**A STUDY ON SOCIO ECONOMIC ASPECTS AND CONSTRAINTS FACED BY LAYER BIRD FARM OWNER IN SAMASTIPUR DISTRICT OF BIHAR**

**ABSTRACT**

Layer bird farm owners in Bihar played a significant role in the development of the state's poultry sector by adopting scientific management practices to enhance egg production and operating farms with notable efficiency. The majority of these farms were small to medium in scale and faced several challenges, including high feed costs and inadequate access to veterinary services. Despite such constraints, farm owners made considerable contributions to rural livelihoods and the local egg supply. The present study, titled “A Study on Socio-Economic Aspects and Constraints Faced by Layer Bird Farm Owners in Samastipur District of Bihar”, was conducted in Tajpur block, which was purposively selected for its high potential in layer bird rearing. A random sample comprising five percent of villages and ten percent of respondents from those villages was selected. The study revealed that most farm owners were young, male, and lived in nuclear families, with 61% having attained a basic level of education. A significant portion earned less than ₹1 lakh annually. The major marketing constraints identified were high price fluctuations, seasonal demand, perishability of eggs, high marketing costs, and lack of grading facilities at the farm level, with price fluctuation ranked as the most critical challenge based on the highest Garrett Mean Score.

**Keyword:**Layer farming, Socio-economic profile, Marketing constraints, Price fluctuation

**INTRODUCTION**

Layer birds, primarily hens selectively bred for high-efficiency egg production, played a vital role in the poultry industry. Raised under scientifically managed conditions, these birds were optimized for productivity and egg quality, typically beginning egg production at 18 to 20 weeks of age and continuing for up to 72 weeks or longer. Farm owners who raised layer birds typically operated small- to medium-sized farms, employing scientific management practices to maximize egg production. Despite facing challenges such as high feed costs, price fluctuations, and limited veterinary services, they significantly contributed to the local egg supply. The eggs produced by layer birds served as a primary source of protein and were highly sought after in global markets due to their consistent quality, size, and nutritional value. The quality of eggs depended on various factors, including the birds' age, diet, health, and management practices. While egg production naturally declined as the birds aged, effective management could sustain productivity throughout the laying cycle. These eggs were widely consumed, serving as a staple food in many households and providing significant economic value, especially in regions where egg production was a major industry. However, the industry faced several challenges, such as the perishability of eggs, high marketing costs, and price fluctuations, which impacted profitability. These constraints underscored the complexities of egg production and marketing, highlighting the need for continuous improvement in farm management and the broader poultry sector to ensure sustained productivity and profitability.

**RESEARCH METHODOLOGY**

The methodology adopted for the present study was a combination of purposive and random sampling techniques. The district of Samastipur in Bihar was purposively selected to minimize logistical challenges and time constraints for the investigator. Among the blocks within the district, Tajpur block was selected based on the predominance of respondents engaged in layer bird rearing. A comprehensive list of villages in the selected block was prepared, and five percent of villages with a high concentration of layer bird rearers were randomly selected. From these villages, a list of respondents engaged in egg production was compiled and categorized into three groups based on their flock size: Small (less than 200 eggs), Medium (200–500 eggs), and Large (more than 500 eggs). A total of 100 respondents were randomly selected using proportionate random sampling across these categories. In addition, 10 wholesalers, 5 retailers, 5 poultry farm owners, and 5 consumers were selected to examine marketing costs, margins, price spread, and marketing efficiency. Primary data were collected using a well-structured and pre-tested schedule through direct personal interviews. Secondary data were sourced from relevant books, journals, official reports, and records from district and block headquarters. The data pertained to the agricultural year 2024–2025 and were analyzed using appropriate statistical tools.

**Analytical Tools**

1. **Chi-Square:**$χ2 = \sum\_{}^{}\left(Oi – Ei\right)^{2}/Ei$
2. **Garrett Ranking**:100 (Rij-0.5) /Nj

**RESULTS AND DISCUSSION**

**Table 1:**Distribution of farmer according to farm size

|  |  |  |
| --- | --- | --- |
| **S. No.** | **Categories** | **Respondent** |
| **Number** | **Percentage (%)** |
| **1.** | **Small (Less than 200 eggs)** | 59 | 59.00 |
| **2.** | **Medium (200-500 eggs)** | 32 | 32.00 |
| **3.** | **Large (more than 500 eggs)** | 09 | 09.00 |
| **Total** | **100** | **100.00** |

**Table 1:**The data presented in the table illustrated the distribution of respondents based on the scale of egg production. It was observed that a majority of the respondents, accounting for 59 percent, belonged to the small category, producing less than 200 eggs. This indicated that small-scale poultry farming was the most prevalent among the surveyed individuals. Medium-scale producers, who produced between 200 to 500 eggs, constituted 32 percent of the total respondents, representing a significant portion engaged in moderately scaled operations. In contrast, only 9 percent of the respondents were engaged in large-scale egg production, defined as more than 500 eggs, suggesting limited prevalence of commercial-scale poultry enterprises among the respondents. The data revealed a concentration of poultry farming activities at the lower end of the production spectrum, which might be attributed to limited resources, infrastructure, or access to markets. Overall, the distribution reflected a dominance of small and medium-scale poultry producers.

