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## Current Status of Duck Farming in India and Its Future Perspectives

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### Abstract:

Duck farming constitutes an important component of India's traditional poultry sector, particularly in the eastern, northeastern, and southern regions where wetland-based production systems support rural livelihoods and nutritional security. Despite contributing only a modest share to national poultry production, ducks provide sustainable income through low-input production systems, efficient resource utilization, and integration with rice and fish farming. The sector is predominantly driven by indigenous germplasm adapted to diverse agro-climatic conditions; however, its growth remains constrained by fragmented production systems, inadequate genetic improvement, seasonal feed shortages, disease challenges, weak veterinary support, and unorganized marketing. This review summarizes the current status of the Indian duck industry, highlighting population trends, production systems, socioeconomic importance, and the major constraints limiting sustainable development. It further discusses strategic interventions including conservation and genetic improvement of indigenous breeds, strengthening of extension and animal health services, promotion of integrated farming systems, and development of organized value chains. A coordinated approach involving research, policy support, and farmer-centric technologies is essential to enhance productivity, profitability, and long-term sustainability of the Indian duck industry.

**Keywords:** *Climate resilience, Duck farming, Indigenous ducks, India, Poultry industry.*

### Introduction:

Duck farming represents one of the oldest and most resilient components of India's traditional poultry sector, particularly in the eastern, northeastern, and southern regions where wetlands, river basins, and rice-based agroecosystems provide favourable conditions for rearing (Kamal et al., 2023; Islam et al., 2026). Unlike intensive chicken production, duck husbandry largely depends on low-input

scavenging systems that efficiently utilize natural feed resources, agricultural by-products, and aquatic ecosystems. This production strategy minimizes feeding costs while generating meat and eggs, thereby supporting household nutrition and providing supplementary income for millions of smallholders and landless farming families. Indigenous ducks dominate Indian production because of their adaptability to diverse agro-climatic conditions, superior scavenging ability, tolerance to harsh environments, and relative resistance to many endemic diseases compared with other poultry species (Kamal et al., 2023). India possesses one of the world's largest duck populations, with production concentrated primarily in West Bengal, Assam, Kerala, Manipur, Jharkhand, and Tripura. Although ducks contribute only a modest share of the national poultry sector, their socioeconomic importance extends beyond production statistics. Duck farming integrates efficiently with rice cultivation, fish farming, and wetland agriculture, enhances resource recycling, supports women's participation in livestock production, and strengthens livelihood resilience in ecologically vulnerable regions (Islam et al., 2026). Nevertheless, rapid land-use changes, wetland degradation, shrinking grazing resources, disease outbreaks, inadequate genetic improvement programmes, fragmented marketing systems, and limited institutional support increasingly constrain the sustainable growth of the sector. Recent reviews have described indigenous duck genetic resources and small-scale production systems separately (Kamal et al., 2023; Islam et al., 2026); however, a concise synthesis encompassing the present status of the Indian duck industry together with its emerging constraints and future development opportunities remains limited. This review summarizes the current status of the Indian duck industry, discusses the major factors limiting its sustainable growth, and highlights future priorities for improving productivity, profitability, and long-term resilience. Conceptual framework illustrating the current status, major challenges, and future prospects of the Indian duck industry are illustrated in Figure 1.



**Fig. 1.** Conceptual framework illustrating the current status, major challenges, and future prospects of the Indian duck industry. The figure summarizes the key drivers influencing sustainable development of duck farming in India.

### Current Status of the Indian Duck Industry:

India ranks among the leading duck-producing countries globally and supports one of the largest duck populations, with approximately 33.5 million birds recorded in the 20th Livestock Census. Although ducks constitute only a small proportion of the national poultry population, they remain an integral component of rural poultry production, contributing approximately 1.1% of total egg production and 2–3% of poultry meat output (DAHD, 2023; Islam et al., 2026). During the past decade, the national duck population has shown an overall increasing trend, largely driven by expansion in the eastern and northeastern regions, while several southern states have experienced stagnation or decline because of urbanization, wetland degradation, and changing agricultural practices (Islam et al., 2026). Duck production in India exhibits a distinct geographical distribution. West Bengal and Assam together account for nearly three-fourths of the national duck population, followed by Kerala, Manipur, Jharkhand, Tripura, Bihar, Andhra Pradesh, Odisha, and Tamil Nadu. This regional concentration reflects the abundance of wetlands, floodplains, rivers, ponds, and rice-growing ecosystems that provide ideal scavenging habitats and natural feed resources. Consequently, duck farming has become closely integrated with the socio-economic fabric of these regions, where it serves as an important source of food security and supplementary household income (Kamal et al., 2023).

