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Backyard poultry farming in India: a pathway to rural development

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Abstract

Backyard poultry farming is an important traditional practice in rural India that contributes to household nutrition, food security and supplementary income. Although poultry production in India has increasingly shifted toward large-scale commercial systems, these operations are mainly concentrated around urban areas, resulting in unequal access to poultry products in rural and tribal regions. Since a large proportion of the rural population depends on carbohydrate-based diets, protein deficiency and malnutrition remain significant concerns. India's poultry sector plays a significant role in the agricultural economy, with nearly 30 million farmers engaged in backyard poultry rearing. India ranks among the top global producers of eggs and poultry meat, yet per capita consumption remains relatively low. To improve output, research institutions such as the Indian Council of Agricultural Research (ICAR) and state agricultural universities have developed improved dual-purpose breeds like CARI Nirbheek, CARI Debendra, Giriraja and Vanaraja. These varieties combine higher egg and meat production with adaptability to rural free-range systems. Proper brooding, simple housing, supplemental feeding, and regular vaccination against diseases are essential for maintaining flock health and productivity. Overall, backyard poultry farming is a sustainable and low-investment enterprise that supports rural development, improves household nutrition, and strengthens economic opportunities for small farmers and women in rural communities.

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INTRODUCTION

Raising a small flock of chickens for food and leisure has been a natural part of human life for centuries. However, over the last fifty years, poultry farming has largely transformed into a massive commercial industry. This modern approach relies heavily on high-yielding bird breeds (specialized broilers and layers), expensive housing, strict diets, and intense medical care (Tantia *et al*., 2006). While commercial farming is highly productive, it comes with significant challenges including fluctuating market prices, expensive feed, disease outbreaks, and a shortage of skilled workers. Because these large farms are typically concentrated near cities, urban populations end up consuming for more eggs and meat than rural or tribal communities do.

This urban-rural divide is a major issue considering about two-thirds of the country's population lives in rural and tribal regions, relying primarily on agriculture (Rajkumar *et al*., 2010). In these areas, daily diets are heavily carb-based (mostly rice or wheat), which unfortunately leads to widespread protein malnutrition and increased vulnerability to disease. Providing affordable, high-quality animal protein is crucial for healthy growth and overall well-being.

This is exactly where backyard and free-range poultry farming steps in as a game-changer. It offers a practical, affordable way to produce highly nutritious chicken meat and eggs right at home. It's a proven strategy not only for fighting protein hunger but also for generating extra family income (Sreenivas *et al*., 2013). Backyard farming is truly a family endeavour, with women playing a particularly vital and leading role in its success. By combining the natural food sources already present in rural backyards with basic training in scientific rearing methods, families can easily turn this traditional practice into a highly profitable and empowering enterprise (Siddiky *et al*., 2017).

INDIA'S POULTRY LANDSCAPE

To understand the scale of this grassroots industry, one must look at the national data. The poultry sector is deeply woven into India's agricultural fabric, with about 30 million farmers actively engaged in backyard poultry.

While the highly organized commercial sector dominates the market, the unorganized backyard sector holds its ground as a pillar of rural survival. Native chickens reared in these backyard conditions contribute a remarkable 11 percent of India's total egg production. When looking at the broader unorganized sector, backyard poultry accounts for about 21% of total egg production (DADF, 2025).

Table1: Category-wise share of poultry in the total poultry population

Poultry category	Share of total poultry population
Broiler	38.70%
Backyard Poultry	29.80%
Layer	29.40%
Duck	1.43%
Others	0.68%

Despite India's impressive standing on the global stage ranking 2rd in world egg production and 4th in meat production there is a hidden struggle. The nation's poultry sector produces around 149.11 billion eggs and 5.18 million tonnes of broiler meat every year. Yet, the average Indian consumes about 106 eggs and 7.5 kg of meat per year (BAHS, 2024). Backyard poultry is perfectly positioned to close this massive gap. The eggs and meat produced in these rural homes constitute a high-quality food source packed with essential macro and micronutrients.

THE ROLE OF IMPROVED BREEDS

While indigenous desi birds are natural foragers, excellent mothers, and highly heat-resistant, their inherently low egg and meat production highlights the need for a strategic shift in rural farming (Kumar *et al*., 2017). To address this limitation, a dedicated wave of research by the Indian Council of Agricultural Research (ICAR) and various State Agricultural and Veterinary Universities has completely transformed the rural poultry landscape over the past fifteen years.