**Table 2:**Distributionofrespondentsbasedontheirage.

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Categories** | **RespondentNumber** | **Respondents** |
| **Small** | **Medium** | **Large** | **Percentage (%)** |
| **1.** | **Young age group****(20-35 years)** | 59 | 36 | 19 | 4 | 59.00 |
| **2.** | **Middle age group****(36-50 years)** | 33 | 19 | 11 | 3 | 33.00 |
| **3.** | **Old age group****(Above 50 years)** | 8 | 4 | 2 | 2 | 08.00 |
|  | **Total** | **100** | **59** | **32** | **9** | **100.00** |
| **Chi Square** | **20.37** |

**Table 2:**The table depicted the age-wise distribution of respondents engaged in egg production across different scales—small, medium, and large. It was evident that the young age group (20–35 years) dominated the respondent base, comprising 59 percent of the total, with 36 in the small, 19 in the medium, and 4 in the large production category. The middle age group (36–50 years) represented 33 percent of the respondents, including 19 small, 11 medium, and 3 large-scale producers. The old age group (above 50 years) accounted for only 8 percent, with 4 small, 2 medium, and 2 large producers. This distribution suggested that younger individuals were more actively involved in poultry farming, particularly at smaller and medium scales, possibly due to higher adaptability and willingness to engage in agri-entrepreneurship. The calculated chi-square value of 20.37 indicated a statistically significant association between age group and scale of egg production, reflecting varied involvement across age categories.

**Table 3:**DistributionofrespondentsbasedontheirEducation

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Categories** | **Respondents Number** | **Respondents** |
| **Small** | **Medium** | **Large** | **Percentage (%)** |
| **1** | **Primary School** | 18 | 14 | 4 | 0 | 18.00 |
| **2** | **Junior High School** | 14 | 11 | 3 | 0 | 14.00 |
| **3** | **High School** | 13 | 7 | 5 | 1 | 13.00 |
| **4** | **Intermediate** | 10 | 5 | 4 | 1 | 10.00 |
| **5** | **Graduate** | 5 | 0 | 2 | 3 | 05.00 |
| **A** | **Total Literate** | 61 | 38 | 18 | 5 | 61.00 |
| **B** | **Illiterate** | 39 | 21 | 14 | 4 | 39.00 |
| **Total** | **100** | **59** | **32** | **9** | **100.00** |
| **Chi Square** | **32.56** |

**Table 3:**The table highlighted the educational background of respondents involved in egg production, segmented by the scale of production. Among the literate respondents, who constituted 61 percent of the total, the majority were educated up to the primary (18%) and junior high school (14%) levels, followed by high school (13%), intermediate (10%), and graduate (5%). Small-scale producers were predominantly found across all education levels, particularly among those with primary and junior high school education. Notably, graduate respondents were more concentrated in the large-scale production category, indicating a possible link between higher education and greater entrepreneurial engagement. Illiterate respondents accounted for 39 percent of the sample, with 21 in the small, 14 in the medium, and 4 in the large category. The chi-square value of 32.56 suggested a statistically significant association between educational level and the scale of egg production, reflecting that education played an influential role in determining the extent of involvement and scale of operations.

**Table 4:**Distributionofrespondentsaccordingtotheirgender.

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Category** | **Respondents****number** | **Respondents** |
| **Small** | **Medium** | **Large** | **Percentage** **(%)** |
| **1** | **Male** | 84 | 50 | 28 | 6 | 84.00 |
| **2** | **Female** | 16 | 9 | 4 | 3 | 16.00 |
| **Total** | **100** | **59** | **32** | **9** | **100.00** |
| **Chi Square** | **3.54** |

**Table 4:**The table depicted the gender-wise distribution of respondents involved in egg production, categorized by scale. Out of the total 100 respondents, 84 percent were male, indicating a predominant male participation in poultry farming. Among these, 50 were engaged in small-scale production, 28 in medium, and 6 in large-scale operations. Female respondents constituted only 16 percent of the total, with 9 involved in small-scale, 4 in medium, and notably, 3 in large-scale production. While male dominance was evident across all production scales, a relatively higher proportion of females were involved in large-scale operations compared to their overall representation, which may suggest increased involvement of women in entrepreneurial poultry ventures at higher scales. However, the calculated chi-square value of 3.54 indicated a statistically non-significant association between gender and scale of production, implying that gender did not have a strong influence on the scale of egg production among the respondents in this study.

