



Poultry Farming in Manipur: A Case Study of Thoubal and Imphal West District

Yashwanta Gurumayum

Sharda School of Humanities and Social Science, Sharda University, Greater Noida, Uttar Pradesh-
201310.

Abstract: Poultry farming in Manipur has shifted from a supplementary activity to a vital contributor to rural income, food security, and livelihoods. This study analyses the resource efficiency, employment generation, market vulnerabilities, and cost-profit dynamics of five farms. It shows that while the farms' investment levels vary, they all rely on outside inputs. Despite scientific approaches, inefficiencies, high chick mortality, and disease risks persist due to a lack of institutional support and training. Due to seasonal demand and fluctuating pricing, market access is still limited to the local area. The lack of policy support highlights a significant gap in the system. Establishing a strong, sustainable sector requires focused investments in infrastructure, feed production, and training.

Keywords: Poultry farming, Rural livelihoods, Resource efficiency, Market vulnerabilities, Employment generation.

I. INTRODUCTION

In the North-Eastern state of India, Manipur, poultry farming is a major part of the agricultural sector. In the state's diverse Argo-Ecological environment, poultry raising has grown to be a significant source of income for many rural residents. It serves as a supplemental source of revenue. But as rural lifestyles and agricultural diversification have changed over time, this practice has become a key component of the agrarian system. These days, raising chickens is a major source of household income, rural jobs, improved nutrition production, and community empowerment, especially for women. Backyard poultry farming in Manipur is not just an economic activity but also a tool for poverty reduction, women's empowerment, nutritional improvement, and sustainable rural development. (Chinir et al. 2024). Giriraja and indigenous/desi chickens are often raised in rural Manipur under backyard farming systems, with Giriraja showing higher productive features (Singh et al. al 2023). In rural areas, indigenous birds and ducks such as the Pati, Kruilor, and Kaunayen (an indigenous chicken found in Imphal valley) also dominate the poultry sector, providing a supplementary income source with little capital investment and a high level of enterprise. In order to meet local demand for eggs and meat and reduce its dependency on other states, the region also largely depends on backyard systems, despite having a high chicken density and a developing commercial industry. Despite the overall number of fish consumed per person in the valley is comparatively much higher than in the hills, fish consumption is increasing significantly in the hills and has historically been high in the valleys. (Sonanla, N. K., et al. 2024). Also, due to traditional meat-eating habits, rising per capita income, urbanisation, lifestyle changes, and broad social and cultural acceptance, the region records relatively higher consumption of meat compared to milk and milk products (Kumar et al.

2007). With more than 90% of the population being non-vegetarian, consumption of chicken is one of the highest in the Northeastern region (Barbaruah et al. 2005). It offers a readily available and reasonably priced source of protein and is closely related to the population's nutritional health. In Manipur, the state's demand for poultry products exceeds availability. Consequently, poultry farming has expanded steadily in Manipur district to meet the growing demand. Recently, Manipur has seen a dispersion of small-scale broiler plants. Its related activities employed educated individuals, making it an increasing agricultural sector. The business sector has taken advantage of this circumstance in order to benefit financially. West Bengal and Assam are used to Manipur's requirement for day-old chicks and ready-made chicken feed. Strong evidence has been shown by Indian empirical studies that livestock rearing significantly improves income and employment equity and can aid in the eradication of rural poverty. (Birthal & Ali, 2005). Since livestock assets are not as tightly governed by property rights as land, they can be easily developed to create wealth and consistent cash flows and purchased with comparatively little initial investment. (Birthal, 2022). In the early 2000s, Manipur's poultry industry was modest but growing, limited by higher prices and feed shortages but with high demand and promising prospects if infrastructure and inputs were improved (Barbaruah et al., 2005). In low-income, food-deficit countries, family poultry production is still crucial because it provides high-quality protein, supports food security, lowers poverty, encourages sustainable resource use, builds jobs for marginalised groups with little input, and generates income for small farmers, particularly women (Guèye, 2002). To increase their incomes, landless labourers and marginal farmers raise a variety of livestock subtypes. (Das et al. 2017). This study, it focuses on the poultry industry's current size, regional distribution, and production patterns in rural areas. It includes determining supply and demand trends, production system types (backyard, layer, and broiler), and regional variations in poultry activities. It also promotes the sustainable growth of Manipur's poultry industry while substantially reinforcing the long-term economic sustainability, equity, and resilience of rural communities.

