Review

Small-scale indigenous poultry farming: A potential catalyst for rural transformation

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ABSTRACT

Backyard poultry farming is predominantly favoured in rural and economically disadvantaged regions of India, where it offers rural households a source of income, nutritious food (meat and eggs), and opportunities for women and unemployed youth, while also helping to bridge the gap between the supply and demand of poultry products. This form of farming requires minimal infrastructure and can be managed effectively by women, elderly family members, and children. Poultry products, particularly eggs and meat, serve as affordable and accessible protein sources, meeting the dietary protein needs of rural Indian communities. However, backyard poultry farming faces several challenges, including high mortality rates among young chicks due to diseases, insufficient infrastructure, low productivity of indigenous breeds, limited scientific knowledge, risks from predators, malnutrition, exposure to harsh climates and fluctuating feed prices throughout the year. Addressing these challenges necessitates the introduction of improved poultry breeds suited for backyard farming, as well as the development of farmers' scientific skills in areas such as feeding, housing, and disease prevention. This review aims to evaluate the current state of backyard poultry farming in India, examining its impact on the socioeconomic and nutritional well-being of rural populations, the development of scientific skills, the empowerment of women and the need for improved chicken breeds for sustainable backyard poultry farming.

Key words: Economy, Poultry farming, Women empowerment

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INTRODUCTION

Backyard poultry farming is increasingly recognized as a crucial tool for improving the socioeconomic and nutritional status of rural communities, particularly among the poor (Abdelqader *et al.,* 2007). This practice provides a cost-effective source of protein through eggs and meat, thereby addressing malnutrition, generating self-employment, and offering supplementary income to landless or economically disadvantaged families (Cardinale *et al.,* 2012). Despite the low production and growth potential of backyard poultry, these birds are preferred for their adaptability to adverse conditions, minimal housing requirements, and high market value for eggs and meat (Biswas *et al.,* 2006). Rural poultry farming, which accounts for approximately 15% of India's total poultry output, plays a significant role in enhancing the livelihoods of rural families, contributing to income, food security, and overall development of the poultry sector. Studies have shown that this practice can result in substantial economic returns, with agricultural crop production growing at 1.5–2% per annum, while egg and broiler production has been increasing at 8–10% annually (Abdelqader *et al.,* 2007).

The practice of backyard poultry farming is characterized by the rearing of up to 100 birds in free-range systems with minimal inputs and biosecurity. This form of poultry farming is particularly advantageous for poor rural households as it converts household waste into high-quality eggs and meat, thereby improving food security and nutrition (Cardinale *et al.,* 2012). Native chicken varieties reared under these conditions contribute significantly to India's egg production. Additionally, backyard poultry farming serves as a vital source of cash income, as surplus poultry products can be sold, providing a financial safety net for families (Sarwar *et al.,* 2015). The sector also contributes to gender equality and other livelihood indicators, making it a strategic entry point into broader livestock production systems, which are essential for breaking out of poverty (Panda *et al.,* 2008). Ultimately, backyard poultry farming offers a sustainable and profitable means of livelihood for the rural poor, enabling them to meet basic needs and secure a better quality of life (Thieme *et al.,* 2014).

Role in nutritional security

To bridge the significant gap between the demand and supply of poultry eggs and meat, there is a pressing need for proper training in poultry rearing and the adoption of scientific farming techniques (Cardinale *et al.,* 2012). This includes ensuring a balanced feed supply, timely vaccination, and improved housing management. Backyard poultry farming, particularly in developing countries like Zambia, plays a crucial role in addressing chronic malnutrition and micronutrient deficiencies by providing high-quality protein, essential vitamins,

and minerals through meat and eggs (Cardinale *et al.,* 2012). In India, rural poultry farming is responsible for meeting a substantial portion of the nation's meat and egg requirements, highlighting its importance in improving the nutritional status and livelihoods of rural populations.

