



## Review Article

# RURAL POULTRY PRODUCTION FOR LIVELIHOOD IMPROVEMENT AND GENDER EQUITY IN INDIA

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**Abstract:** Poultry egg and meat are important animal protein sources and essential in providing balanced diets for nutrition and health. It is an excellent source of high quality protein, vitamins and trace minerals. Rural poultry sector contributes nearly 21% of the national egg production in India and is the most neglected one. Poultry production in rural/backyard areas is one promising strategy to ensure food security, enhance income and promote women's empowerment at a relatively low investment. The focal points for rural poultry production should aimed at development of appropriate variety, utilization of locally available resources, Proper health care and disease control, capacity building/training of farmers and a well organized marketing system. Involving women on training in husbandry and poultry health services will lead to successful poultry activities. Promotion and implementation of long term planning for sustainable rural poultry production to improve livelihood and promote gender equity is the need of hour.

**Keywords:** Rural poultry production, Livelihood improvement, Gender equity

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## Introduction

Rural poultry production has been broadly considered as a quickest way to ensure food security, generate employment and income, and promote women's empowerment at a relatively low investment [1]. Poultry represent an important system to feed the fast-growing human population of developing countries like India and to provide income to poor small farmers, especially women. Increased production of poultry, both commercial and rural, is a vital contribution to food security at both the household and community levels. Rural poultry production is usually suitable to rural areas as commercial poultry production is not successful due to poor socioeconomic conditions and lack of adequate infrastructure. Rural poultry are usually owned and managed by women and children. In spite of the rapid development of commercial poultry activities worldwide, it has been estimated that around 80 per cent of the global poultry population occurs in traditional family-based production systems and that the latter contribute up to 90 percent of the total poultry products in many countries. The total backyard poultry in India is 313.7 million in 2019 which has increased by 45.8% over previous census [2] and contributing to 21% of total egg basket.

The role of family poultry in poverty alleviation, food security and the promotion of gender equality in developing countries are well documented. Women in rural areas play major role in family poultry farming and usually manage all the activities. In spite of considerable involvement and contribution, women's role in poultry production has often been underestimated, if not ignored. Access, control and management of resources empower women and lead to an overall positive impact on the welfare of the household. Involving women in poultry activity will not only increase their decision-making but also economic power within both the household and the community. The management, processing and marketing of poultry products generate more income than most of the activity's women tend to be involved in, and bring benefits for the whole family. The involvement of women in rural poultry production, control over the income generated from the sale of egg and meat increases their self-respect and in the rural community [3].

## Nutritive value of poultry egg and meat

Poultry egg and meat are important animal protein sources and essential in providing balanced diets for nutrition and health. It is an excellent source of high-quality protein, vitamins and trace minerals. An egg supply about 6.9g wholesome protein of the highest biological value (94). An egg provides about 6 g fat and is a rich source of linoleic acid, which is essential in human nutrition. Egg contains 44 out of the 45 essential nutrients for the human body. Although, egg is a multifunctional food with superior nutritional quality, it is available at a relatively lower price. Thus, egg is within the reach of poor people. Availability, lower cost, ease of preparation and good taste give eggs a deserved place in diets of humans.

Poultry meat is well accepted, relatively cheaper natural food and a valuable source of nutrients for human being. Nutritionally poultry meat is a valuable source of proteins, vitamins and minerals and has relatively lower fat content. The protein content of chicken meat is about 22% with a biological value of 79. The chicken breast meat contains less than 1 g fat/100 g and for dark meat (skin off) it ranges between 3 to 5%. Poultry meat is also important source of bioactive compounds such as carnosine, anserine and L-carnitine.

## Why Rural Poultry Production?

Adoption of commercial exotic breeds in rural / backyard system of rearing is a difficult scenario because of the limited resources of the poor people. The lack of basic infrastructure, compounded feed and proper health practice still make it a dream to go for organized poultry production. Due to this many public/private poultry institutions across the country have developed certain varieties of chicken which can be grown in the rural/backyard conditions with minimum inputs. These chicken varieties can produce 150-160 eggs per annum and could attain around 1.2 to 1.5 kg of body weight at 12 weeks of age with minimum or no inputs. Moreover, they are hardy, resistant to common poultry disease and need less health care.