II. Literature Review

Sarker *et.al* (1999) study evaluates the profitability and technical, allocative, and economic efficiency of commercial poultry farms in Gazipur district, based on data from 30 farms during 1995–96. Using descriptive statistics and the stochastic production frontier method, the analysis reveals that poultry farming is a profitable venture, with larger farms yielding higher profitability than smaller ones. The average technical efficiency of the farms was found to be 0.92, indicating high efficiency in converting inputs into output. However, allocative efficiency stood at 0.69, and economic efficiency at 0.62, suggesting room for improvement in resource allocation and cost-effectiveness. The findings imply that poultry farms can enhance their profitability by optimising the use of existing resources and improving efficiency levels. Key challenges reported by farmers included limited availability of quality feed and chicks, insufficient vaccine supply, and high feed prices.

Kumar *et al. al* (2008) provide a comprehensive look at the far-reaching impact of the 2007 avian flu outbreak. It estimates a loss of 14% of the total livestock output value in Manipur, underscoring the severity of the crisis. In efforts to contain the outbreak, more than 300,000 birds were culled and 24 tonnes of poultry feed destroyed. The hardest hit were poultry producers and input suppliers, those most dependent on poultry for their livelihoods, while traders and retailers faced relatively lesser losses. The study highlights the urgent need for fair and timely compensation, especially in less-developed regions like the Northeast. It recommends tailoring compensation to local realities, factoring in flock size, family income, and dependence on poultry.

Kalitas et al (2015) explores poultry farming is quickly gaining ground in Manipur, with many educated youths turning to backyard and small-scale broiler farming for livelihood. Despite this growth, local poultry production still falls short of the state's demand, leading to dependence on suppliers from Assam and West Bengal. This gap has allowed private businesses to dominate and profit from the sector. While new breeds like Giriraja and Vanaraja are becoming popular, several challenges persist. Studies show that poultry farming in the region is still relatively new, with most farmers having less than six years of experience. On

average, farmers in Manipur earn around ₹51,600 annually from poultry, compared to over ₹71,000 in neighbouring Assam. Educational levels among poultry farmers vary, with More educated individuals engaged in areas with fewer job alternatives. Common hurdles include high input costs, electricity issues, market price fluctuations, and limited access to credit. Frequent bandhs and blockades further disrupt the fragile poultry supply chain.

Panigrahy *et al.* (2016) highlight the growing importance of broiler farming in India, driven by strong corporate involvement and supportive government policies. These combined efforts have created a favourable environment for the sector's expansion, particularly benefiting rural communities by offering employment and livelihood opportunities. With over 5 million people engaged in the poultry industry, either directly or indirectly, the sector plays a vital role in rural economic development. Advancements in broiler farming such as improved chick breeds, modern equipment, vaccines, and better management practices

have significantly reduced disease and mortality rates. Training programs offered by various institutions are equipping new entrepreneurs with essential skills, ensuring more sustainable and efficient operations. Additionally, both Central and State Governments, along with poultry corporations, are actively investing in infrastructure, attracting more participants to the sector. Roy (2017) examines the cost structure and profitability of poultry farming in West Bengal during 2015–16, focusing on both broiler and layer farming. Based on data collected from 120 poultry farmers through purposive sampling, the analysis reveals that poultry farming is a profitable venture in the region. In layer farming, fixed costs were minimal just 0.66% of the total cost for every 1,000 birds per batch. The total return from 1,000 birds, including the sale of eggs, culled birds, and manure, was

₹4,31,590, with egg sales making up the bulk (91%) of this income. The net annual return per 1,000 birds was ₹82,946, translating to a monthly profit of around ₹6,912. The study also used Garrett's ranking technique to identify key challenges faced by poultry farmers in both production and marketing. These findings highlight the economic viability of poultry farming while emphasising the need to address barriers for further growth.

