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Poultry genetics resources of north east India: Socio-economic importance

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Abstract

Poultry rearing plays a vital role in enhancing the livelihoods of rural communities in northeast India. This region, known for its diverse agro-climatic conditions and rich biodiversity, has a long-standing tradition of backyard poultry farming, especially with indigenous breeds. Poultry farming provides a sustainable source of income, nutrition, and employment, requires minimal inputs, and possesses natural disease resistance, making it ideal for low-cost, small-scale farming systems. In addition to economic benefits, poultry holds cultural and traditional significance in many rural households, often used in rituals and festivals. Due to their superior taste and quality, the growing consumer demand for local quality products further increases market opportunities. Poultry rearing not only contributes to income security but also supports women's empowerment and the preservation of cultural heritage in rural northeast India. This review discusses the economic importance of poultry rearing in the region, government initiatives supporting its growth, major challenges faced by rural poultry farmers, and sustainable strategies to strengthen this sector.

Keywords: Poultry genetic resources, socioeconomic important, challenges, strategies, North East India

1. Introduction

Rural poultry keeping has been a tradition among the tribal community of north-eastern people since time of immemorial. They keep a small flock of chickens in their backyard for their household consumption of meat and eggs and also to meet their day-to-day petty expenses (Deka *et al.*2017) [11]. More than 80% of the population of Assam and another state of the northeastern region lives in rural areas, whose primary occupation is agriculture and allied sectors. Along with agriculture, most of them rear a few livestock and poultry like cattle, buffalo, goat, pig, sheep, chicken and duck in their household to support their livelihood and nutritional security (Islam *et al.* 2022) [19]. Native chicken reared in the backyard system of management in the villages plays an important role in rural livelihood and income generation (Lalhlimpuia, 2021) [28]. The red jungle fowl, or Gallus gallus (Linn), is a bird that inhabits the northeastern region and its surrounding areas. Modern poultry has its roots in the *Gallus gallus* murghi species. The North Eastern Region of India had a total poultry of 69.2 million in the 20th livestock census, 2019 [29]. Contributing 8.1% to the country's poultry population. Among the NE states, except for the states of Arunachal Pradesh and Tripura, all the other North East states experience a high percentage growth of poultry density (Sharma and Omena 2024) [25]. Backyard poultry farming holds considerable potential for egg and meat production as well as income generation in the rural parts of Assam and other northeastern states (Kalita and Borah,2024) [22]. The indigenous birds of Assam and the northeastern region usually have stronger. They are capable of resisting various diseases, can escape easily from predators, and have multicoloured plumage. Indigenous birds are preferred among consumers and so fetch more money than exotic breeds (Kalita *et al.* 2016) [24]. The indigenous ducks (Anas platyrhynchos) of the Northeastern region of India have the innate potential to produce eggs and meat with less input and are good sources of protein. There are various duck populations in this region reared by farmers under traditional systems (Das *et al.* 2019) [9]. Thus, indigenous poultryplays a significant role in egg and meat production in Assam. Low inputs associated with indigenous chicken might be the reason for inferior productivity.

2. Chicken Genetic Resources

In India, there are around 19 registered breeds of chicken till today, and those breeds are morphologically quite similar among themselves. Body conformation like comb type, plumage pattern, egg colour and body weight. The framers are raising those birds in a backyard system, and therefore they are reared with zero input with scavenging, leftover feed, grain and kitchen waste (Mishra, 2022) [30].

Table 1: State-wise Number of poultry population in the North East region in India (figures in numbers)

States	Rural	Urban	Total (Rural + Urban)
Arunachal Pradesh	1489612	1043501	1599575
Assam	45668840	1043501	46712341
Manipur	4636781	1260856	5897637
Meghalaya	5179252	200280	5379532
Mizoram	1310314	736996	2047810
Nagaland	2400500	438444	2838944
Sikkim	572296	8568	580864
Tripura	3887504	280742	4168246
Total	65154099	5012888	69224949(69.2 million)
Share of NE in India%	8.1		

Source: Government of India (2019) 20th Livestock Census All India Report, Ministry of Fisheries, Animal Husbandry & Dairying, Department of Animal Husbandry & Dairying.

Daothigir: The Daothigir chicken is an indigenous poultry breed primarily found in the north bank region of the Brahmaputra River in Assam. Its breeding tract covers most parts of the Kokrajhar district and the Dhubri, Bongaigaon, Barpeta, and Nalbari districts. This breed is characterized by a compact, heavy-set body structure with relatively long legs. The plumage is predominantly black, interspersed with white feathers. According to Kalita *et al.* (2021) [23], the average body weight of males is 1.79 ± 0.13 kg and 1.63 ± 0.13 kg. The average age at sexual maturation is 165.30 ± 7.40 days. On average, a hen of this breed lays 60 to 70 eggs per year, indicating a moderate level of productivity under traditional rearing systems. The Daothigir chicken is well adapted to the local agroclimatic conditions and is typically reared under extensive or backwards management systems.