### Advantages of rural poultry production

It is easy to manage and handle  
 It needs minimal use of land, labour and capital  
 Assured availability of eggs and meat in rural areas  
 Employment generation for the rural poor  
 Constant sources of regular income  
 Avoids cruelty of intensive system of poultry production  
 Improve socioeconomic status of the rural poor  
 Assured availability of protein to the rural people  
 Most important is women in rural areas can operate rural poultry with maximum involvement, thus promotes gender equity. Empirical and circumstantial evidence from many developing countries shows that poultry production can bring significant benefits to households, in terms of contributions to food security, women's empowerment and poverty reduction [4]. Although considerable progress has been made in rural poultry sector during the last decade, it has not achieved its peak due to several potential constraints faced by the farmer/farm women involved in this sector. While going for rural poultry production, it is essential to understand the local production system, their limitations and opportunity, the circumstances under which such traditional system came into existence and how they can be improved further. The focal points for rural / backyard poultry production should focus on development of appropriate variety, utilization of locally available resources, Proper health care and disease control, capacity building/Training of farmers and a well-organized marketing system

### Choice of germplasm

The indigenous breeds of fowl are the choice for rural poultry production as they are hardy, resistance to common diseases, heat tolerant and do not need special attention as compared to commercial breeds. These native breeds have also acquired considerable adaptability to the local climatic environments due to several years of natural selection. There are certain native breeds which have certain unique genes like necked neck and frizzle gene that help in heat dissipation during summer. Dark meat chicken (Kadaknath) is a highly valued chicken at some regions for its nutritive properties is assumed to alleviate bone and kidney disease and also human lactation [5]. The coloured pulmage, long shank and alertness help these birds to protect themselves from predators. However, the growth rate of these varieties of chicken is very slow (1 kg around 16 wks) and they lay few eggs (50-60/year).

### Development of appropriate variety

A need was felt to develop suitable germplasm for rural / backyard production with improvements in the economic traits in the existing native breeds or the development of new stock with infusion of native blood. The productivity of these stocks should be 150-160 eggs per annum and around 1.2 kg meat at 12 weeks of age. Upgrading and cross breeding are the most easy and quickest method for improvement of indigenous germplasm for traits of economic importance [6]. Many public sector institutions are working hard to develop varieties of chicken suitable for rural poultry farming and some of the promising varieties developed so far are given in [Table-1] below.

Table-1 *Chicken varieties developed for rural poultry production*

Name	Feather pattern	Purpose	Organization
Vanaraja	Multicolour	Dual	ICAR-DPR, Hyderabad
Gramapriya	Multicolour	Egg	ICAR-DPR, Hyderabad
Srinidhi	Multicolour	Dual	ICAR-DPR, Hyderabad
Giriraja	Multicolour	Dual	UAS, Bangalore
Krishna - J	Mixed (Black/ brown)	Egg	JNKVV, Jabalpur
Gramalakshmi	Mixed brown	Egg	KAU, Mannuthy
CARI-Shyama	Mixed black	Dual	CARI, Izatanagar
CARI-Nirbheek	Multi colour	Dual	CARI, Izatanagar
Kamrupa	Multi colour	Dual	AAU, Guwahati
Narmadanidhi	Multi colour	Dual	JNKVV, Jabalpur
Pratapdhan	Multi colour	Dual	MPUAT, Udaipur
Jharsim	Multi colour	Dual	BAU, Ranchi

### Utilization of locally available resources

Availability of locally available/produced feed resources is important for rural

poultry production. It is very difficult to know the activity of the birds for their picking up habits and availability of resources in the rural poultry rearing. It is therefore suggested to provide some diets to satisfy their nutrient requirements for optimum production for egg and meat. The feed for birds should be made at a cheaper cost utilizing the locally available feed resources like grain by products, oilseed by products and unconventional feedstuffs and may not necessarily be a balanced one. Locally available feed ingredients such as cassava root meal, rice kani, groundnut oil cake, moringa leaf meal, neem leaf meal, etc. can be utilized to make low-cost feed for supplementary feeding. The research conducted by the author revealed that Azolla leaf meal can be included in the diet of Vanaraja laying hens up to 10% without affecting production performance and egg quality [Table-2][7]. The rural poultry feeding system should be based on a sustainable strategy of education, training and extension on feed resources and their uses focusing women [4].