The Indian duck sector remains predominantly smallholder-based. More than 90% of ducks belong to indigenous or non-descript populations managed under extensive or semi-intensive production systems with minimal external inputs. Birds are generally allowed to forage freely in harvested paddy fields, village ponds, marshes, and irrigation channels, while household by-products, broken rice, and rice bran constitute the principal supplementary feeds. Such systems substantially reduce production costs and enable economically weaker households to maintain profitable flocks despite limited access to commercial feed resources and veterinary services (Kamal et al., 2023; Islam et al., 2026). India possesses considerable duck genetic diversity represented by indigenous breeds such as Pati, Maithili, Nageswari, Tripureswari, Chara, Chemballi, Keeri, and Sanyasi, alongside improved breeds including Khaki Campbell, White Pekin, Indian Runner, and Muscovy. Indigenous ducks continue to dominate rural production because of their adaptability, efficient scavenging ability, reproductive fitness, and resilience under diverse agro-climatic conditions, whereas improved breeds are primarily adopted in organized farms to enhance egg and meat productivity (Kamal et al., 2023). Despite its relatively modest contribution to national poultry production, duck farming performs multiple functions beyond meat and egg production. Integration with rice cultivation and aquaculture improves nutrient recycling, suppresses insect pests and weeds, enhances farm resource utilization, and diversifies household income. The sector also provides livelihood opportunities for women, tribal communities, and landless farmers, reinforcing its importance as a climate-resilient and resource-efficient livestock enterprise in several agro-ecological regions of India.

### Emerging Challenges and Future Perspectives:

Despite its ecological suitability and socioeconomic significance, the Indian duck industry continues to operate below its production potential because of multiple interconnected constraints. The sector remains largely unorganized and is dominated by smallholder production with limited access to quality breeding stock, scientific management, institutional credit, and veterinary services. Most indigenous ducks reproduce through uncontrolled natural mating, resulting in inconsistent productivity and gradual erosion of valuable genetic resources. Although several native breeds possess desirable adaptive traits, organized selection and conservation programmes remain inadequate to exploit their genetic potential (Kamal et al., 2023). Feed availability represents another major limitation. Traditional scavenging systems depend heavily on wetlands, harvested paddy fields, and natural aquatic resources, all of which have declined because of urban expansion, land-use changes, intensive agriculture, and climate variability. Seasonal shortages of natural feed frequently reduce body condition, egg production, and reproductive efficiency. Simultaneously, increasing prices of commercial feed discourage smallholders from adopting semi-intensive production systems, thereby limiting opportunities for productivity improvement (Islam et al., 2026).

Disease prevention and biosecurity also require greater attention. Ducks generally exhibit higher environmental adaptability than chickens; however, outbreaks of avian influenza, duck plague, duck cholera, and parasitic infections continue to threaten production, particularly under extensive production systems where contact with migratory birds and shared water bodies facilitates pathogen transmission. Limited disease surveillance, inadequate vaccination coverage, and insufficient veterinary infrastructure further increase production risks, especially in remote rural areas (Islam et al., 2026). Marketing remains one of the weakest components of the Indian duck sector. Production is fragmented, value chains are poorly organized, and most farmers rely on local markets where prices fluctuate considerably. Limited processing facilities, weak cold-chain infrastructure, and the absence of producer organizations reduce opportunities for value addition and restrict market expansion. Consequently, the economic contribution of duck farming remains disproportionately low compared with its production potential.

Addressing these challenges requires coordinated interventions that integrate genetic improvement, conservation of indigenous breeds, strengthening of hatchery networks, improved extension services, disease surveillance, and market development. Expansion of integrated rice–duck and duck–fish production systems, promotion of locally available alternative feed resources, and establishment of farmer cooperatives could substantially improve profitability while maintaining environmental sustainability. Future research should prioritize genomic characterization of indigenous germplasm, precision nutrition, climate-resilient production systems, and digital technologies for disease monitoring and farm management. Such interventions would strengthen the resilience of the Indian duck industry and

enhance its contribution to rural livelihoods, nutritional security, and sustainable agricultural development.

### Conclusion:

Duck farming remains an integral component of India's diversified poultry sector, supporting rural livelihoods, nutritional security, and sustainable farming systems, particularly in the eastern, northeastern, and southern states. Although the industry contributes modestly to national poultry production, its ecological adaptability, compatibility with integrated farming systems, and predominance of resilient indigenous germplasm provide considerable opportunities for future expansion. Nevertheless, fragmented production systems, inadequate genetic improvement, feed constraints, disease risks, and weak market linkages continue to limit productivity and profitability. Strengthening breed conservation, scientific production practices, veterinary and extension services, organized marketing, and value-chain development will be essential for unlocking the sector's full potential. A coordinated approach involving research institutions, policymakers, and farming communities can transform duck farming from a predominantly subsistence enterprise into a competitive, climate-resilient, and economically sustainable component of Indian livestock agriculture.

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