The primary solution has been the introduction of improved dual-purpose breeds. These newly developed varieties are specifically designed to bridge the production gap; they thrive in adverse rural environments while laying significantly more eggs and gaining much more body weight than traditional local birds. Additionally, these improved breeds maintain a high immune competency against common diseases and produce brown eggs, which consistently fetch a higher market value (Pathak *et al*., 2013).

Table2: Improved poultry varieties

Variety	Type/purpose	Developing Organization
CARI Nirbhik	Egg	CARI, Izatanagar
CARI Shyama	Egg	CARI, Izatanagar
Giriraja	Dual	KVAFSU, Bangalore
Vanaraja	Dual	DPR, Hyderabad
Gramapriya	Egg	DPR, Hyderabad
Srinidhi	Dual	DPR, Hyderabad
CARI Devendra	Dual	CARI, Izatanagar
Kalinga Brown	Egg	CPDO, Bhubaneswar
Nicorock	Dual	CARI, Portblair
Kuroiler	Dual	Kegg farms, Delhi
Krishna Priya	Dual	KAU, Manuthy
Nishibari	Egg	CARI, Portblair

UPCARI	Egg	CARI, Izatanagar
Rajasree	Egg	SVVU, Hyderabad
Krishna J	Egg	JNKV, Jabalpur
Nandanam Chicken	Egg	TANUVASU, Chennai
Gramalaxmi	Egg	KAU, Manuthy
Gramasree	Egg	KAU, Manuthy
Pratapdhan	Dual	MPUAT, Udaipur (AICRP)
Kamarupa	Dual	AAU, Guwahati (AICRP)
Narmadanidhi	Dual	MPPCVV, Jabalpur (AICRP)
Jharsim	Dual	BAU, Ranchi (AICRP)

DEFINING MODERN BACKYARD POULTRY FARMING

The word backyard poultry farming is widely used and interchanges with other terminology like free range poultry farming, rural poultry farming or family poultry farming. The boosting the supply of eggs and meat while creating extra income for rural and tribal households. This is typically achieved by keeping small flocks usually 10 to 20 birds of improved chicken varieties that require very little financial input to maintain (Rath *et al*., 2015)

While people have kept chickens in their backyards for centuries, traditional native birds naturally have low production rates, despite their high demand across rural and urban markets. To bridge this productivity gap, modern, scientifically backed backyard farming was introduced in the 1990s by the Indian Council of Agricultural Research (ICAR) and various state agricultural and veterinary universities.

Their extensive work demonstrated a highly adaptable model: improved backyard varieties much like the CARI Debendra and CARI Shyama breeds actively being evaluated for dietary energy and protein performance today can thrive not only in small household setups but also in large-scale commercial operations when provided with the right nutritional and management inputs.

1. The Subsistence Level: The small flocks, high value at the household level, rural farming typically involves families keeping small flocks of about 15 to 25 birds. This is usually a semi-intensive or free-range setup where the birds get a large portion of their nutrition by scavenging naturally in the backyard (Chatterjee *et al*., (2017).

However, the first 4 to 6 weeks are critical and require a more intensive approach; the chicks need proper brooding, vigilant health care, and a precisely balanced diet. Once they reach 5 to 7 weeks of age, they transition to roaming freely during the day while returning to a safe, well-ventilated shelter at night. As the hens begin to lay, supplying calcium and ensuring they get about 16 hours of light a day becomes essential. Keeping the flock healthy requires a strict schedule of periodic deworming and vaccinations against common viral threats like Newcastle Disease (ND), Infectious Bursal Disease (IBD), and fowl pox. Ultimately, the eggs and meat produced in these free-range conditions are highly sought after and command premium prices, especially in urban markets.

2. The Commercial Level: Scaling for the Market on the flip side, rural poultry farming can be scaled up to a full commercial operation. This involves raising improved rural varieties in an intensive system, utilizing the same inputs you would see in standard commercial broiler or layer operations.

Because these rural varieties naturally have lower yields compared to specialized commercial crosses, the overall cost of production can be higher when farmed intensively. This makes optimizing the birds' diet specifically finding the perfect balance of dietary energy and protein levels absolutely critical for profitability, especially when managing heavy dual-purpose breeds like the CARI Debendra. Despite the higher production costs, these birds closely resemble native chickens and lay desirable tinted eggs, allowing producers to secure much higher prices than standard industrial poultry.