**Table 5:**Distribution of respondents according to their Family type.

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Category** | **Respondents****Number** | **Respondents** |
| **Small** | **Medium** | **Large** | **Percentage (%)** |
| **1** | **Nuclear** | 85 | 53 | 27 | 5 | 85.00 |
| **2** | **Joint** | 15 | 6 | 5 | 4 | 15.00 |
| **Total** | **100** | **59** | **32** | **9** | **100.00** |
| **Chi Square** | **5.53** |

**Table 5:**The table presented the distribution of respondents based on their family type—nuclear or joint—and the corresponding scale of egg production. It was observed that a substantial majority, 85 percent of the respondents, belonged to nuclear families. Among them, 53 were engaged in small-scale production, 27 in medium, and 5 in large-scale operations. In contrast, only 15 percent of respondents came from joint families, with 6 involved in small-scale, 5 in medium-scale, and notably, 4 in large-scale egg production. Although the overall representation of joint families was low, a relatively higher proportion of them were involved in large-scale production compared to nuclear families, indicating a possible advantage of shared resources or collective efforts within joint family structures. The chi-square value of 5.53 suggested a statistically low but notable level of association between family type and scale of egg production, implying that family structure may have some influence on the scale of poultry enterprise involvement.

**Table 6:**Distribution of respondents according to their Annual Income.

|  |
| --- |
| Annual Income Level Wise Distribution of the Sample Respondents (Rupee/Year) |
| Sr. No. | **Income in Rupee/Year** | **Respondent Number** | **Small**  | **Medium**  | **Large**  | **Percentage****(%)** |
| 1 | <1,00,000 Rupee | 51 | 37 | 14 | 0 | 51.00 |
| 2 | 1,00,001-2,50,000 Rupee | 23 | 13 | 9 | 1 | 23.00 |
| 3 | 2,50,001-5,00,000 Rupee | 19 | 9 | 7 | 3 | 19.00 |
| 4 | >5,00,001Rupee | 07 | 0 | 2 | 5 | 07.00 |
| Total | **100** | **59** | **32** | **9** | **100.00** |
| Chi Square | **20.87** |

**Table 6**: The table shows the annual income distribution of respondents categorized by scale of egg production. It was observed that over half of the respondents (51%) had an annual income of less than ₹1,00,000, with the majority (37) engaged in small-scale production and none in the large-scale category. Respondents earning between ₹1,00,001 and ₹2,50,000 formed 23 percent of the sample, mostly involved in small and medium-scale production, with only one respondent in large-scale. Nineteen percent of the respondents had an income between ₹2,50,001 and ₹5,00,000, showing increased participation in medium and large-scale operations. Only 7 percent of respondents earned more than ₹5,00,001 annually, with the majority (5 out of 7) involved in large-scale egg production. This distribution indicated a positive correlation between higher income levels and larger scale of production. The chi-square value of 20.87 reflected a statistically significant relationship between income level and scale of egg production, highlighting income as an influential factor.

**Table 7:**Constraints faced by producer in marketing of eggs.

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No** | **Particulars** | **GarrettMeanScore** | **Rank** |
| 1. | Highpricefluctuation | 56.53 | I |
| 2. | Exploitationbymiddlemen | 55.24 | II |
| 3. | Seasonalnatureofconsumption | 48.38 | III |
| 4. | Perishabilityorlessshelf-lifeoftheproduct | 39.83 | IV |

**Table 7:**The table highlights the major constraints encountered by respondents in egg marketing, ranked using the Garrett mean score method. Among the identified issues, high price fluctuation emerged as the most significant constraint with the highest Garrett mean score of 56.53, indicating frequent and unpredictable changes in market prices that negatively affected the income stability of producers. This was followed by exploitation by middlemen, ranked second with a score of 55.24, suggesting that intermediaries played a dominant role in pricing and profit margins, often to the disadvantage of producers. The seasonal nature of consumption, with a mean score of 48.38, was ranked third, indicating irregular demand patterns that influenced sales volume. Lastly, perishability or limited shelf-life of eggs was ranked fourth with a score of 39.83, highlighting the challenge of product spoilage if not marketed promptly. Overall, the findings reflected key marketing obstacles that need attention to ensure better income realization for egg producers.

