute significantly, producing between 3,000 to 5,000 thousand tones annually. Their production levels also reflect a steady or slightly increasing pattern over the year's .On the other end of the spectrum, states and union territories like Nagaland, Mizoram, Manipur, Tripura, Goa, and Arunachal Pradesh show very low levels of milk production, often below 500 thousand tonnes. This could be attributed to factors such as smaller landholdings, less emphasis on dairy farming, or infrastructural limitations. Overall, the chart emphasizes that milk production in India is unevenly distributed, with certain southern, northern, and western states dominating the sector, while eastern and northeastern regions remain relatively underdeveloped in dairy production. The steady growth in most high-producing states indicates a positive trend in the Indian dairy industry over the observed period.

Figure 4. State-wise Number of Animals In-Milk of Non-Descript/Indigenous Cows During 2016-17 to 2022-23 (figures in '000 Nos.)

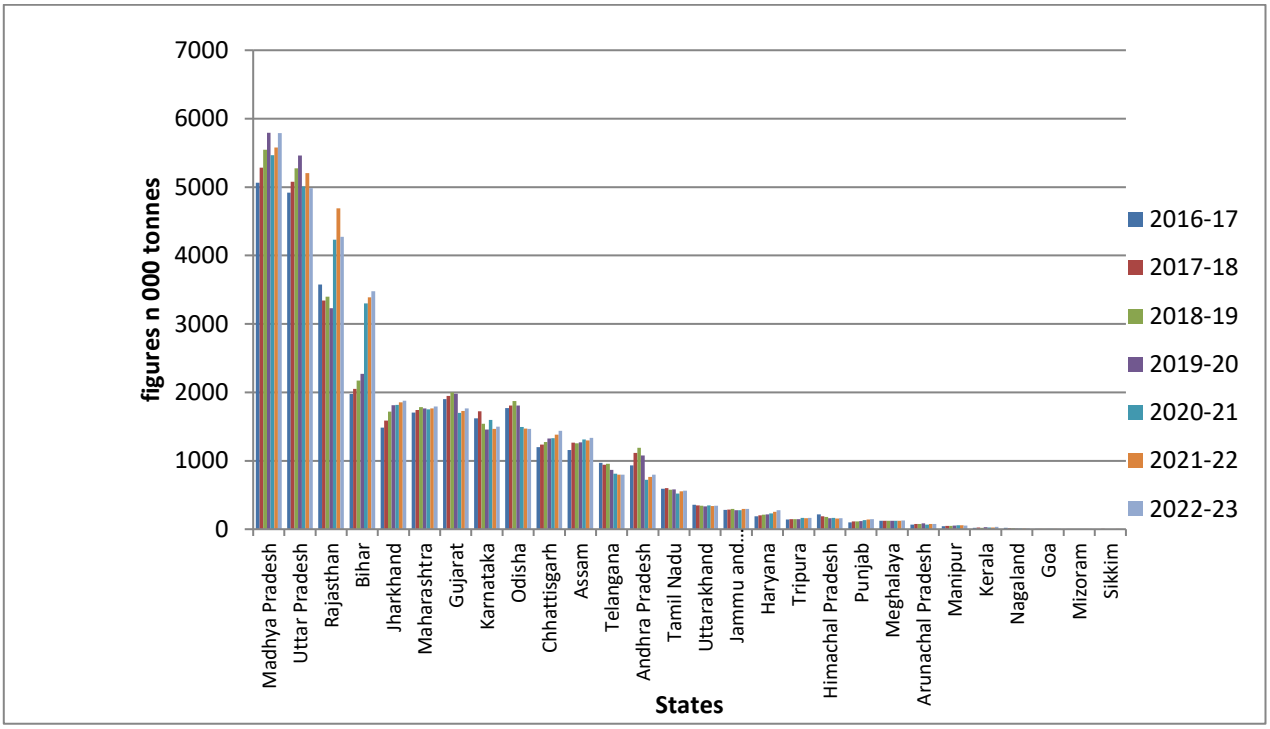

Image credits: Authors. Data source: Basic Animal Husbandry Statistics 2023, Government of India 2023