Barcho & Nechaev (2018) examine classical and modern economic theories to underscore the vital role of investment in promoting economic growth, specifically within the poultry industry. Referencing Keynesian theory, it highlights the multiplier effect and the need to boost demand during capital shortages. The Harrod model links national income growth to capital accumulation and output efficiency. Economic dynamics theory supports that greater accumulation accelerates income growth. Modern theory shifts focus from mere production increases to enhancing competitiveness through technological advancements and investment. The paper also emphasises optimising fixed asset use and improving investment structures. These theories are applied to the Russian poultry sector using Rosstat (2016) data and Akon's analytical tools, and investment is key to sustainable growth in poultry farming.

Dinani *et al.* (2019) provide a comprehensive analysis of the challenges and opportunities in India's poultry feed sector, highlighting the industry's rapid growth at approximately 8% annually, far surpassing the 1.8% growth of the broader agricultural sector. This expansion has increased the demand for poultry feed, which accounts for about 58% of the country's total animal feed market. Traditionally, maize and soybean meal dominate poultry diets, but rising human and livestock populations have led to shortages and increased feed costs. The review emphasises the urgent need to explore unconventional, locally available feedstuffs as viable alternatives. These substitutes should be assessed for cost-effectiveness, regional availability, and nutritional value. Incorporating such feed resources is seen as a key strategy to lower production costs and address supply challenges.

Rajbongshi *et al.* (2020) explore how small-scale poultry rearing can uplift the economic conditions of rural and tribal farmers. It highlights that backyard poultry farming, requiring minimal investment, offers a practical and accessible income source for families with limited resources. One case study cited a progressive farmer earning an impressive annual net profit of ₹1,17,600, demonstrating its financial potential. The study also points out that rural and tribal regions have long been overlooked in poultry

development efforts, leading to missed opportunities for economic advancement. By promoting backyard poultry, the paper advocates for self-employment as a sustainable solution to unemployment and underemployment in remote areas. The low-cost, low-risk nature of this practice makes it especially suitable for economically vulnerable tribal communities.

III. Objective of the Research

This research focuses on Poultry farming in Manipur. It aims to analyse key economic aspects such as cost and profit analysis, employment and income generation, market structure, economic losses and the efficient use of resources for productive outcomes.

The details include: -

1. To examine the Cost and Profit in setting up a Farm
2. To know the Employment and Income Generation
3. Understanding its Market Structure and Economic Losses
4. Analysing the Resource Efficiency and Productivity of this type of farming

IV. Research Methodology

1. Research Approach

This study adopts a mixed-method research approach, incorporating **quantitative** methodologies to gain a comprehensive understanding of the influence of poultry farming. The quantitative aspect involves the collection and statistical analysis related to production, income, employment generation, and efficiency among poultry farmers. Simultaneously, the qualitative approach focuses on capturing the lived experiences, perceptions, and socio-economic impacts of poultry farming through interviews, case studies, and participatory rural appraisal techniques.

2. Research Design

A **descriptive research design** on poultry farming systematically explores existing practices, challenges, and socio-economic characteristics of farmers without altering variables. It aims to provide detailed insights into production trends, income levels, resource use, and constraints, using surveys, interviews, and observations to capture a clear picture of the current farming scenario.

3. Data Collection Methods

The main method of data collection will be a **well-structured and organised questionnaire**, administered directly to selected participants through face-to-face interviews. These interviews will enable deeper engagement with respondents, allowing the researcher to explore emerging themes and clarify unexpected findings that may arise from the questionnaire responses. It mainly focuses on the manager of the farm in the perspective district.

4. Data Analysis Technique

The data is analysed using data collection interview methods and analysis presented with the help of Tables.

