Meat Production Scenario vis-à-vis Piggery Development Potential in Assam to Address Meat Shortfall

Haripriya Dutta[1], and Bhabesh Mili[2]

Abstract

This study was carried out to analyze the meat production scenario vis-à-vis piggery development potential in Assam to address meat requirements. This study revealed a huge deficit in meat production (84.76%) in Assam in order to meet the meat requirement as per recommended value of the Indian Council of Medical Research (ICMR). In terms of monetary value, this shortfall represents a significant market potential of ₹140.60 million. At the same time, meat production patterns indicate that pigs were the highest contributors to the total meat production in Assam during 2022-23. Therefore, piggery development has the potential to bridge the meat requirement gap, increase socioeconomic status, and improve food and nutritional security, particularly among the rural population in the state.

Keywords: Livestock; Meat; Pig; Monetary value; Rural Economy.

Author Affiliation: [1]CKB Commerce College, Jorhat 785001, Assam, India, [2]College of Veterinary Sciences and Animal Husbandry, Central Agricultural University (I), Jalukie 797110, Peren, Nagaland, India.

Corresponding Author: Bhabesh Mili, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University (I), Jalukie 797110, Peren, Nagaland, India.

E-mail: bhabamili@gmail.com

INTRODUCTION

Livestock is an integral part of the agrarian economy (Sharma and Omena, 2024). Almost every household in the rural areas of Assam is engaged in livestock rearing, especially among small/marginal farmers/tribal masses (Sharma & Omena, 2020; Sharma and Omena, 2024). This sector has immense potential to generate self-employment, alleviate poverty, and ensure nutritional security in rural areas, particularly for small and marginal poor farmers in Assam

(Borah and Halim, 2014). Farmers sell their animals when there is an urgent need for money, such as during festivals, sicknesses, or natural calamities (Bhattacharjya et al. 2017). Despite its significance, this sector contributes only 1.17% to the state GDP, which is much lower than the national average of 4.1% (NEDFi 2021).

The main purposes of livestock rearing in Assam are to provide additional income and fulfill religious obligations, especially among many tribes (Bhattacharjya et al., 2017; Shyam et al., 2017). According to Sharma and Omena (2024), the growth and production trends of livestock species have significant implications for food security and rural economy of Assam including the entire NE Region. However, the majority of livestock and poultry farmers still use traditional age-old and low input management systems (Kadirvel et al., 2019; Banik et al., 2020). Among livestock, pigs have a huge potential to contribute faster economic returns for farmers because of their high fecundity, better feed conversion efficiency, early sexual maturity, and short gestation interval (Kumaresan et al., 2007; Rodriguez-Estevez et al., 2010; Kadirvel et al., 2017), they also play a vital role in extra income of pig farmers in Assam (Shyma et al., 2017).

Meat is an important and common source of animal protein in the NE states of India (Mahajan et al., 2015). According to Shyma et al. (2017), backyard piggery in Assam contributed 13.99% (₹31,992) of the total annual income when family labor was included. Despite its potential, the state is yet to be self-sufficient in meat production to meet the recommended ICMR values of 10.8 kg per annum per person. In addition, the demand for meat has been increasing with increasing human population over time. The demand for pork is relatively high in Assam, including in other states in the NE region of India, except for Sikkim. Therefore, this study aims to analyze meat production scenarios in the state.

METHODOLOGY

This study was based on secondary data on livestock and poultry populations, collected from the Livestock Census-2012 & 2019 (Livestock Census-2012; Livestock Census-2019) and Basic Animal Husbandry Statistics, 2019 (BAHS, 2019), Basic Animal Husbandry Statistics, 2023 (BAHS, 2023), and other online sources, especially the current market value. The projected population of Assam was obtained from the Report of the Technical Group on Population Projection -2020 by the National Commission on Population, Ministry

of Health and Family Welfare, New Delhi (GoI 2020). Further, the compound annual growth rate (CAGR) of meat was calculated according to Mili and Dutta (2024).