Figure 4 explanations: Chart show notable production, with steady increases indicating improving dairy infrastructure and productivity. Chhattisgarh, Karnataka, Andhra Pradesh, and Punjab also contribute significantly, though at slightly lower The chart presents a stacked bar graph of milk production (in '000 tonne**s)** across Indian states from 2016-17 to 2022-23. It provides a comprehensive view of the growth and distribution of milk production over seven years, highlighting both high-performing and low-performing states .Madhya Pradesh, Uttar Pradesh, Rajasthan, and Bihar are the top milk-producing states, each showing substantial and consistent growth over the years. These states dominate the chart, with Madhya Pradesh leading in overall volume for the most recent year (2022-23), surpassing 35,000 thousand tones .States like Maharashtra, Gujarat, Haryana, and Odessa evels. In contrast, northeastern states such as Mizoram, Nagaland, Arunachal Pradesh, and Sikkim, along with small union territories like Goa and Pondicherry, have very low milk production figures throughout the period, reflecting limited dairy farming activity in these regions. The stacked bar format also effectively illustrates year-on-year growth across all states. Most states exhibit a positive growth trajectory, suggesting national progress in dairy development and rising demand for milk products. Overall, the chart highlights both regional disparities and progress in milk production across India, with particular growth in central and northern states, reinforcing their crucial role in the country's dairy economy.

Figure 5. State-wise Average Yield per In-Milk Animal of Non-Descript/Indigenous Cows During 2016-17 to 2022-23 (figures in kg/day/Animal)

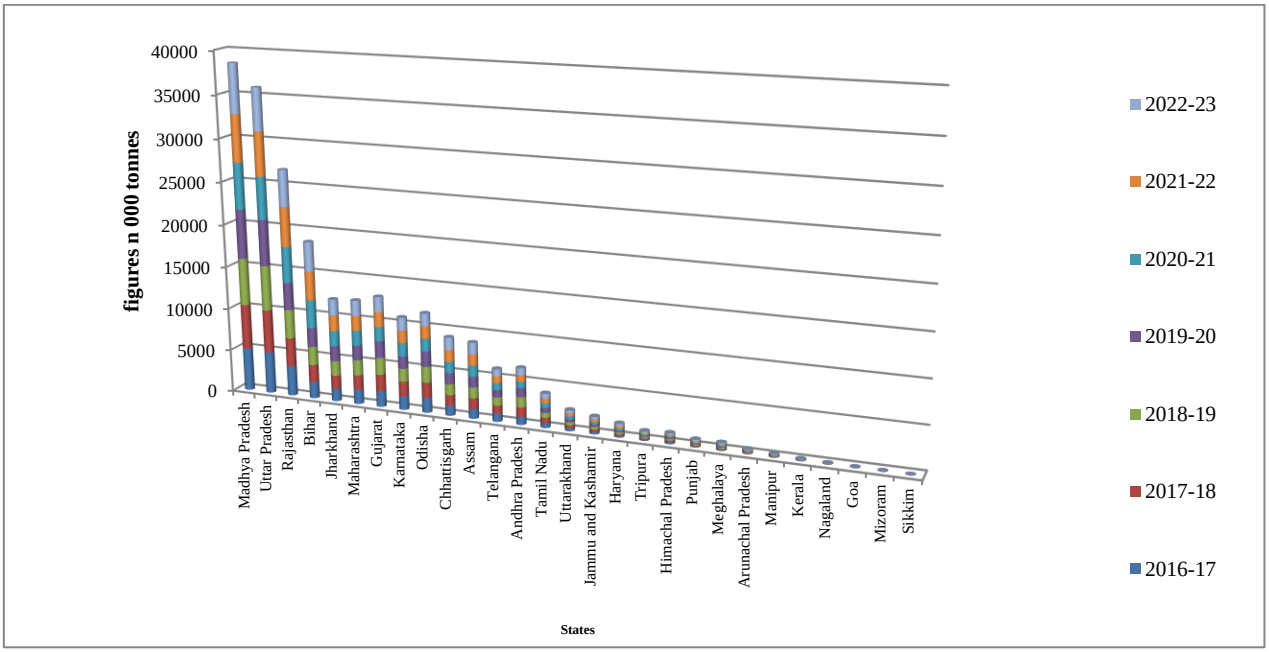

Image credits: Authors. Data source: Basic Animal Husbandry Statistics 2023, Government of India 2023