In this commercial model, hundreds or even thousands of birds are raised in a relatively small, concentrated area from day one until they reach market age. To maximize success, it is best to align production with peak seasonal demand or to establish direct links with retail chains a business model that is already thriving in regions like India's Northeastern states.

MANAGEMENT PRACTICES IN BACKYARD FARMING

The economic success of a backyard poultry operation largely depends on local market demand and

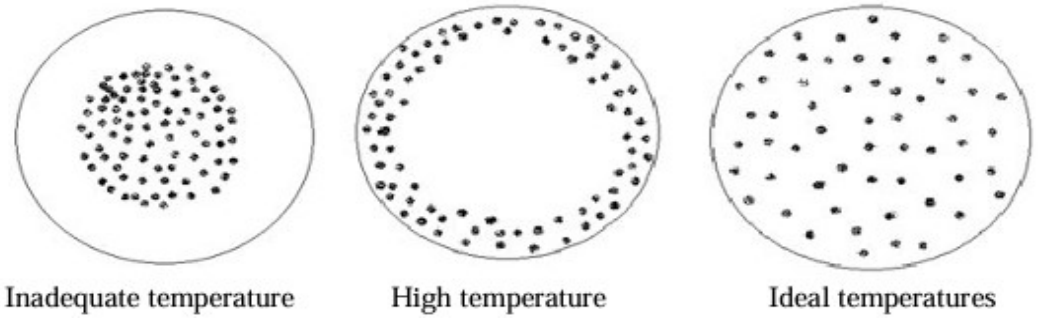
the natural food base available. Farmers typically adopt one of three practical models:

1. **Free-Range Farming:** Best for egg-type birds, relying heavily on natural scavenging.
2. **Semi-Scavenging Farming:** Ideal for dual-purpose or egg-type birds, balancing natural foraging with supplemental feeding.
3. **Small-Scale Intensive Farming:** Used primarily for meat-type birds, where they are kept contained and fed a balanced, commercial-style diet from day one until they reach market weight.

THE CRUCIAL FIRST WEEKS (BROODING)

Basically, day old chicks are produced with artificial incubation and they need initial mother care in the form of nursery rearing, where they will be provided with balanced feed, artificial warmness (heat), protection from predators and health care up to 4-6 weeks of age.

Brooding Basics: Create a warm, safe pen by spreading 2-3 inches of clean litter (rice husk or sawdust) covered with newspaper. Use chick guards to keep the birds near the heat source (60/100W bulbs). If the temperature is higher the birds move away from the heat source and start showing the typical symptoms of panting. When temperature is inadequate, the chicks huddle under the brooder near to the heat source. At ideal temperature, chicks are uniformly distributed across the brooding area.



STEPPING OUT (THE FREE-RANGE PHASE)

Once the chicks reach about 5-7 weeks of age and weigh between 550g and 750g, they are ready to explore the backyard. The number of chicks per household depends on the area and availability of natural food base However, 15-25 birds per household are ideal for successful and effective management of birds. The birds are let out for foraging during the day time and are kept in night shelter during the night. The birds under free range can easily pick up its food from the backyard, once it learns to scavenge in the fields (Conroy *et al*., 2005). Under natural scavenging conditions, it is hard to get required calcium. Usually, the deficit quantity of calcium is drawn physiologically from medullary bones for optimum shell quality. When birds consume adequate required calcium, little or nil quantity of calcium is drained from bones. To maintain leg health of the bird and also shell quality, it is recommended to offer 5-6g calcium source/day/bird along with grain feeding.

HOUSING

Night shelters are required to house birds during the night, bright sunny days, and rainy periods, and these are usually constructed using locally available low-cost materials such as mud, stone, wire mesh, bamboo, and wood. The night shelter also protects the birds from rain and sun during day time. Birds should be provided 1.5–2.0 square feet of floor space per bird in the night shelter. The shelter should be equipped with artificial lighting and windows to ensure proper ventilation (Chatterjee *et al*., 2017). Dampness should be strictly avoided, as a wet shelter can become a breeding ground for lice, mites, and flies. Therefore, the floor must be kept clean and dry, cleaned regularly, and lime powder or suitable disinfectants should be used to control parasites.