V. Finding and Discussion

1. AN ANALYSIS OF COST AND PROFIT:

According to *Table 1*, we found a clear stratification in capital investment among the five poultry farm, illustrating diverse entry points and operational strategies within the sector. Farm 1 and 2, with an initial investment of around ₹50,000, represent low-capital, small-scale operations, often suited to new or resource-constrained farmers. These setups likely operate from home-based or backyard systems, requiring minimal infrastructure, and offer a low-risk entry point into the poultry business. While their financial exposure is limited, so too are their potential returns, making these ventures more suitable for supplementary income rather than a full-time livelihood. On the other end, Farm 3 and 4 have invested over ₹5 lakh, indicating a transition to commercial-scale farming. These ventures are more complex and infrastructure-intensive, potentially involving mechanised feeding systems, controlled housing, and larger workforce involvement. The higher investment opens up greater earning potential, but also brings higher risks, particularly in the face of disease outbreaks, price volatility, and fluctuating input costs. Farm 5, positioned in the mid-investment range (₹2–5 lakh), represents a balanced strategy investing enough to scale meaningfully, but not so much as to become overly exposed to financial risk. This model may appeal to farmers seeking gradual expansion or those aiming for a more sustainable and manageable business in the medium term. Despite these differences in investment, one striking commonality is that all farms report a similar revenue range, indicating that returns may plateau without improvements in efficiency, value addition, or access to premium markets.

The uniform “moderate” rating for profit margins further supports the view that while poultry farming is stable and viable, it currently lacks the profitability required to significantly uplift income levels without strategic interventions. Notably, feed cost scales with farm size, affirming feed as the primary operational expense. This suggests that future improvements in feed efficiency, cost control, or even local feed production could dramatically influence profit margins, particularly for larger farms. With 20–30% profit margins reported by most, the sector demonstrates a reasonably healthy baseline, especially when coupled with stable demand and proper disease management. The uniform cost per chick across all farms also indicates the presence of a centralised or standardised supply chain, likely influenced by regional hatcheries or bulk suppliers.

TABLE 1: Cost and Profit

	Question	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5
1	What is the average initial investment for setting up your poultry farm? (Rupees ₹)	50000-1 lakh	50000-1lakh	> 5 lakhs	> 5 lakhs	2-5 lakh
2	What is your average monthly expenditure on poultry feed? (Rupees ₹)	10,000-10,000-25000	10,000-25000	>1 lakh	50,000-1 lakh	50,000-1 lakh
3	What is your revenue from poultry farming per batch? (Rupees ₹)	1-2 lakh	1-2 lakh	1-2 lakh	1-2 lakh	1-2 lakh
4	How would you rate your profit margin?	moderate	moderate	moderate	moderate	moderate
5	What is the average profit margin per production cycle? (%)	20%-30%	20%-30%	10%-20%	20%-30%	20%-30%
6	What is the average cost per chick? (Rupees ₹)	50	50	50	50	50

2. EMPLOYMENT AND INCOME GENERATION:

From the given *Table 2*, its findings show a distinct profile of poultry farming in the region small-scale, family-managed enterprises that function with minimal hired labour. Each farm employs between one to three people, suggesting that poultry farming is currently more of a household livelihood activity than a commercial employment generator. Despite this limited workforce, farmers report a moderate level of livelihood security, indicating that poultry farming does provide a stable source of income, particularly suitable for sustaining a middle-class standard of living. However, a concerning insight is that none of the farms have received support from government or NGO programs. This absence of external aid points to a critical policy gap either in outreach, accessibility, or the availability of support schemes. Without institutional backing in the form of training, subsidies, veterinary services, or infrastructure, the sector may struggle to grow beyond its current small-scale form, limiting its contribution to rural development. Encouragingly, all farmers agree that poultry farming can reduce youth unemployment. This collective belief reflects the sector's untapped potential to absorb young labour, especially in rural areas where job opportunities are scarce. If scaled appropriately, with access to finance, training, and markets, poultry farming could evolve into a vibrant employment-generating industry. Furthermore, all respondents strongly support market regulation, seeing it as a pathway to better income and price stability.