Miri: The Miri chicken breed is an indigenous breed of Assam, with its breeding tract primarily located in upper Assam, including Majuli Island, Dhemaji, North Lakhimpur, Sibsagar, and Dibrugarh districts. Locally known as “Porog", this breed is recognized for its distinctive cream-coloured plumage with brown, red and black speckles. Morphologically, the miri chicken exhibits a well-adapted structure suited for traditional rearing practices. According to Sharma *et al.* (2024) [40], the most, the average body weight is 1.06 ± 0.049 kg at six months and increases to 1.525 ± 0.048 kg at twelve months. The age at first egg lay is reported to be 212 days. The Clutch size typically ranged from 4 to 5 days, and the average annual egg production is 62 eggs per hen. This breed is primarily reared under extensive backwards systems and plays a significant role in the livelihoods and food security of rural communities in the region.

Kaunayen Chicken: The kaunayen chicken is an indigenous breed native to the valley region of Manipur, with its breeding tract primarily distributed across the Thoubal, Imphal West, Imphal East, and Bishnupur districts. The predominant plumage colour of this chicken is black, followed by brown or red with or without patches. A distinctive morphological feature of the males is the bare, hard and rose-red coloured breast and thighs. Notably, the Kaunayen chicken is traditionally used for cockfighting, reflecting its cultural and socioeconomic importance in the region (Mishra, 2022) [30]. The body weight of an adult male ranged from 2.4 to 3.8 kg, with an average of 3.01±0.06 kg, and that of an adult female ranged from 1.0 to 2.9 kg, with an average of 2.32±0.09 kg. Hens start laying eggs at about 5–7 months of age, typically producing about 10–12 eggs in a laying period of 10–15 days. According to Vij (2016), egg laying is mostly daily in free-ranging hens, but there is a pause of 1–2 days in caged hens.

Chittagong Chicken: The Chittagong chicken is also known as Malay Chicken, is an indigenous breed found predominantly in the northeastern states of India that share a border with Bangladesh. The breed is characterized by a tall stature, broad shoulders, and a slightly narrow loin, giving it a robust appearance. It possesses a featherless shank and a distinctive upright stance, which adds to its unique morphology. The Chittagong chicken is primarily reared in rural areas for income generation and is widely recognized for its excellent mothering ability (Debbarma *et al.*2021) [17]. The average body weight of adult males ranges from 3.5 to 4.5 kg, and females are between 3.0 to 4.0 kg (Yadav *et al.* 2017). Reproductively, hens lay approximately 12 to 14 eggs per clutch, reflecting moderate productivity under traditional rearing systems. The Chittagong breed plays a significant role in supporting rural livelihoods and preserving indigenous poultry biodiversity in the region.

Zoar Chicken: The Zoar chicken is an indigenous poultry germplasm native to Mizoram, with its breeding tract primarily located in the Aizawl and Mamit districts. This breed is distinguished by its long beak, well-developed shanks, and a broad wingspan, moderately developed single comb, and wattle. In males, Zoar chicken exhibit diverse plumage colouration, commonly including a combination of black, golden-yellowish brown, white-orange brownish mix and whitish-yellow. In contrast, females typically display brownish or reddish-black plumage. The average body weight of an adult is approximately 2024 ±40.2 g, while a female's body weight is around 1367.4±19.2 g. The breed reaches sexual maturity between 7 to 8 months, with the first egg laid at approximately 7.5 months of age. The average weight of an egg is 35-40 g, and hens exhibit a mean hatchability rate of 60-70 with the mean annual egg production per hen being around 72 eggs (Lalhlimpuia *et al.* 2021) [28].

Tripura Black Chicken: The Tripura black is a local indigenous chicken germplasm of Tripura, predominantly reared in rural areas under traditional backyard systems. This breed is characterised by its distinct dark, black and

shining plumage, medium body size and pale yellow to blackish grey shanks. The comb is typically single, and the skin colour ranges from white to pink. At 20 weeks of age, the average body weight of males is reported to be 1186.09±25.46 g, while females weight approximately 1003.64 ± 13.99 g. The breed attained an average age at first egg lay of around 160 days. The mean egg production up to 40 weeks of age is 36.17 ± 1.54 eggs and which increases to 124.14 eggs by 72 weeks (Malik and Singh *et al.* 2013) [31].

3. Synthetic Breed

Tokbari: A new dual-purpose chicken variety named Tokbari has been developed by the All India Coordinated Research Project (AICRP) on Poultry Breeding Centre for the North Eastern Hill (NEH) region, located at the Tripura centre. This variety has been specially bred to suit the rural poultry production systems and agro-climatic conditions of the NEH region of India. 'Tokbari' is a multi-colored hybrid chicken variety developed through the crossbreeding of Coloured Broiler, local Tripura Black, and Dahlem Red breeds. This genetic combination has resulted in a bird that is both resilient and productive under diverse rural conditions. The average annual egg production of this variety of chicken is 159.3 eggs under farm and 138.8 eggs under field conditions at the age of 72 weeks (ICAR Annual report,2023-24) [2].