Figure 5 explanations: This stacked bar chart illustrates milk production (in '000 tonnes**)** across various Indian states from 2016-17 to 2022-23, offering a detailed view of how milk output has evolved over time in different regions .At the top of the chart, Madhya Pradesh, Uttar Pradesh, Rajasthan, and Bihar consistently emerge as the highest milk-producing states, with production levels in 2022-23 exceeding 30,000 thousand tones for the top performers. The stacked bars clearly show a steady year-on-year increase, reflecting sustained growth and investment in the dairy sector. States like Maharashtra, Gujarat, Haryana, Odisha, and Chhattisgarh also show moderate to high levels of milk production, with noticeable upward trends across the years. These states, while not leading, still play a significant role in the national milk supply .In contrast, northeastern states such as Nagaland, Mizoram, Arunachal Pradesh, and Sikkim, as well as smaller states and union territories like Goa and Tripura, produce very low quantities of milk, often below 1,000 thousand tones annually. Their stacked bars are minimal in size, indicating limited contribution to the national total .Overall, the chart highlights regional imbalances in milk production, with central and northern states being the major producers, while northeastern and smaller states lag significantly. The visual trend of increasing height in the bars across all states indicates a nationwide upward trajectory in milk production over the past seven years, suggesting enhanced dairy development and improved livestock practices across India.

Figure 6. State-wise Estimates of Milk Production of Non-Descript/Indigenous Cows During 2016-17 to 2022-23 (figures in '000 Tonnes)

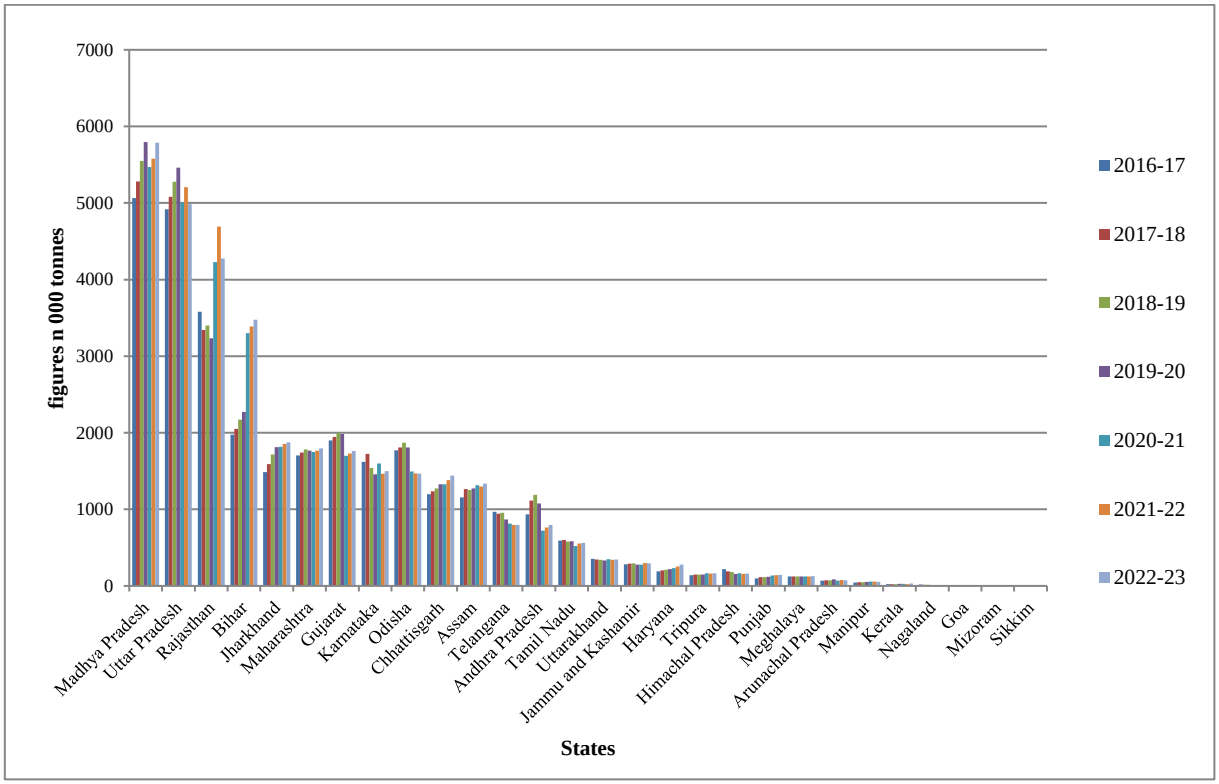

Image credits: Authors. Data source: Basic Animal Husbandry Statistics 2023, Government of India 2023