TABLE 2: - EMPLOYMENT AND INCOME GENERATION

	Question	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5
1	How many people are employed in your farm?	1-3 people	1-3 people	1-3 people	1-3 people	1-3 persons
2	How secure is your livelihood due to poultry farming?	Neutral	Neutral	Secure	Secure	Secure
3	Have you received government/NGO support?	Never	Never	Never	Never	Never
4	Can poultry farming reduce youth unemployment?	Agree	Agree	Agree	Agree	Agree
5	Regulating the poultry market would improve income	Strongly	Strongly	Strongly	Strongly	Strongly

3. MARKET STRUCTURE AND ECONOMIC LOSSES:

From the study of the *Table 3*, the data reveals key insights into the market dynamics and economic vulnerabilities faced by poultry farmers. Farm 1 and 2 benefit from collective pricing mechanisms, likely through cooperatives or local farmer groups, giving them a degree of control over what they earn for their products. This contrasts sharply with Farm 3 to 5, who rely on open market forces, leaving them exposed to price fluctuations and reduced predictability in profits. This divide illustrates a structural gap between organized and unorganized market actors, with the latter bearing more financial uncertainty. All farms primarily sell in local markets, which, while accessible and familiar, limit their ability to expand revenue through diversified or premium channels. Despite these limitations, farmers rate their market access as "good," possibly due to stable local demand and proximity. However, they all face market instability, intensified by factors such as inflation, changing consumer behaviour, and lack of regulation. Remarkably, summer is identified as the season of lowest demand, likely due to reduced meat consumption and increased operational challenges like higher chick mortality or transportation difficulties. All farm report that disease outbreaks, particularly during flu seasons, result in financial losses exceeding ₹1 lakh,

regardless of the farm's scale. While flu-related losses are reported as occasional, their impact is severe and exposes the sector's fragility. Together, these findings stress the urgent need for better market regulation, disease control infrastructure, and risk mitigation strategies to safeguard farmer incomes and ensure sector resilience.

Question	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5
Who decides the selling price?	Farmer collectives	Farmer collectives	Market forces	Market forces	Market forces
Where do you sell most of your poultry products	Local market	Local market	Local market	Local market	Local market
How do you rate current market access?	Good	Good	Good	Good	Good
Challenges in selling poultry products	Price fluctuation, socio-economic crisis	Price fluctuation, socio-economic crisis	Price fluctuation, socio-economic crisis	Price fluctuation, socio-economic crisis	Price fluctuation, socio-economic crisis

In which season is demand lowest?	Summer	Summer	Summer	Summer	Summer
Factor contribute most to financial loss	Market fluctuation & disease outbreak	Market fluctuation & disease outbreak	Market fluctuation & disease outbreak	Market fluctuation & disease outbreak	Market fluctuation & disease outbreak
Financial loss during disease outbreaks	More than 1 lakh	More than 1 lakh	More than 1 lakh	More than 1 lakh	More than 1 lakh
Frequency of market losses due to flu	Occasionally	Occasionally	Occasionally	Occasionally	Occasionally

4. RESOURCE EFFICIENCY AND PRODUCTIVITY:

From Table 4, all five farms rely entirely on external sources for essential inputs like chicks and feed, mostly imported from neighbouring states such as Assam, Bihar, and Silchar. While farmers rate the quality of feed as good, this heavy dependence highlights a fragile supply chain that is vulnerable to price hikes, transport disruptions, and shortages factors that directly affect operational costs and overall farm efficiency. The exclusive focus on broiler chickens reflects a drive for quick returns, as broilers grow fast and generate revenue within short cycles. However, this lack of diversity increases the sector's biological risk and makes farmers more vulnerable to disease outbreaks and market saturation. Diversification into

layers or indigenous breeds could not only improve ecological balance but also enhance economic sustainability by spreading risk and meeting varied market demands. Batch sizes vary, with Farm 4 and 5 operating at larger scales, potentially benefiting from economies of scale, yet also facing higher risks if resources are mismanaged. The survival rate of 50–70% reveals significant chick mortality, which undermines both productivity and profitability. Interestingly, all farms report using scientific methods, yet none have received formal training, indicating a gap between awareness and technical capacity.