Kamrupa: Kamrupa is a multi-coloured chicken variety reared in rural villages of Assam and the northeastern region. This variety of chicken is developed in CVSc, Khanapara, under All India Coordinated Research Project at Khanapara, Guwahati, Assam Agricultural University (Kalita *et al.,* 2016) [24]. The average body weight of Kamrupa at 40 weeks of age. is 2067.43±10.50 grams. The age at first egg lay is recorded at 178.50±1.25 days, and the average annual egg production is 138±2.10 eggs. These characteristics make Kamrupa a prolific and hardy breed, ideal for both eggs and meat production under rural and low input systems.

Duck Genetic Resources: The indigenous duck population of the northeastern (NE) region of India is predominantly found in the states of Assam, Manipur and Tripura (Phookan *et al.* 2018) [36]. Among these, Assam holds a significant position, with the second-largest duck population in the country, estimated at approximately 7.33 lakh. The most commonly reared duck breed in the region is the Pati duck, which is favoured by local farmers due to its high adaptability, hardiness, and productivity under traditional management systems (Kaushik *et al*.2020) [26].

Pati Ducks: Pati ducks are a native breed of Assam, primarily reared under backyard production systems in rural areas. These ducks are dual-purpose, valued for both meat and egg production (Kaushik *et al*.2020) [26]. Pati ducks exhibit diverse plumage colours, including white, blackish brown, black and white, and khaki, while the bill, shank, and feet are typically yellow and the skin is predominantly white. Age at sexual maturity ranges from 220-235 days, with the average age at first egg recorded as approximately 240 days. The average egg weight of this breed is 60.5 g, and the annual egg production ranges from 75 to 90 eggs per bird (Dutta *et al*.2022) [14].

Nageswari duck: Nageswari ducks, popularly known as 'Nagi', are one of the important egg-type native varieties of duck found only in a few areas of the Cachar and Karimganj districts of Assam (Sharma *et al*.2024) [40]. Adult ducks mainly forage in rice paddies during the day and are kept overnight in bamboo enclosures that are locally known as 'Ugartol'. Islam *et al.* (2024) [20] reported that the highest growth performance is 1486.07 g., and the highest egg production is 192.00 ± 5.70 eggs.

Tripureswari: ICAR-National Bureau of Animal Genetic Resources (NBAGR-2025) [34] registered the Tripureswari with the Accession Number INDIA_DUCK_1900_TRIPURESWARI_11004 on January 2025. This newly registered breed is found in Tripura and distributed in Sepahijala, Gomati, Kowai, Dhalai, South, West, Unokoti, and North Tripura. It is mainly reared for egg and meat purposes. The average body weight at 12 months is 1.199 kg. The annual egg production of these ducks ranged from 70 to 101 eggs.

Tripura deshi duck: The Tripura local duck is primarily meant for meat and egg purposes. Plumage may be dark brown, and the colour of the head might be green, black, white, brown, grey, greyish black, or yellowish brown. The neck is coloured black, white, brown, grey, and yellowish-brownish. A white ring is discovered at the neck, and the bill and shank is primarily yellow. The feet were golden or orange in colour (Phookan *et al.* 2018) [36]. The average age at first egg lay, annual egg production, and egg weight are 193.34±0.95 days, 84.81±0.58 nos., and 51.34 ±0.4 gm, respectively (Debnath *et al.* 2023) [16].

Manipur deshi duck: According to Phookan *et al*. (2018) [36], the Manipuri Desi duck exhibits considerable phenotypic variation, with body colour ranging from completely white, grey, grey wish black, brown, to combinations of white and grey, the neck is typically white or brown, while the head shows s range of colours including green, black, white and black and white, blackish green. The tail is generally black and white; the bill appears yellow or greenish yellow, and the legs and feet are either orange or blackish brown. The average egg weight recorded for this ingenious breed is 66.33 g.

4. Indigenous Chicken Production System in North East India

In rural tribal villages of Assam, particularly among the Karbi tribal community, poultry farming is commonly practised on a small scale, with most farmers keeping their birds alongside their own houses. Due to limited economic resources, small flock sizes, and a lack of scientific knowledge, rural tribal farmers often cannot afford to construct proper poultry housing. As a result, poultry are typically kept in a section of the house at night and allowed to roam freely during the day in backyards and cultivated fields (Rit) to forage for food such as leftover rice, maize, and insects. At night, they are sheltered in simple structures made from locally available materials such as bamboo, wood, thatch, and small mud dwellings, or in traditional

poultry shelters known as *Vo-Aroi.* According to Islam *et al.* (2021) [20], housing systems are primarily designed to protect from predators and shelter during adverse climatic conditions. Nath *et al.* (2012) [33] observed that the scavenging system is predominant in rural poultry, in addition to quantities of cereals, maize etc.