Meat requirements, gap analysis and their monetary value

The total annual meat requirement (A) of Assam for the year 2022-23 was calculated by multiplying the annual requirement of meat per person by the projected human population of the state. The ICMR recommends 10.8 kg of meat per person annually. The meat production (ΔP) requirement from each species to meet the shortfall of meat requirements at the current production trends was calculated as follows:

$$\Delta P = (A-P)/P$$

The total monetary value of meat (M) required addressing the gap or shortfall in meat production in Assam was calculated as:

$$M = \sum g_s r_s$$

Where, g_s represents gap or shortfall in meat production for each species (s),

r_s represents rate per kilogram of meat for each species.

RESULTS AND DISCUSSION

The total meat production in Assam was 58.24 thousand tonnes, which accounts for only 0.60% of the total meat produced in the country (9768.64 thousand tonnes) during 2022–23 (Fig. 1). This indicates a significant shortfall/gap between meat production and requirements, with a substantial deficit of 84.76% during 2022-23 (Fig. 2). The per capita availability of meat (1.71 kg/ annum) was very low in Assam compared to the national average (7.1 kg/annum) during 2022-23 (Fig. 3). This deficit in meat production was primarily due to the lower average meat yield per animal compared to the national average (Tables 1 and 2). Therefore, to bridge this shortfall/gap in meat requirements within the state, production from each species must be amplified six times, based on the current production scenario. In terms of monetary value, this shortfall represents a significant market potential of ₹140.60 million (Table 3), offering lucrative economic opportunities for the state.

The species-wise contributions of meat to the total meat production in Assam and India are shown in Tables 1 and 2. In Assam, pigs were the highest contributor to the total meat production,

Haripriya Dutta, and Bhabesh Mili. Meat Production Scenario vis-à-vis Piggery Development Potential in Assam to Address Meat Shortfall

13

accounting for 37.71% (Table 1). This production pattern contrasts with the national level, where poultry was the leading contributor, accounting for 51.14% of the total meat production (Table 2). In Assam, chevon followed by pork, contributed 30% of the total production, while chicken accounted for 22.13%. Buffaloes had the lowest contribution to the total meat production in Assam, accounting for only 0.29% (Table 1).
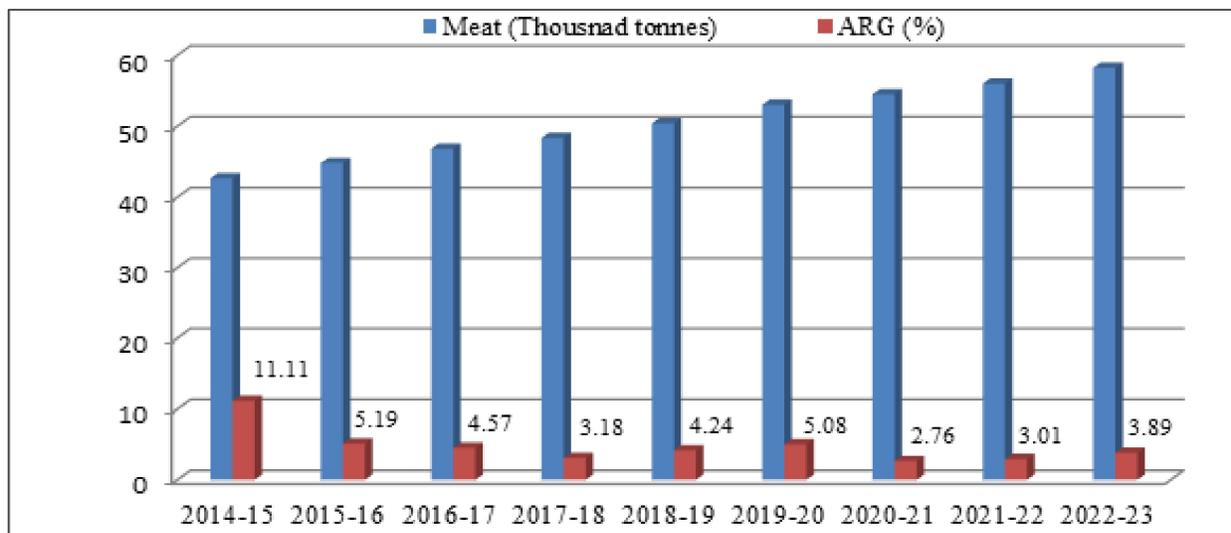

