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Enhancing livelihood and nutritional security through NABARD-sponsored backyard poultry among women SHGs in Zunheboto district of Nagaland

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Abstract

A field study was conducted in the Zunheboto district of Nagaland to assess the impact of backyard poultry interventions on livelihood and nutritional security among women Self-Help Groups (SHGs). The programme, supported by NABARD, Dimapur, Nagaland, involved scientific management training along with the distribution of improved poultry strain (Rainbow Rooster), low-cost egg incubators. A total of 60 women beneficiaries from 6 SHGs of 5 villages of Akuluto Block of Zunheboto district were included in the study. The results revealed that 22,618 eggs were produced, of which a substantial portion was utilized for household consumption, while the rest was marketed. A total of 2,135 birds were sold, and 1,380 birds were consumed at the household level, contributing to improved protein intake. The intervention generated a total income of ₹30,80,360 with an average net income of ₹32,592 per beneficiary. Meat availability increased by 66.7 kg per household. The adoption of low-cost incubators ensured a continuous chick supply and reduced dependence on external sources. The study concludes that backyard poultry integrated with improved technologies significantly enhances livelihood opportunities, nutritional security, and women's empowerment in rural areas.

Keywords: Backyard poultry, SHGs, nutritional security, rainbow rooster, low-cost incubator, Nagaland

Introduction

Livestock plays a vital role in ensuring food and nutritional security as well as livelihood support in rural India. In the northeastern state of Nagaland, a substantial gap exists between the demand and availability of animal-based protein sources. As per the Annual Administrative Report (2022–23) of the Department of Animal Husbandry and Veterinary Services, the state faces a deficit of 38.50 MT of meat and 1,520.19 lakh eggs annually. The per capita availability of meat (40 g/day) and eggs (22 eggs/year) is considerably lower than the recommended levels of 70 g/day and 182.5 eggs/year, respectively.

Backyard poultry farming is recognized as an effective intervention to bridge this gap due to its low input requirement, quick returns, and suitability for smallholder farmers, particularly women. Several studies have highlighted that backyard poultry significantly contributes to income generation and nutritional security in rural households (Pal *et al.* 2020; Kumar *et al.* 2021; Singh *et al.* 2021) [7, 5, 9]. Improved dual-purpose poultry strains such as Rainbow Rooster have shown better adaptability and productivity under semi-scavenging systems, especially in hilly regions (Kumar *et al.* 2021; Borah *et al.* 2023) [6, 1].

One of the major constraints in backyard poultry development is the limited availability of quality chicks in rural areas. The introduction of low-cost incubation technologies has been reported to enhance chick availability and promote self-reliance among farmers (Dinesh *et al.* 2025; Singh *et al.* 2025) [4, 8]. Moreover, backyard poultry farming has been widely recognized as a tool for women's

empowerment by improving their economic participation and decision-making ability (Yadav *et al.* 2022; Das *et al.* 2022) [10, 3].

In this context, Krishi Vigyan Kendra (KVK), Zunheboto, implemented a NABARD-supported programme aimed at promoting backyard poultry among women SHGs by providing quality chicks of Rainbow Rooster birds, using low-cost egg incubators and improved management practices. The present study was undertaken to evaluate the impact of this intervention on livelihood and nutritional security.

Materials and Methods

Study area

The study was conducted in 5 villages of Akuluto Block of Zunheboto district of Nagaland, characterized by hilly terrain, moderate rainfall, and predominantly tribal farming communities.

Selection of beneficiaries

A total of 60 women beneficiaries belonging to 6 Self-Help Groups (SHGs) were selected through purposive sampling based on their interest and resource availability.

Intervention details

The selected beneficiaries were provided with:

- 100-day-old chicks of improved strain (Rainbow Rooster)
- Formulated starter and grower feed for the initial first 20 days

- Feeders and drinkers
- Vaccination and veterinary support
- Low-cost egg incubators for on-farm chick production

Capacity building

Training programmes, demonstrations, and regular field visits were conducted to impart scientific knowledge on feeding, housing, and disease management along with handling incubators for increased hatchability.

Data collection and analysis

Data were collected through personal interviews, farm records, and field observations. The data were analyzed using simple statistical tools such as averages and percentages.

Results and Discussion

Production performance

The intervention resulted in the production of 22,618 eggs under backyard conditions after 24 weeks of age. Improved feeding, vaccination, and management practices contributed to better survivability and productivity of birds. Similar improvements in productivity under backyard systems have been reported by Yadav *et al.* (2022) ^[10] and Borah *et al.* (2023) ^[1].

Nutritional security

A total of 1,380 birds were consumed at the household level, significantly enhancing protein intake. The availability of eggs further improved dietary diversity among beneficiary households. These findings corroborate earlier reports that backyard poultry plays a crucial role in improving household nutrition (Pal *et al.* 2020; Singh *et al.* 2021) ^[7, 9].

Economic impact

The economic benefits derived from the intervention are presented below:

Parameter	Value
Birds sold	2,135
Birds consumed	1,380
Eggs produced	22,618
Total income (₹)	30,80,360.00
Average income/beneficiary (₹)	32,592.00
Increase in meat availability (kg/household)	66.7

The findings clearly indicate that backyard poultry farming serves as a reliable source of supplementary income for rural households. Comparable results have been reported by Das *et al.* (2022) ^[3] and Chauhan *et al.* (2024) ^[2], who observed significant income enhancement through backyard poultry interventions.

Role of low-cost incubator

The introduction of low-cost incubators enabled farmers to produce chicks locally, reducing dependence on external hatcheries and ensuring sustainability of the enterprise. Similar observations were made by Dinesh *et al.* (2025) ^[4], who reported improved chick availability and enterprise continuity through low-cost incubation technologies.

Women empowerment

The programme significantly enhanced the economic participation and decision-making capacity of women SHG members. It also improved their technical skills and confidence in managing poultry enterprises. These findings are in agreement with earlier studies highlighting the role of backyard poultry in women's empowerment (Yadav *et al.* 2022; Singh *et al.* 2025) ^[10, 8].

Conclusion

The study demonstrates that backyard poultry farming, supported by improved breeds and low-cost technologies, is an effective strategy for enhancing livelihood and nutritional security in rural Nagaland. The intervention not only increased income and protein availability but also empowered women SHGs. The model has strong potential for replication in similar agro-ecological regions.

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