5. Socio-Economic importance

Indigenous chicken plays an important role as an income source, particularly in the rural tribal areas where people rely on agriculture, livestock and poultry rearing for livelihood. poultry rearing is an integral part of a rural tribal household in Northeast India, influencing many aspects of their social, cultural, and economic lives. It provides food security, emergency cash. and cultural importance to tribal households. The following significant benefits of indigenous poultry to rural economies.

Income generation: The primary purpose of indigenous chicken rearing is for cash income to nutritional security for rural households. (Moges *et al*. 2010; Bharti *et al*., 2018) [32, 6]. The rural tribal farmers of northeastern India raise poultry and livestock in their backyard and earn by selling eggs, meat, live chicken, duck and small ruminants. Also, local chicken, eggs and meat fetch a higher price than exotic breeds (Patra and Singh 2016) [35]. According to Das *et al.* (2021) [10], rural poultry farmers in Meghalaya enhance their livelihoods by generating income through the sale of eggs at Rs. 10 per egg and live birds at Rs. 250-300 per kg of live weight, earning approximately Rs. 875-1200 per bird. Therefore, rural poultry farming plays a significant role in strengthening the rural economy.

Food security: Indigenous chicken is crucial in providing food and nutritional security to rural families, as farmers particularly keep a minimum of 5 to 10 chickens in their houses. As a result, food such as eggs and meat is available in every family, ensuring food security. Backyard chicken farming has long been a practiced among rural people, and it is a powerful and impactful tool for rural and underprivileged communities, providing nutritionally rich food via egg and meat supplies. (Ali *et al.* 2020) [4].

Promoting gender equality and women's empowerment: Rural poultry rearing is a potent and impactful tool for women's economic empowerment and livelihood promotion of the rural masses of Assam (Ali *et al.* 2020 and Islam *et al.* 2021) [4, 20]. In the northeastern region, backyard poultry rearing amongst the tribal community was managed by the female members of the family. They are the caretakers and the consumers as well as the marketers of their poultry products (Deka *et al.* 2013) [12]. The women are used to providing locally available feed to their poultry and building nesting boxes for them.

Utility in education of children: Indigenous chicken rearing in rural tribal areas to meet petty expenses such as children's school fees, cosmetics, mobile phone bills, etc. (Islam *et al.* 2021) [20]. Local chicken eggs and meat fetch a higher price than exotic breeds (Patra and Singh 2016) [35]. In the North East Region, rural people are agricultural and livestock rearing is the only source of income. Therefore, poultry rearing is not only food security but also helps in education for their children.

Cultural and historical value: In rural tribal villages, the major purpose of chicken rearing is the use of chickens for cultural and religious ceremonies in order of importance (Fisseha *et al.* 2010) [18]. In the North Eastern Region, the majority of the people are tribal people; Some of the tribes, like Karbi, are preserving and sustaining the utility of the indigenous poultry for religious ceremonies, *Se klarkli*, a spiritual significance, and cultural programs, which play a major role in conserving indigenous chicken. Indigenous male bird is also used for Cock fights (Kukura Juj) during *Jonbeel Mela.* So, indigenous poultry plays a major role in various aspects in rural tribal people of North East India, and for this reason, people from this region have been keeping indigenous poultry sustainably the time immemorial.

Total 2: Estimates of egg production and per capita availability during 2021 -2022 in NE and India.

State	Egg production (Nos. in lakh)		Growth rates (%)	Per capita availability (nos. in lakh)		Growth rates (%)
	2020-2021	2021-2022		2020-2021	2021 -2022	
Arunachal Pradesh	638.51	666.62	4.4	42	43	1
Assam	5253.04	5421.70	3.12	15	15	-
Manipur	1141.63	1148.39	0.59	36	36	-
Meghalaya	1107.85	1114.62	0.61	34	34	-
Mizoram	434.06	407.50	-6.12	34	34	-
Nagaland	384.87	353.99	-8.02	16	16	-
Sikkim	98.13	82.45	-15.98	12	12	-
Tripura	3041.68	3153.37	3.67	75	77	2
NE region	12099.77	12348.64	2.06	33.88	33.38	-
All India	1220496.44	1296001.26	6.19	90	95	5
% Share of NER in India	0.99%	0.95%				-4%

Source: Basic Animal Husbandry Statistics-2022 [5].

6. Major Challenges in Poultry Production in the North East Region

High cost of feed: Feed costs remain one of the most significant concerns in the poultry sector (Rao, 2015) [37]. This cost typically constitutes 60-70% of total production costs. High feed prices are a serious challenge in rural areas, where chicken production is predominantly small-scale and backyard-based. Small farmers generally struggle to buy commercial chicken feed, which limits flock size and productivity. Additionally, rising prices of raw materials

such as feeds and housing materials make it hard for the poultry farmer to grow in rural poor (Donbiaksiam *et al.* 2024) [13].