BIOSECURITY

Because rural setups often mix different ages and species of animals, disease control is tough. The best defence is providing fresh water every morning, isolating sick birds immediately, and keeping the living quarters pristine.

Vaccination is Non-Negotiable: Stick to a strict vaccination schedule, particularly for high-risk threats like Newcastle Disease (ND), Fowl Pox, and Infectious Bursal Disease (IBD).

Deworming: Conduct periodic deworming (ideally a few days before vaccinations) to clear out internal parasites picked up during scavenging.

Preventing Pecking: Because rural varieties can be aggressive, mildly trimming their beaks between 2 and 10 weeks of age prevents them from injuring each other.

WOMAN EMPOWERMENT THROUGH BACKYARD FARMING

One of the most profound impacts of backyard poultry is how it shifts the gender dynamics in rural households. In many of these homes, men typically have multiple streams of income, but for women, the money earned from selling poultry products is frequently their primary, and sometimes only, source of independent income.

In the realm of rural poultry farming, women are predominantly the owners of the birds. Because this

enterprise requires very little initial investment and practically no heavy infrastructure, it can be seamlessly managed by women alongside their household duties (Kumar *et al*., 2021). This access to micro-revenue acts as a vital tool for empowerment. It not only boosts their daily savings but directly increases their independent decision-making power and involvement in crucial family affairs, paving the way for broader socioeconomic development.

RECOMMENDATION FOR FUTURE PROSPECTS

- Utilization of region-specific indigenous breeds for the development of varieties for the backyard poultry farming.
- Controlling the common disease like ND and fowl pox is very important in backyards. Regular vaccination and medication should be practiced for better production and returns from the birds. Vaccination doses in small quantities should be made available to the farmers enabling them to go for vaccination instead of larger doses. Community based vaccination program gives better results to contain the disease incidence in rural chicken germplasm.
- Skill upgradation of rural farmers and women should be given priority for effective implementation.
- Co-operative mode of marketing of the poultry producers to encourage the farmers. Effective and accessibility of the marketing options to the farmers is very important in popularizing the rural poultry.

REFERENCES

BAHS, GOI. (2024). Basic Animal Husbandry and Fisheries Statistics.

Chatterjee, R. N. (2017). Backyard Poultry Production System in India. Book: Backyard Poultry Production Systems in SAARC Member States. Published by SAARC Agriculture Centre (SAC), Dhaka, Bangladesh. Page, 59-91.

Conroy C, Sparks N, Chandrasekharan D, Sharma A, Shindey D, Singh LR, Natarajan A, Anitha K. 2005. Improving backyard poultry keeping: a case study from India. Agricultural Research and Extension Network Paper No. 16. London: Overseas Development Institute.

DADF. 2025. Department of Animal Husbandry Dairying and Fisheries (DADF), ministry of agriculture. New Delhi: Government of India.

Kumar M, Dalal DS, Ratwan P, Yadav AS. 2017. Strategies to minimize heat stress in broiler and layer chickens. Res Rev J Dairy Sci Technol. 6:26–30.

Kumar, M., Dahiya, S. P., & Ratwan, P. (2021). Backyard poultry farming in India: A tool for nutritional security and women empowerment. *Biological Rhythm Research*, *52*(10), 1476–1491. https://doi.org/10.1080/09291016.2019.1628396

Pathak PK, Nath BG. 2013. Rural poultry farming with improved breed of backyard chicken. J World's Poultr Res. 3:24–27.

Rajkumar U, Rama Rao SV, Sharma RP. 2010. Backyard poultry farming-changing the face of rural and tribal livelihoods. Indian Farming. 59:20–24.

Rath KR, Mandal KD, Panda P. 2015. Backyard poultry farming in India: a call for skill upliftment. Res J Recent Sci. 4:1–5.

Siddiky, N.A., ed. 2017. Backyard Poultry Production Systems in SAARC Member States. SAARC Agriculture Centre.

Sreenivas, D., Prakash, M. G., Mahender, M. and Chatterjee, R. N. 2013. Genetic analysis of egg quality traits in White Leghorn chicken. Veterinary world. 6(5): 263.

Tantia, M.S., Vijh, R.K., Bharani Kumar S.T., Mishra, B., and Ahlavat, S.P.S. (2006). Genetic diversity analysis of chicken breeds of India. Indian Journal of Animal Sciences, 76 (12), 1033-1038.