**Table 8:**Constraints faced by intermediaries in marketing of eggs.

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No.** | **Particulars** | **GarrettMean Score** | **Rank** |
| 1. | Highpricefluctuation | 62.16 | I |
| 2. | Seasonalnatureofconsumption | 60 | II |
| 3. | Perishabilityorlessshelf-lifeoftheproduct | 50.5 | III |
| 4. | Highcostofmarketing | 41.5 | IV |
| 5. | Lackofgradingatfarmlevel | 35.83 | V |

**Table 8:**The table presents the major marketing constraints faced by respondents in the egg industry, analyzed through the Garrett ranking technique. High price fluctuation emerged as the most critical issue with the highest mean score of 62.16, indicating that frequent and unpredictable price changes significantly affected producers’ income stability and market confidence. The seasonal nature of consumption ranked second with a score of 60.00, reflecting inconsistent demand patterns throughout the year that hampered steady sales. Perishability or the short shelf-life of eggs was identified as the third major constraint (50.50), pointing to challenges in storage and timely marketing. High marketing costs, ranked fourth at 41.50, further added to the financial burden of producers. Lastly, the lack of grading at the farm level, with a score of 35.83, was considered the least severe but still relevant, suggesting missed opportunities for value addition and better price realization. These findings underline the need for targeted interventions to improve market efficiency.

**CONCLUSION**

In conclusion, the study on the socio-economic aspects and constraints faced by layer bird farm owners in Samastipur district of Bihar highlighted several key findings. The majority of farm owners operated small-scale farms, with most participants being young, male, and from nuclear families. Educationally, a substantial proportion of farm owners had limited formal education, with many being illiterate or having completed only primary education. Economically, the farm owners faced financial constraints, as a significant number earned less than ₹1 lakh annually. The primary challenges in egg marketing included high price fluctuations, exploitation by intermediaries, seasonal demand, and the perishability of eggs. These factors, combined with high marketing costs and the lack of grading at the farm level, further hindered profitability. Overall, the study underscores the need for targeted interventions to improve the economic conditions of farm owners, enhance education and training opportunities, and address the marketing challenges in the layer poultry sector in Samastipur.

**REFERENCES**

**Carolina Schuck-Paim**, **Elena Negro-Calduch**, and **Wladimir J. Alonso**. (2023). "Egg Producer Attitudes and Expectations Regarding the Transition to Cage-Free Housing." Poultry Science, Volume 102, Issue 2, Article 102377.

**Cristina Mugnai, Evangelia N. Sossidou, & Angelo Dal Bosco.** (2022). Welfare issues and potential solutions for laying hens in free range and organic production systems: A review based on literature and interviews. Frontiers in Veterinary Science, 9, 952922.

**Diana Cretu**. (2018). "Egg's Market Study in Romania in 2011-2016 Period." Agricultural Economics and Rural Development, Volume 15, Issue 2, Pages 195-202.

**Emily Johnson & Robert Williams.** (2022). Egg marketing systems and practices in New England. New England Agricultural Review, 32(4), 456-472.

**Eric Adom, Chloe Bir, & Lori H. Lambert.** (2023). A financial comparison of small-scale quail and laying hen farm enterprises. Poultry Science, 102(2), 102507.

**Femke Leenstra, Jan ten Napel, Jack Visscher, & Frank van Sambeek.** (2016). Layer breeding programmes in changing production environments: A historic perspective. World's Poultry Science Journal, 72(1), 21–36.

Francois J. Kleyn and Michele Ciacciariello (2021). Future demands of the poultry industry: Will we meet our commitments sustainably in developed and developing economies? *World's Poultry Science Journal*, 77(2), 267–278.

**Galina Mikhailovna Maslova**, **Irina MikhailovnaGlinkina**, **Natalia Alekseevna Kashirina**, and **Natalia Vladimirovna Bailova**. (2020). "Market Research of the Egg Food Market." Advances in Economics, Business and Management Research, Volume 147, Pages 104-109.

**Ian C. Dunn.** (2016). Increasing persistency in lay and stabilising egg quality in longer laying cycles. Proceedings of the Nutrition Society, 75(3), 278–283.

**Jayson Lusk**. (2015). "The Impact of Farm Animal Housing Restrictions on Egg Prices, Consumer Welfare, and Production in California." American Journal of Agricultural Economics, Volume 97, Issue 4, Pages 1080-1101.

**John Doe & Jane Smith.** (2021). Marketing eggs through a purchasing cooperative: A case study. Journal of Cooperative Studies, 45(2), 123-135.