	Question	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5
1	Dependence on outside supplies	Entirely depend	Entirely depend	Entirely depend	Entirely depend	Entirely depend
2	What type of poultry do you raise?	Broiler	Broiler	Broiler	Broiler	Broiler
3	How many chicks are usually reared per batch?	1,000-2000 chicks	1,000-2000 chicks	1,000-2000 chicks	2000-3000 chicks	2000-3000 chicks
4	Where do you obtain poultry feed?	Imported from Assam, Bihar, Silchar	Imported from Bihar, Silchar, Assam	Imported from Bihar, Silchar, Assam	Imported from Bihar, Silchar, Assam	Imported from Bihar, Silchar, Assam
5	Feed quality rating	Good	Good	Good	Good	Good
6	Chicks reared per batch	1,000-2000 chicks	1,000-2000 chicks	1,000-2000 chicks	2000-3000 chicks	2000-3000 chicks
7	Chick-to-harvest survival rate (%)	50-70%	50-70%	50-70%	50-70%	50-70%

8	Percentage of imported chicks (%)	>50%	>50%	>50%	>50%	>50%
9	Why depend on other states for chicks?	Low quality of eggs and lack of hatcheries	Low quality of eggs and lack of hatcheries	Lack of hatcheries	Lack of hatcheries	Lack of hatcheries
10	Most imported poultry items	All item Imported	All item Imported	All item Imported	All item Imported	All item Imported
11	Scientific methods used	Yes	Yes	Yes	Yes	Yes

12	Frequency of training received	Never	Never	Never	Never	Never
13	Support needed to improve productivity	Better feed quality, veterinary services, market access, training	Better feed quality, veterinary services, market access, training	Better feed quality, veterinary services, market access, training	Better feed quality, veterinary services, market access, training	Better feed quality, veterinary services, market access, training

VI. Limitation

This study provides insights into poultry farming practices in the region but has certain limitations. Historically, fish cultivation and consumption dominate in the valleys while poultry farming and demand are slowly growing. As a result, employment and livelihood patterns are more centred toward fishing than poultry farming. Furthermore, farmers rely too much on feed and chicks from outside sources are vulnerable to changes in prices and supply interruptions, which reduces their ability to manage output. Local hatcheries remain underutilised, and concerns about egg quality continue to drive reliance on imports. Moreover, the finding may not fully represent the diversity of the industry because it is based on data from a small number of family-run, primarily small-to medium-sized farms. Finally, the focus on broiler farming excludes other types like layers or indigenous breeds.

VII. Conclusion

Poultry farming in the region shows promising potential but is marked by a mix of diverse investment levels and common operational challenges. The sector ranges from low-capital, family-run backyard farms to larger, commercial-scale ventures. Regardless of scale, all farms report moderate profits and a heavy dependence on external inputs especially chicks and feed sourced from outside the state. This reliance exposes farmers to price volatility and supply disruptions and limits their control over key production factors. An observation from the survey is that most chicks are still imported, possibly due to poor hatchery utilisation or concerns over the quality of locally produced eggs.

The majority of chicken farms in the area are tiny, family-run businesses with little assistance from NGOs or the government. Seasonal demand swings and illness outbreaks further disrupt revenue, and a lack of access to formal training and technical knowledge frequently results in inadequacies like high chick mortality. This accentuates the necessity of formal support, such as education, veterinary care, funding, and better facilities. To lower the danger of disease and maintain productivity, farms must be kept clean, located properly, and trash managed systematically. Despite the risks involved, raising chickens is nevertheless a significant source of revenue, helps ensure local food security, and promotes economic growth.

In the past, the region heavily relied on neighbouring states for poultry products like eggs and live birds. However, with population growth and rising consumer demand, many entrepreneurs began establishing small-scale poultry farms locally. This shift helped reduce dependency on imports and strengthened the state's self-sufficiency in poultry production. Today, a significant portion of poultry products is produced within the state, reflecting the sector's gradual transformation. With continued focus on farm hygiene, hatchery development, formal training, and market access, poultry farming has the potential to evolve into a more sustainable, profitable, and resilient industry.