Fig. 1: Trends in Meat Production from 2014-15 to 2022-23 with Annual Growth Rate (ARG).

Source: Basic Animal Husbandry Statistics, 2023, Govt. of India and Economic Survey, Assam 2023-24, Govt. of Assam.

Table 1: Meat production from different species of animal in Assam (2022–23):

Species	Number of animals slaughter for meat production (figures in '000 nos)	Meat production (in Tonnes)	Average meat yields per animal (Kg)	Per Cent contribution to total meat production (%)
Cattle	62.25	3690	59.28	6.34
Buffalo	2.5	170	68	0.29
Goat	2878.69	17470	6.07	30
Sheep	346.92	2060	5.94	3.54
Pig	678.4	21960	32.37	37.71
Poultry	9855.58	12890	1.31	22.13

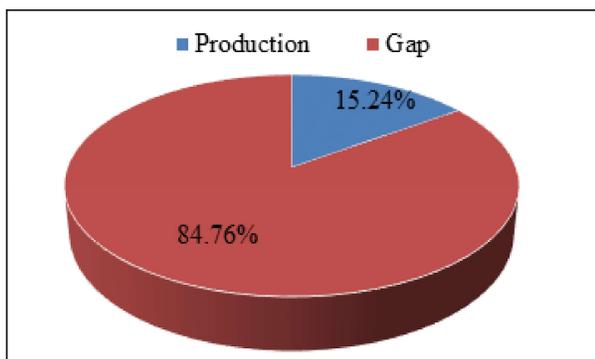*Source:* BAHS 2022-23, Government of India

Fig 2: Meat Production and Requirement Gap in Assam during 2022-23

The species-wise meat production scenario in Assam highlighted the importance of pig farming. Pig husbandry in Assam is characterized by small units, a focus on fattening over breeding, dependence on locally available feed and food waste, low productivity, and the use of Indigenous Traditional Knowledge (Shyam et al., 2015; Banik et al., 2020; Doley et al., 2024). Traditional pig production systems are based on low input and output (zero-grain production systems) in backyards with household kitchen waste and garbage crop residues (Kumaresan et al., 2007; Kadirvel et al., 2017). Therefore, with the growing

Table 2: Meat production from different species of animal in India (2022–23):

| Species	Number of animals slaughter for meat production (figures in '000 nos)	Meat production (in Tonnes)	Average meat yields per animal (Kg)	Per Cent contribution to total meat production (%)
Cattle	2169.15	236950	109.24	2.43
Buffalo	13620.31	1720030	126.28	17.61
Goat	123400.36	1413620	11.46	14.47
Sheep	73703.46	1026400	13.93	10.51
Pig	9333.55	376150	40.3	3.85
Poultry	3315773.55	4995490	1.51	51.14