Lack of breeding farms: The lack of poultry breeding farms for indigenous breeds has made it difficult to access local day-old chicks. Which, in turn, hampers the development of large-scale poultry farming. As a result, most farmers are unable to start or expand poultry farms using local breeds. According to (AH & Vety. Dept. 2019-24) [3], Currently, chicks for both commercial layer and broiler operations are predominantly sourced from outside the state, with hatching eggs and feed materials imported are Andhra Pradesh, Maharashtra, and Karnataka. However, transporting hatching eggs over such long distances reduces hatchability and increases the cost of day-old chicks (DOC), making poultry farming less viable for local farmers.

Disease outbreak: Despite its benefits, poultry farming in North East faces major challenges like Avian influenza outbreaks, causing severe economic losses (Donbiaksiam *et al*. 2024) [13]. Incidence of parasitic diseases is another major cause that affects the performance of chickens under backyard system of production due to poor growth and egg production.

Lack of training and awareness: In rural areas, due to the lack of information, the farmers did not know about medicines and control measures to deal with diseases, which causes great loss in poultry farming (Singh *et al.* 2017) [41]. Strengthening training programs can improve disease management and financial support access (Donbiaksiam *et al*. 2024) [13]. There is a lack of technical people among rural farmers, so they do not have the idea about scientifically rearing local chickens, and they cannot generate more production at the village level. (Singh *et al.* 2021) [38].

Challenges in poultry marketing: Despite advancements in commercial poultry production, marketing remains unorganized, especially in rural areas. The backyard poultry farming in rural areas faces market access challenges, limiting farmers from obtaining premium prices despite producing organic poultry and eggs. Due to poor connectivity, they sell locally at lower rates. The poultry and eggs from this system are generally sold in the local market in villages or towns where farmers do not get a better price (Singh *et al.* 2022) [42].

Lack of availability of required veterinary support: Non-availability of inputs like medicines and vaccines in small numbers of doses near rural and tribal areas is one of the hindrances for local chicken production in the country. In rural tribal areas, there are not many facilities for infrastructure and transportation for the required medicine and vaccine cannot be reached in the rural tribal areas. Islam *et al.* (2019) [21] mentioned that higher incidences of diseases among indigenous chickens might be due to non-compliance with vaccination against the most common diseases like Ranikhet disease and infectious coryza.

7. Government Initiatives and Policies

National Livestock Mission (NLM): The Department of Animal Husbandry & Dairying, Government of India is implementing the scheme of National Livestock Mission since the financial year 2014-15. The National Livestock Mission promotes rural poultry farming by providing financial support, training and infrastructure to small farmers. The role is not only in production of poultry sector but also to increase of per animal productivity through breed improvement of dairy, wool and fodder.

Rural Backyard Poultry Development (RBPD) Programme: This programme is an initiative under the National Livestock Mission (NLM) aimed at improving poultry farming in rural areas. The Rural Backyard Poultry scheme for rural poor households, being implemented by the State Animal Husbandry and Veterinary Department aims to promote poultry as a livelihood option among the poor families. There was convergence of the NRLM, SRLM activities in the field with the afore-mentioned government scheme, whereby SHG and poor families from the villages availed its benefits (Kumar *et al.*2018) [27].

Departmental Poultry and Duck Farm: The A.H. & Veterinary Department, Assam has 22 nos. of Poultry/Duck farms in the state. Out of the 4, the numbers are located in the 6th scheduled districts. The departmental poultry and duck farms in Assam and other Northeastern states play the main role in assisting rural poultry farmers, benefiting small farmers, improving local poultry breeds, and ensuring sustainable poultry farming practices (AH & Vety. Dept, Gov, Assam,2019-24) [3].

Khrishi Vigyan Kendra (KVK): The Technology Intervention Programmes of the Indian Council of Agricultural Research (ICAR), which establishes KVKS responsible for training, research, and demonstration of multiplied technologies. KVK is a knowledge and skill offering centre from where a farmer can obtain information and help for fixing farmers' day-to-day agricultural problems. The main goal of these KVK is to supply primarily based virtually feasible options to the farming community, scientists and researchers (Talukdar *et al.* 2023) [45].

Department of Animal Husbandry, Dairying and Fisheries (DADF): The Department of Animal Husbandry and Dairy plays a critical role in supporting rural farmers through various initiatives aimed at improving livestock production, promoting dairy development, and enhancing rural livelihoods. These initiatives include providing healthcare services, extension and training to farmers, and implementing socioeconomic programs.

Tribal sub plan project: Tribal welfare programs were supported by central government under the Tribal Sub-Plan to the eligible State Agricultural Universities for implementation of the programs covering tribal districts in various states. The funding under the Tribal Sub Plan is done mainly for animal husbandry, backyard poultry and other agricultural sectors in the rural tribal areas (Annual report 2019- 20, DAH &D & MF) [2].

8. Sustainable Strategies for Indigenous Poultry

The most important constraint of poultry improvement programs is the lack of any systemic approach in the selection strategies for indigenous chicken (Sankhyan *et al.*2013) [39]. To overcome limitations in systemic selection approaches in indigenous chicken conservation, several sustainable options need to be adopted. These options seek to increase the productivity, genetic potential, and sustainability of indigenous poultry. Some of the strategy options are:

Self-help groups (SHGs): One of the most effective strategies for rural development is the creation of self-help groups (Singh *et al.* 2021) [38]. Typically, ten to twenty local women or men between the ages of eighteen and forty make up this financial intermediary group. In India, women perform almost 70% of farm labour (Chayal *et al.* 2013) [8]. SHGs give women financial security, which empowers them to raise chickens in their backyards (Singh *et al.* 2018) [38].