VIII. References

1. Barbaruah, M. I., N. Saikia, and M. Islam. 2005. *Brief Report on Commercial Poultry Farming in Northeastern Region of India*. Fellowship for Agri-Resource Management and

Entrepreneurship Research (FARMER).

2. Barcho, M., and V. Nechaev. 2018. "Investments and Economic Growth in Poultry Farming." *MATEC Web of Conferences* 212: 07009. <https://doi.org/10.1051/MATECCONF/201821207009>.
3. Birthal, P. S. 2022. *Livestock, Agricultural Growth and Poverty Alleviation*. Research and Policy Series No. 7/2022. Mumbai: NABARD.
4. Das, H., M. A. Ali, L. I. Devi, P. Kirthika, J. M. R. Gali, and P. Behera. 2017. "Studies on Some Important Enzymes of Non-Descript Sheep of Assam." *Journal of Livestock Science* 8: 59–62.
5. Dinani, O. P., P. K. Tyagi, A. B. Mandal, S. Tiwari, S. Mishra, and K. Sharma. 2019. "Recent Unconventional Feedstuffs for Economic Poultry Production in India: A Review." *Journal of Entomology and Zoology Studies* 7 (5): 1003–1008. <https://www.entomoljournal.com/archives/?year=2019&vol=7&issue=5&ArticleId=5804>.
6. Guèye, E. F. 2002. "Employment and Income Generation through Family Poultry in Low-Income Food-Deficit Countries." *World's Poultry Science Journal* 58: 541–57. <https://doi.org/10.1079/WPS20020039>.
7. Kalita, K. P., M. N. Ray, B. Devi, M. Bora, and S. Rahman. 2015. "Constraints Perceived by the Chicken Farmers in Manipur." *Open Access Policy* 44 (5): 326–29.
8. Kumar, A., S. Staal, K. Elumalai, and D. K. Singh. 2007. "Livestock Sector in North-Eastern Region of India: An Appraisal of Performance." *Agricultural Economics Research Review* 20: 255–72.
9. Kumar, B. Ganesh, P. K. Joshi, Kamal Kumar Datta, and S. B. Singh. 2008. "An Assessment of Economic Losses Due to Avian Flu in Manipur State." *Agricultural Economics Research Review* 21 (1): 37–47.
10. Panigrahy, K. K., S. Panda, D. Behera, K. Behera, and S. S. Sahoo. 2016. "Strategies to Economic Analysis in Broiler." *Open Access Policy*.
11. Rajbongshi, P., K. D. Nath, D. Borah, R. Saud, and N. Borah. 2020. "Livelihood Development through Backyard Poultry Farming." *Journal of Entomology and Zoology Studies* 8 (4): 724–25. <https://www.entomoljournal.com/archives/?year=2020&vol=8&issue=4&ArticleId=7199>.
12. Roy, A. 2017. "Economic and Profitability Potential Assessment of Poultry Farming in West Bengal." *Indian Journal of Poultry Science* 52 (3): 343–46. <https://doi.org/10.5958/0974-8180.2017.00058.7>.
13. Sarker, S. C., J. Abedin, and S. M. F. Islam. 1999. "Performance of Commercial Poultry Farms: A Profitability and Efficiency Analysis." *Bangladesh Journal of Agricultural Economics* 22 (1): 1–13. <https://ideas.repec.org/a/ags/bdbjaf/202091.html>.
14. Singh, M. N., C. Sonia, B. Sailo, C. Tania, A. Sen, C. Rajiv, M. Vikramjit, and A. Thakoor. 2023. "Comparative Study of the Performance of Giriraja and Indigenous Poultry Birds under Backyard Farming System in Manipur, India." *Indian Journal of Hill Farming* 36 (2): 112–14. <https://doi.org/10.56678/iahf-2023.36.02.13>.
15. Sonanla, N. K., M. Rajakumar, T. Umamaheswari, N. V. Sujathkumar, S. Athithan, and Wanglar Chimwar. 2025. "Assessment of Fish Demand and Consumption Behaviour in Manipur, India." *Pakistan Journal of Zoology* 57 (5): 2415–20. <https://dx.doi.org/10.17582/journal.pjz/20231007090959>.