Source: BAHS 2022-23, Government of India
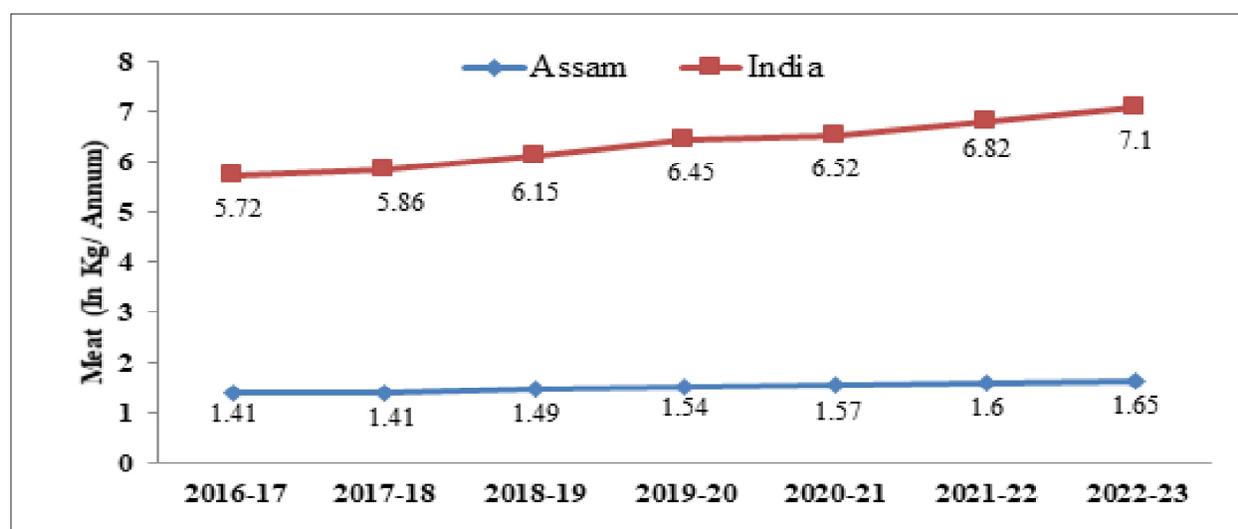
Fig. 3: Per Capita Availability of Meat from 2016-17 to 2022-23: Source: Basic Animal Husbandry Statistics, 2023, Government of India.

Table 3: Production and shortfall of meat in Assam:

Species	Actual Production/ Availability in tonnes	Total meat requirement based on the current production patterns in tonnes	Gap/ shortfall of meats in tonnes	Current market price in Rs (e)	Monetary value to meet the gap in million Rs (f=d X e)
(a)	(b)	(c)	(d=c-b)		
Cattle	3690	24212.6	20522.6	150	3.08
Buffalo	170	1115.486	945.486	150	0.14
Goat	17470	114632.5	97162.55	740	71.9
Sheep	2060	13517.06	11457.06	740	8.48
Pig	21960	144094.5	122134.5	350	42.75
Poultry	12890	84580.05	71690.05	200	14.34
Total	58240	382082.4	323842.4	-	140.68

Source: BAHS, 202-23, Government of India.

demand for pork, piggery offers not only extra income and livelihood opportunities, but also untapped market prospects in Assam, and the entire NE states. Consequently, improving pig-rearing practices and commercial large-scale piggery are crucial to increase meat production; thus, it will generate promising employment opportunities and improve socioeconomic status, especially among the rural population in the state.

CONCLUSION

The meat production scenario in Assam highlighted a substantial deficit in meeting the state's meat requirements, based on the ICMR's recommended meat consumption value. However, this shortfall in meat represents a significant market potential, offering lucrative economic opportunities for the state. Among livestock, pigs have the highest share of total state meat production and are one of the most preferred meats, especially among the tribal communities in the state. Hence, piggery development has a huge potential to bridge the gap and improve the per capita availability of meat, which will further generate promising employment opportunities, uplift socioeconomic status, and improve food and nutritional security, particularly among the rural population in the state.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study.

REFERENCES

1. Banik, Santanu; S Naskar and K. Barman (2020), "Smallholder pig production system of Assam", The Indian Journal of Animal Sciences, Vol. 90, No. (10), pp. 1441–1443.

2. Basic Animal Husbandry Statistics 2019 (BAHS, 2019), Government of India, Ministry of Fisheries, Animal Husbandry and Dairying, Department of Animal Husbandry and Dairying, Krishi Bhawan, New Delhi.

3. Basic Animal Husbandry Statistics, 2023 (BAHS, 2023). Government of India, Ministry of Fisheries, Animal Husbandry and Dairying, Department of Animal Husbandry and Dairying, Krishi Bhawan, New Delhi.

