



## Poultry: A Key to Fighting Malnutrition in Rural India

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### Introduction:

Poultry plays a vital role in improving human nutrition, particularly in combating malnutrition in India. Eggs and chicken are rich sources of high-quality, complete protein and provide essential micronutrients such as vitamin A, vitamin B12, iron, zinc, choline and vitamin D, which are crucial for growth, immunity, and overall health. Recognizing their importance, the ICMR–National Institute of Nutrition (2024) dietary guidelines strongly recommend the inclusion of eggs and meat as reliable protein sources for people of all age groups. This becomes especially significant in the Indian context, where under nutrition continues to be a major public health challenge. According to the National Family Health Survey-5 (2019–21), nearly 35% of children under five are stunted, about 19% are wasted and around 32% are underweight. Incorporating animal-source foods like poultry products into regular diets can therefore serve as an effective and affordable strategy to bridge nutritional gaps, reduce malnutrition and improve the health status of vulnerable populations.

### Affordable Poultry Solutions for Rural Households

Backyard poultry farming with improved dual-purpose birds offers a sustainable and low-cost solution for addressing malnutrition in rural India. Hardy, low-input, coloured varieties such as

Vanaraja, Gramapriya, Srinidhi and Janapriya, developed by ICAR-DPR, are well suited for free-range and backyard rearing. These birds provide better egg production and body growth compared to nondescript desi birds, while thriving under scavenging conditions with only minimal supplementary feeding. Research by institutions like CABI Digital Library and ICRISAT highlights their potential in enhancing food and income security in rural communities.

In terms of dietary use, households are encouraged to prioritize egg consumption for nutritionally vulnerable groups, especially children, pregnant women and lactating mothers. Providing 2–5 eggs per person per week is both practical and affordable for low-income families, aligning with the ICMR-NIN dietary guidelines. Beyond direct consumption, surplus eggs and birds can be sold to generate income, which can then be used to purchase other nutrient-rich foods such as pulses, vegetables, oils and staples. This approach helps improve overall dietary diversity, in line with the NIN “My Plate for the Day” recommendation that emphasizes the inclusion of multiple food groups for balanced nutrition.

Integration with school and Anganwadi feeding programs further enhances the impact of poultry. Many states and union territories already include eggs in PM-POSHAN (Mid-Day Meal) menus, although frequency varies across regions. Where eggs are not yet provided, local advocacy

through School Management Committees (SMCs) and Panchayati Raj Institutions (PRIs) can push for weekly egg distribution. For children who do not consume eggs, culturally acceptable alternatives such as bananas or legume-based laddus can be offered. This combined strategy not only strengthens nutritional security at the household level but also supports community-wide efforts to reduce malnutrition among children and women.

### Low-Cost Technologies for Rural Poultry

Several innovative yet low-budget technologies can significantly improve the success of backyard poultry rearing in rural areas. One such option is the establishment of Azolla mini-ponds, which serve as a rich protein supplement containing 20–25% crude protein. A simple 2×2 meter lined pit can produce fresh azolla daily, effectively replacing a portion of commercial concentrate feed for layers and growers, as demonstrated in multiple ICAR/KVK manuals and validated by MIT D-Lab studies (Mahanthesh et al., 2018).

For chick rearing, off-grid or low-energy brooders provide a cost-effective solution during the first 3–4 weeks of life. These brooders, often made of insulated boxes with safe heat sources, help reduce chick mortality and lower energy costs. Research supported by MIT D-Lab collaborators and Research Gate studies highlights their effectiveness in resource-poor settings. Additionally, the use of locally available materials for shelters and brooders—such as bamboo or woven structures with rat-proof flooring, mud/clay or thermocol brooders and deep-litter housing systems—has been recommended by ICRISAT to protect birds from diseases, predators and environmental stress at minimal cost (Sweeney et al., 2024).

Feed costs can also be reduced through home-mixed rations, prepared using locally available by-products such as broken rice, maize, oilseed cakes and a mineral-vitamin premix. These feeds, when combined with scavenging and kitchen or market scraps, provide a balanced diet for backyard flocks, as outlined in ICAR and SAU guidelines. Finally, adopting a basic health management schedule—including timely vaccinations against Newcastle Disease (Lasota strain), Infectious Bursal Disease (IBD) and Fowl Pox, along with periodic deworming—ensures flock survival and improved productivity. These preventive measures, which can be administered by

village para-vets or SHGs, are low-cost yet highly effective, as emphasized in ICAR backyard poultry manuals (Kumar et al., 2024).

### Digital Integration and Government Support

Digital integration and ecosystem support play a vital role in strengthening rural poultry farming. Under the National Livestock Mission and other government initiatives, farmers are provided with subsidies and infrastructure support such as automated feeding systems, climate-controlled housing, mobile veterinary services, cold chain facilities and local feed mills. These interventions not only reduce production costs but also make modern technologies accessible to small and marginal farmers. Alongside this, the use of AI-enabled feed formulation software, advanced feed ingredients and gut-health conditioners has emerged as a powerful tool for nutritional optimization. By helping farmers design balanced rations, these technologies improve feed efficiency, lower feed conversion ratios and enhance flock health, thereby contributing to both productivity and profitability in poultry farming (DAHD, 2024).

### Conclusion:

Poultry farming is a practical, cost-effective way to tackle malnutrition in India, offering protein-rich eggs and meat to rural and low-income families. By combining improved breeds, low-cost innovations and government-supported digital tools, backyard poultry not only improves nutrition but also generates income, making it a sustainable route to better health and livelihoods. Empowering rural households—especially women—with the right skills, resources, and technology ensures that poultry farming becomes both a source of income and a reliable means to strengthen health and nutrition across communities.

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