Table-2 *Dietary incorporation of azolla meal on production performance and egg quality of laying hens*

Parameters	Azolla meal (%)			SEM	P value
	0	5	10		
Egg production (%)	50.09	52.76	51.13	1.81	0.845
Egg weight	61.62	61.62	60.50	0.60	0.692
Feed efficiency (g feed/g egg)	4.41	4.36	4.59	0.22	0.914
Haugh unit	75.38	75.39	74.41	1.04	0.161
Albumen %	58.35	56.86	57.29	0.37	0.249
Yolk %	32.70	34.27	34.07	0.34	0.121
Eggshell %	8.95	8.85	8.63	0.12	0.572
Eggshell thickness (mm)	0.372	0.381	0.378	0.005	0.452

(Annual Report; ICAR-CIWA; 2016-17)

### Disease control

Health services for rural poultry are deficient in many countries including India. Disease control is a major factor that contributes to the success of rural poultry production. The single most important disease concerning to rural poultry keeping has been reported to be Ranikhet Disease (RD) which is accountable for 60-80 percent mortality. Hence vaccination against most common poultry disease (Marek's disease and Infectious bursal disease) in general and Ranikhet disease in particular is very essential for success of rural poultry [8]. Women play central role in rural poultry; therefore, vaccination programmes should focus on the inclusion of women as vaccinators. Ensuring the involvement of women as vaccinators and advisors contributes to both effective poultry disease control programmes and the improved status of women in their households and their communities. Strengthening poultry disease surveillance, prevention and control is required for sustainable rural poultry production. The vaccination schedule for rural poultry farming is given in [Table-3].

Table-3 *Vaccination schedule for rural poultry production*

Age	Vaccine	Dose	Route
1 <sup>st</sup> day	Marek's disease	0.2 ml	Subcutaneous (S/C)
7 <sup>th</sup> day	Newcastle disease	1 drop	Ocular or nasal
14 <sup>th</sup> day	Infectious bursal disease	1 drop	Ocular or oral
24 <sup>th</sup> day	Infectious Bursal disease	1 drop	Ocular or oral
28 <sup>th</sup> day	Newcastle disease	1 drop	Ocular or nasal
6 <sup>th</sup> week	Fowl pox	0.2 ml	Intramuscular (I/M)
8 <sup>th</sup> week	Newcastle disease	0.5ml	I/M
18-20 weeks	ND+IBD killed	0.5ml	I/M or S/C
40 <sup>th</sup> week	ND+IBD killed	0.5ml	I/M or S/C

### Marketing system

In India, rural poultry production is not the main household income-generating activity, and therefore, formal marketing links for production inputs and outputs are generally on-existent [9]. The production inputs are mostly limited to the public sector institutions and therefore, not able to meet the growing demands. The production outputs such as eggs are sold through informal trading with a premium price. Most of the birds in rural areas are sold live. The birds are slaughtered in public places without following any standard hygienic procedure. It is, therefore essential to develop reliable and stable market chain round the year to facilitate marketing of the poultry products. Formation of women producer co-operatives and rural market yards will help in proper marketing.

### Training and Capacity building

It has been observed that failure in rural poultry production in many instances is due to lack of knowledge, experience and sufficient exposure to poultry rearing. Training programmes at village level targeting the stakeholders, women and youth should be organized for effective implementation of rural poultry farming. It will help the farmers to know the important tips related to the poultry management and disease control in the flocks. It has been reported that where women receive training in husbandry practices and gain access to poultry health services, poultry activities are more successful [10].

### Government policies and schemes

National Livestock Mission (NLM) was launched in financial year 2014-15 to ensure sustainable growth and development of livestock sector, including poultry and capacity building of all stakeholders. As per Government of India, Rural Backyard Poultry Scheme Guidelines, 20 chicks are given initially, followed by 15 and 10 chicks with interval of 16 weeks each. Each unit will get financial support for building night shelter for birds and for purchase of 45 numbers of four-week old chicks. Many public sector intuitions under Government of India such as Central Poultry Development Organization, ICAR-Directorate of Poultry Research and ICAR-Central Avian Research Institute; as well as State Agricultural universities are involved in developing chicken varieties suitable for rural poultry farming and promoting capacity building and skilled based training. The financial assistance in shape of loan is available from commercial and co-operative banks for taking up the poultry farming. The technical officers of the Fisheries & Animal Resource Department, Krishi Sahayak Kendra and banks (NABARD) are providing guidance to the entrepreneurs for preparing the project and loan assistance from bank.

### Conclusion

Success of rural poultry production will not only ensure nutritional security of farm family but also enhance house hold income. Definitely it will be a boon for the poor farmers, especially the farm women and an important tool for rural development. Promotion and implementation of long-term policies for sustainable rural poultry production integrating both public and private sector is the need of the hour and if implemented properly, the authors feel that rural poultry will definitely improve the livelihood and promote gender equity in this country.

**Application of review:** Rural poultry production plays an important role in livelihood improvement and promoting gender balance in rural areas. Several aspects such as poultry variety, supplementary feeding, disease control, proper marketing, training and capacity buildings are important while venturing for rural poultry production. Proper implementation of government policies and programmes involving women in rural areas is essential to make it sustainable sources of household income and nutrition security of farm families.

**Research Category:** Livelihood improvement and gender equity

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