4. Bhattacharjya, Rupam; J. Saharia, R. Roychoudhury,

M. C. Borah, M. N. Ray and Hazarika, M (2017), "Livestock marketing in Assam - purpose and effect of seasonal variation", Journal of Entomology and Zoology Studies, Vol. 5, No. 4, pp. 1304-1307.

5. Borah M and Halim R. A. (2014) Dynamics of Livestock and Poultry Sector in Assam: A Critical Analysis. Economic Affairs, 59, 773-782.

6. Doley, Monuj. Kumar; S. A. Laskar, M. Neog, B. K. Neog, R. Hazarika, K. Chadipiralla, N. Baruah and P. V. B. Reddy (2024), "Rural Backyard Pig Farming Constraints Faced by Tribal Farmers", Research Journal of Agricultural Sciences, Vol. 15, No. 1, pp.172–176.

7. Government of India, 2020 (GoI, 2020). Report of the technical group of population projections-2020. National Commission of Population, Ministry of Health and Family Welfare, Nirman Bhawan, New Delhi.

8. Hoque, J: R. J. Deka, N. K. Sarma, H. F. Ahmed and S. K. Laskar (2020), "Growth Response of Assam Local Goats under Intensive Farming", Agricultural Science Digest, pp.1-5.

9. Kadirvel, G; K. M, Bujarbaruah, S. Kumar and S. V. Ngachan (2017), "Oestrus synchronization with fixed-time artificial insemination in smallholder pig production systems in north-east India: Success rate and benefits", South African Journal of Animal Science, Vol. 47, No. 2, pp. 140.

10. Kumaresan, Arumugam; K. M., Bujarbaruah, K. A. Pathak, B. Chhetri, S. K. Das, A. Das, and S. K. Ahmed (2007) "Performance of pigs reared under traditional tribal low input production system and chemical composition of non-conventional tropical plants used as pig feed". Livestock Science, Vol.107, No. 2–3, pp. 294–298.

11. Livestock Census-2012. All India Report, Ministry of Agriculture, Department of Animal Husbandry, Dairying and Fisheries, Krishi Bhawan, New Delhi, Government of India.

12. Livestock Census-2019. All India Report, Ministry of Agriculture, Department of Animal Husbandry, Dairying and Fisheries, Krishi Bhawan, New Delhi, Government of India.

13. Mahajan, Sumit; J.S. Papang and K.K. Datta (2015), "Meat consumption in North-East India: Pattern, Opportunities and Implications" Journal of Animal Research, Vol.5 No.1, pp. 37-45.

14. Mili B and Dutta H (2024) Current scenario of milk production in the North-eastern states of India: Challenges and mitigation strategies to address milk shortfall. Indian Journal of Animal Sciences 94 (10): 896–900.

15. NEDFi Data Bank Journal on North Eastern States Economy (Livestock & Poultry)', Vol. 49, 2021.

16. Rodríguez-Estévez, Vicente; Sánchez-Rodríguez, M., García, A., & Gómez-Castro, A. G. (2010). "Feed conversion rate and estimated energy balance of

free grazing Iberian pigs". Livestock Science, Vol. 132, No. 1–3, pp. 152–156.

17. Sharma, H. I; and T. Omena, (2024), "Livestock economy in North East India: Emerging patterns and its implications", Journal of Livestock Science, Vol. 15, No. 1, pp.60–68.

18. Shyam, Janmoni; H. Tripathi and B. Balaraju (2017), "Economic Contribution of Backyard Piggery in the Livelihood Security of Tribal Families of Assam", International Journal of Livestock Research, Vol. 7, No.2, pp. 135-143.

19. Shyam, Janmoni; H. Tripathi and J. Yadav (2015), "Constraint analysis of backyard pig production in tribal areas of Assam", Veterinary Science Research Journal, Vol. 6, No. 1, pp.36–41.