Infrastructure and housing: To reduce costs, governments and other organization should promote building low-cost poultry houses using local materials like bamboo, wood, and mud. These materials provide excellent ventilation, keeping birds healthy and comfortable. Training farmers on construction and maintenance can ensure better productivity and poultry health. Vety. Dept & AH (2015-16) [3] mentioned that the Poultry sector is handicapped due to inadequate processing infrastructure, as a result of which the primary producers do not get remunerative prices most of the time.

Veterinary service and treatment: Lack of veterinary facility was the main constraint and was ranked first, followed by disease outbreak lower productivity of local chicken (Islam *et al.*2020) [20]. The state veterinary department plays a pivotal role in rural poultry production. Farmers can access free treatment medicines and vaccines from the local veterinary dispensary. Farmers in remote areas should have access to mobile veterinary services for better healthcare of their animals. Training the farmers on disease prevention, summer and winter management is important. These steps will help keep poultry healthy and farming more successful.

Establishment of hatcheries: The government should construct hatcheries at the district level and hybrid varieties of mother units at the block level. These measures assist in meeting the demand for chicken and promote farmers' livelihoods by giving access to healthy, high-quality day-old chicks. (Sheikh *et al.* 2018) [44]. Establishment of government hatcheries in rural areas like block level can enhance rural poultry.

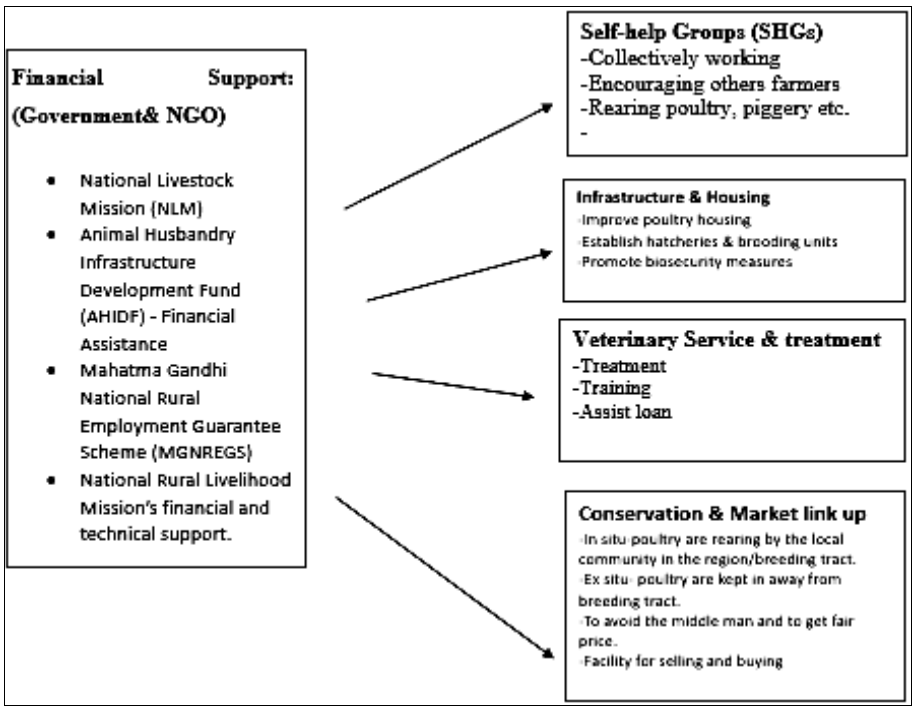

Fig 1: Showing how the government and NGO can support the rural farmers financially to boost the rural poultry.

Financial and government support: The government should give financial help to poultry farmer to enhance their farm infrastructure. NABARD should also provide loans with subsidies to the needed farmers with minimal paperwork. This financial assistance can be helpful to purchase day-old chicks, vaccines, and medicine and enhance farm infrastructure.

Conservation: Rural Backyard Poultry Development (RBPD) Programme, launched in 199-2000 in northeastern India, aims to conserve indigenous poultry breeds by enhancing hatching, brooding, and farm infrastructure. For effective in situ conservation, farmers need education on the importance of native breeds, breeding practices, housing, and disease management. Government support and community-based initiatives are essential to preserve genetic diversity and promote a resilient backyard poultry system.

Market linkup: Market linkup connects farmers directly to buyers, reducing dependence on middlemen who offer a lower price. Therefore, farmers will get a fair price based on market demand and not just on the local buyers. It makes easily available of farm equipment and feed on the doorstep, which supports their growth and boosts income from poultry rearing.