Eggs and poultry meat are rich sources of essential nutrients that are vital for human health. Eggs are an economical source of high-quality protein, vitamins A, B12, D, and K, as well as minerals like iron and zinc (Alam *et al.,* 2014). They also contain lutein and zeaxanthin, nutrients that have been shown to reduce the risk of blindness and cataracts in older adults. Similarly, poultry meat is an excellent source of protein, omega-3 fatty acids, and minerals such as iron, selenium, and zinc (Deka *et al.,* 2013). Indigenous chickens, commonly reared in backyard systems, contribute significantly to meeting the protein requirements in developing countries, providing bioavailable nutrients essential for health. The varied diet of backyard chickens enhances the nutritional value of their meat, making them a vital component of food security and nutritional well-being in rural areas (Biswas *et al.,* 2006).

Advantages

Backyard poultry farming offers numerous advantages, particularly for rural communities. It effectively converts household waste, such as kitchen scraps and vegetable remains, into high-quality eggs and meat, contributing to both family nutrition and income generation. This farming practice involves minimal feed costs, as it utilizes agricultural by-products and leftover grains, making it a cost-effective enterprise with low initial investment (Nath *et al.,* 2012). Moreover, backyard poultry farming provides employment opportunities for small-scale farmers, women, and unemployed youth, while also integrating well with other agricultural activities like mushroom farming. The eggs and meat produced are highly valued in the market, fetching higher prices than those from intensive poultry systems. Additionally, the faecal material from backyard poultry enriches soil fertility, serving as a natural fertilizer (Deka *et al.,* 2013).

This farming system also supports environmental sustainability and biodiversity conservation. Backyard poultry farming causes less environmental pollution compared to intensive systems due to the lower density of birds (Rath *et al.,* 2015). It efficiently utilizes family labor, including elderly members and children who may not be able to engage in other agricultural tasks, thereby enhancing household income. Importantly, the conservation of indigenous poultry breeds through backyard systems helps maintain a healthy genetic reservoir, which is vital for the long-term sustainability and functionality of ecosystems (Singh *et al.,* 2017). With low initial costs and high economic returns, backyard poultry farming is increasingly in demand, particularly for desi (indigenous) chickens, which are sought after in local markets for their quality.

Role of empowerment to rural women

Empowering women through self-employment and entrepreneurship training in sectors like backyard poultry farming creates significant opportunities for improving their socioeconomic status (Deka *et al.,* 2013). Microcredit has emerged as an effective tool for empowering women by enabling them to generate self-employment and supplementary income, addressing financial challenges they often face. In India, key indicators of women's empowerment—security, decision-making power, and mobility—remain notably low. However, in rural poultry farming, women often own and manage the poultry, as reported by Okitoi *et al.,* (2007). Studies, including those by Ogunlade *et al.,* (2013), show that poultry farming is a common activity among rural women in many countries, including India, providing them with regular income using minimal inputs. Although backyard poultry farming may not generate substantial income, it enhances the skills of poor women and contributes to improving their socioeconomic and nutritional status (Sarwar *et al.,* 2015). Consequently, government and non-governmental organizations should promote backyard poultry farming, as it strengthens women's decision-making abilities and involvement in family affairs, driving rural socioeconomic development (Sultana *et al.,* 2011).

Scientific knowledge and proper training are crucial for the success of backyard poultry farming. Training programs can significantly improve farmer's understanding of important aspects such as disease management, environmental stresses, poultry feed composition, and effective marketing of eggs and meat (Rath *et al.,* 2015). To make backyard poultry farming economically viable in rural areas, it is essential to provide basic training to farmers (Rajkumar *et al.,* 2010). This would address major constraints like illiteracy, poor marketing systems, and improper program implementation. Scientific training has been proven to significantly enhance farmers' knowledge and improve their poultry management practices, leading to better production outcomes.

Beyond the Coop: Poultry Farming Influence on Rural Well-being

Backyard poultry farming holds significant potential for driving economic growth in developing countries while meeting the basic needs of poor or marginalized

rural communities (Nath *et al.,* 2012). It ensures the availability of affordable, high-quality food, particularly animal protein, for the population (Nielsen *et al.,* 2003). Abdelqader *et al.,* (2007) highlighted the critical role of backyard poultry farming, especially chicken rearing, in the socio-economic framework of rural agriculture, noting that it serves as a vital income source for rural families, though its importance can vary across different communities. Singh *et al.,* (2017) investigated how the additional income from backyard poultry farming is utilized to enhance socioeconomic conditions. Their findings revealed that farmers prioritized essential amenities, with expenditures on electricity (23.48%), latrines (15.65%), and bathrooms (23.48%). Additionally, 12.66% of farmers upgraded their Kaccha houses to Pakka houses, and some invested in luxury items like mobile phones (26.96%) and DVD players (0.87%). According to Thieme *et al.,* (2014), a significant portion of the surplus income from poultry rearing—33% and 30%—was allocated to education and food, respectively.