Figure 6 explanations: This bar chart illustrates milk production (in '000 tonnes) across Indian states from 2016-17 to 2022-23, showcasing annual production trends over a span of seven years. Madhya Pradesh, Uttar Pradesh, Rajasthan, and Bihar dominate as the top milk-producing states, each consistently producing above 5,000 thousand tones annually. These states show steady or slightly increasing trends in production, underscoring their importance in India's dairy sector .Jharkhand, Maharashtra, Gujarat, and Odessa fall into the mid-tier range, producing between 2,000 and 4,000 thousand tonnes, with visible year-on-year growth, especially in the early years, although the trend seems to level off in the later years for some of these states .States such as Karnataka, Assam, Chhattisgarh, Tamil Nadu, and Telangana also contribute to the national milk output but at lower volumes, generally between 1,000 and 2,000 thousand tonnes. Their production remains relatively stable; with slight fluctuations over the years. .The lowest milk producers include Sikkim, Mizoram, Goa, Nagaland, Arunachal Pradesh, and Meghalaya, whose production levels are minimal across all years, reflecting limited dairy development in these regions. Overall, the chart reflects a steady growth pattern in most states, particularly the top producers. It also emphasizes the regional disparity in milk production, with central and northern states far outpacing eastern and northeastern regions. This trend highlights the concentration of dairy farming in specific parts of India and the need for policy support in underperforming regions to boost production capacity.

Conclusions

This study highlights the crucial role of dairy farming in India's rural economy and underscores the significant inter-state disparities that exist in milk production, livestock productivity, and dairy

infrastructure. While India maintains its status as the world's largest milk producer, the benefits of dairy development are unevenly distributed across states. States such as Uttar Pradesh, Rajasthan, Gujarat, and Madhya Pradesh dominate in total milk production, whereas Punjab and Haryana lead in per capita milk availability—indicative of better dairy management and consumption patterns. The findings emphasize that crossbred/exotic cows consistently outperform non-descript indigenous cattle in milk yield, with Tamil Nadu emerging as the top producer from crossbred cows. Conversely, Madhya Pradesh recorded the highest yield from indigenous cows, suggesting potential in breed improvement. Northeastern and smaller states continue to show low productivity, often due to infrastructural deficits, lack of cold chain facilities, limited veterinary support, and market access challenges. Overall, the study reveals the necessity for region-specific policy interventions to enhance the dairy sector. Strategies must focus on genetic improvement programs for indigenous breeds, development of veterinary infrastructure, better extension services, and strengthening of dairy cooperatives. Targeted investment in underperforming regions—particularly in the eastern and northeastern parts of the country—can help bridge the productivity gap and ensure more inclusive and sustainable dairy development. Such interventions are imperative for enhancing rural livelihoods, improving nutritional security, and boosting India's dairy economy holistically.

References:

1. Dr. N. Taibangnganbi1* , Dr. Sowmya S, Dr. P. Sunantha (2024) A Comparative Analysis Of The Production Of Milk In Southern States Of India Educational Administration: Theory and Practice, 30(5), 7615-7620, Doi: 10.53555/kuey.v30i5.3403
2. Evans Kemboi1, S. M. Feroze, Ram Singh, Jabir Ahmed and Hehlangki Tyngkan(2020) Yield gap in milk production is considerable in Indian Himalayan state of Meghalaya Journal of Dairy Research 88, 121–127. https://doi.org/10.1017/ S002202992100008X
3. Patibandla Lakshmipriya, D.K. Sinha, K.M. Singh* , R.P. Singh and Nasim Ahmad(2022) Economic Analysis of Milk Production: A Study of South India Economic Affairs, Vol. 67, No. 05, pp. 711-720, December 2022 DOI: 10.46852/0424-2513.4.2022.4
4. Munishami Gowda, N., and S. N. Yogish(2024). “An Economic Analysis of Dairy Sector in India with Special Reference to Milk Dairy Co-Operatives in Karnataka.” Shanlax International Journal of Economics, vol. 12, no. 4, 2024, pp. 55-59
5. *Basic Animal Husbandry Statistics 2023*, published by the Department of Animal Husbandry & Dairying, Government of India