9. Conclusion

A poultry genetic resource in Northeast India plays a vital role in genetic value as a potential and vibrant genetic makeup that can purely differentiate from other parts of the country's chickens. Morphologically, their unique characteristics and their productive ability with zero input, disease resistance, and meat quality are the most important economic values. The sociocultural and religious preferences of the native people give more importance to preservation and therefore more market demand for the respective required traits. So, it is also very essential to focus scientifically on research work for the indigenous chickens of Northeast India. The development of the poultry sector in northeastern India will help in the upliftment of the socio-economic condition of the region and may help in pushing forward the main line of the country.

10. References

1. Anonymous. Strategy Paper on Poultry Development in Assam. Animal Husbandry and Veterinary Department, Assam; 2015-16. Guwahati-781003.
2. Annual report. Department of Animal Husbandry and Dairying, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India; 2019-20.
3. AH & Vety. Dept. Strategy paper on Poultry Sector, Assam Poultry Development Policy Assam (2019-2024). Animal Husbandry and Veterinary Department, Assam; 2019-24. Guwahati-781003.
4. Ali A, Chakravarty M, Rajbongshi A, Deka M, Mazumdar H, Bhuyan S, *et al*. Backyard poultry farming empowering women to doubling farmers' income. J Entomol Zool Stud. 2020;8(2):1138-43.
5. Basic Animal Husbandry Statistics-2022. Division of the Department of Animal Husbandry & Dairying (DAHD). Government of India.
6. Bharti R, Sagar M, Chander M, Singh D, Yadav P. Socio-Economic Status of Backyard Poultry Rearing Rural Women of Bundelkhand Region of Uttar Pradesh. Int J Livest Res. 2018;8(5):158-63.
7. Chatterjee RN, Rajkumar U. An overview of poultry production in India. Indian J Anim Health. 2015;54(2):89-108.
8. Chayal K, Dhaka BL, Poonia MK, Tyagi SVS, Verma SR. Involvement of Farm Women in Decision Making in Agriculture. Stud Home Community Sci. 2013;7(1):35-7.
9. Das B, Das A, Phookan A, Zaman G, Aziz A, Khomba TC, *et al*. Genetic analysis of four indigenous duck populations of north-east India using microsatellite markers. Indian J Anim Sci. 2019;89(2):209-11.
10. Das M, Sinha PK, Sen A, Niranjan M, Baiswar P, Singh N, *et al*. Backyard poultry farming: A step towards doubling tribal farmers' income in the mid-hill region of Meghalaya. Indian J Hill Farming. 2021;34(1):176-82.
11. Deka BC, Deka CK, Islam R, Hussain R, Paul M. Production performance of improved backyard rural poultry in NICRA village of Dhubri district of Assam. Int J Chem Stud. 2017;5(3):802-4.
12. Deka P, Borgohain R, Deka B. Status and constraints of backyard poultry farming amongst tribal community of Jorhat district in Assam. Asian J Anim Sci. 2013;8(2):86-91.
13. Donbiaksiam T, Touthang L, Thaimei KP. Challenges of Poultry Farming in Manipur. Just Agriculture Multidiscip Newslett. 2024;4(9):2582-8223.
14. Dutta D, Dutta IB, Kaushik P, Bora M, Deka RJ, Bhattacharyya BN, *et al*. Morphological Characteristics of Pati Duck. Indian J Anim Res. 2022; DOI:10.18805/IJAR.B-4819.
15. Dutta Borah BK, Kumar S, Sasmal D, Doley S, Kanwat M, Kalita H. Performance of different chicken variety under backyard system in Namsai district of Arunachal Pradesh. Indian J Poult Sci. 2020;55(3):233-7. DOI: 10.5958/0974-8180.2020.00039.2.
16. Debnath J, Debnath B, Sarkar BK. Study on egg production, egg quality traits, clutch size and carcass characteristics of indigenous duck of Tripura, India. Int Conf Curr Adv Agric Anim Allied Sci. 2023;24-29. Shri Mata Vaishno Devi University, Katra, Jammu.
17. Debbarma A, Koloi S, Sarkar D, Tripura S, Debbarma A, Debbarma K. Livestock and fodder production scenario of Tripura: An overview. Pharma Innov J. 2021;SP-10(5):18-20.
18. Fisseha M, Abera M, Tadelle D. Assessment of village chicken production system and evaluation of the productive and reproductive performance of local chicken ecotype in Bure district, North-West Ethiopia. Afr J Agric Res. 2010;5(13):1739-48.
19. Islam R, Islam S, Rahman M, Saikia AK. Productive and reproductive traits of free-range indigenous chicken under different Agro-climatic conditions of Assam. Indian J Anim Health. 2022;61(1):151-7.
20. Islam R, Kalita N, Sapcota D, Sheikh IU, Mahanta J, Sarma M. Characterisation of Free-range Indigenous Chicken Production System in North-East India (Assam). J Anim Res. 2021;11(1):59-70.
21. Islam R, Kalita N, Sapcota D, *et al*. Constraints Perceived by Indigenous Chicken Farmers of Brahmaputra Valley of Assam. Vet Res Int. 2019;7(4):234-6.
22. Kalita N, Borah M. Backyard poultry farming in Assam. Sabujeema Int Multidiscip E-Mag. 2024;4(6):05-8.
23. Kalita N, Talukdar A, Borah MK. A study on the performance of the Daothigir breed of chicken under an intensive system of management in Assam. J Entomol Zool Stud. 2021;9(1):1753-5.
24. Kalita N, Pathak N, Ahmed M. 'Kamrupa'-A new dual chicken variety for farmers of Asom and North-East India. Indian J Anim Sci. 2016;86(6):686-90.
25. Sharma S, Omena E. Livestock economy in North East India: emerging patterns and its implications. Livest Sci. 2024;15:60-8.
26. Kaushik P, Saikia J, Kalita N, Deka R. Morphology and morphometry characteristics of Pati. Int J Chem Stud.