In India, the role of poultry farming varies by region. For instance, in Tamil Nadu, poultry farming is a major source of income and a primary livelihood for many, whereas in Rajasthan, it primarily serves to provide household consumption and family protein (Neilson *et al.,* 2003). Holst *et al., (*2007) pointed out that increased income from livestock, including poultry, was responsible for improving the living standards of 50% of rural poor farmers. The potential for further income growth can be realized by mitigating disease risks and enhancing producer prices (Kusina *et al.,* 2001).

Bottlenecks in Backyard Poultry Farming Systems

Backyard poultry farming faces several significant challenges that impact its effectiveness and productivity (Panda *et al.,* 2008). One of the primary issues is disease occurrence, with Newcastle Disease (NCD) and Ranikhet disease being major contributors to poultry mortality and reduced production (Dutta *et al.,* 2013). Additionally, outbreaks of other diseases such as Salmonellosis, Gumboro, and Coccidiosis further exacerbate the problem, leading to high mortality rates among chicks and affecting overall flock health. Infrastructure constraints also pose a challenge, with inadequate resources and poor infrastructure limiting access to veterinary and extension services (Ghosh *et al.,* 2005). Issues such as insufficient research, poor road connectivity, and a lack of awareness and education about poultry farming practices contribute to these difficulties. Moreover, the need for better healthcare resources and technology to support poultry farming, particularly for women, is evident (Islam *et al.,* 2015).

Mortality constraints are notably high in backyard poultry systems, with chick mortality rates often reaching up to 60%, particularly during extreme weather conditions (Kusina *et al.,* 2001). Predation and diseases are major causes of death, and the high mortality rates due to predation and disease outbreaks are significant concerns in various regions (Nath *et al.,* 2012). Low production performance is another issue, as indigenous chicken breeds generally exhibit lower productivity in terms of egg and meat production compared to commercial breeds (Islam *et al.,* 2015). Other constraints include high hatching mortality, poor production performance, limited knowledge about scientific farming practices, and inadequate financial and technical support (Muchadeyi *et al.,* 2005). Addressing these challenges requires improved management practices, better housing, effective vaccination schedules, and enhanced support for poultry farmers to increase productivity and mitigate losses (Kundu *et al.*, 2015).

Exploring the Future Potential

Current literature reveals that backyard poultry farming primarily involves non-descript or desi breeds, which are often characterized by lower growth rates, reduced production efficiency, and diminished reproductive performance compared to more modern poultry varieties. To address these performance issues, there is an urgent need to introduce and rear improved poultry varieties that can offer better productivity outcomes. A significant challenge in this transition is the prevalent use of outdated practices in health management, feeding, and housing among backyard poultry farmers. Many of these farmers do not follow scientific approaches, which limits the effectiveness and profitability of their operations. Consequently, the potential for backyard poultry farming to become a more lucrative and productive enterprise remains underutilized. To transform traditional backyard poultry farming into a more profitable and economically viable business, it is imperative to adopt scientific farming methods. This shift would involve implementing advanced techniques for flock management, including improved health care, optimized feeding strategies, and enhanced housing conditions. By embracing these modern practices, backyard poultry farming can attract more farmers, improve overall performance, and significantly boost the sector's contribution to the rural economy.

CONCLUSION

The growth of backyard poultry farming can significantly reduce poverty in India by providing a livelihood for poor and marginal farmers, while also enhancing their nutritional intake through affordable, high-quality protein from eggs and meat. It plays a key role in

empowering women and addressing the gap in poultry supply and demand. However, to boost productivity and profitability, there is a need for improved poultry breeds and the adoption of scientific farming practices, including better healthcare, balanced feeding, timely vaccination, and effective management.

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