2020;9(1):351-4.
27. Kumar R, Suar D, Mishra P. Characteristics for the Effectiveness of Women's Self-Help Groups in Bihar. VOLUNTAS Int J Volunt Nonprofit Organ. 2018;29(6):1283-99.
28. Lalhlimpuia C, Singh NS, Mayengbam P, Chaudhary JK, Tolenkhomba TC. Phenotypic characterisation of native chicken 'Zoar' of Mizoram, India in its home tract. J Entomol Zool Stud. 2021;9(1):1756-9.
29. Livestock Census. Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India; 2019. New Delhi.
30. Mishra AK. Poultry Genetic Resources of India and its Role in Rural Poultry Production. Indian J Plant Genet Resour. 2022;35(3):242-6. DOI:10.5958/0976-1926.2022.00076.6.
31. Malik S, Singh R. Evaluation of Tripura black native germplasm of poultry at the organised farm conditions. Indian J Anim Sci. 2013;83(2):197-200.
32. Moges F, Mellesse A, Dessie T. Assessment of village chicken production system and evaluation of the productive and reproductive performances of local chicken ecotype in Bure district, North West Ethiopia. Afr J Agric Res. 2010;5:1739-48.
33. Nath PB, Pathak PK, Mohanty AK. Constraints Analysis of Poultry Production at Dzongu Area of North Sikkim in India. Iran J Appl Anim Sci. 2012;2(4):397-401.
34. NBAGR-2025. ICAR-National Bureau of Animal Genetic Resources, Karnal, Haryana.
35. Patra J, Singh DV. Backyard Poultry Farming, a Suitable Intervention for Tribal People for their Livelihood Support and Nutritional Security. Int J Human Soc Sci Invent. 2016;5(6):22-6.
36. Phookan A, Das B, Das A, Islam R, Sharma M, Bharali K, *et al*. Morphology, morphometry and certain egg quality traits of indigenous ducks of North Eastern region of India. Int J Chem Stud. 2018;6:3131-3.
37. Rao S. Trends and Challenges of Poultry Industry. Int J Eng Technol Manag Res. 2015;1(1):8-13.
38. Singh AK, Debbarma A, Baishya A, Sarkar D, Mohanta KP, Anil. Insights of Improved Backyard Poultry Farming in India with Special Reference to Hilly Regions: A Review. Int J Livest Res. 2021;11(3):1-16.
39. Sankhyan V, Katoch S, Thakur YP, Dinesh K, Patial S, Bhardwaj N. Analysis of characteristics and improvement strategies of rural poultry farming in north northwestern Himalayan state of Himachal Pradesh, India. Livest Res Rural Dev. 2013;25(12):Article #211.
40. Sharma SD, Zaman G, Das B, Das A, Phookan A, Akhtar F. Prediction of annual egg production based on part-year egg production in Nageswari ducks of Assam. Pharma Innov J. 2024;13(3):165-7.
41. Singh JK, L, Mohilal N. Gastrointestinal parasitic infection in diverse species of domestic birds of Manipur, India. J Parasit Dis. 2017;41:142-6.
42. Singh M, Mollier RT, Paton RN, *et al*. Backyard poultry farming with improved germplasm: Sustainable food production and nutritional security in fragile ecosystem. Front Sustain Food Syst. 2022;6:962268. https://doi.org/10.3389/fsufs.2022.962268.
43. Sarma O, Das B, Phookan A, Gogoi A. Animal Genetic Resources and Biodiversity in the North-Eastern State of Assam, India: An Overview. Uttar Pradesh J Zool. 2025;46(5):140-52. https://doi.org/10.56557/upjoz/2025/v46i54830.
44. Sheikh IU, Nissa SS, Zaffer B, Akand AH, Bulbul KH, Hasin D, *et al*. Propagation of backyard poultry farming for nutritional security in rural areas. Int J Vet Sci Anim Husb. 2018;3(4):03-10.
45. Talukdar, Das PK, Borah A. Role performance of subject matter specialists of Krishi Vigyan Kendra under Assam Agricultural University. Pharma Innov J. 2023;SP-12(7):810-12.