

Tripureswari Duck: A New Feather in Indian Poultry Sector

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ABSTRACT

The *Tripureswari* duck, an indigenous breed from Tripura, has been officially recognized for its adaptability, resilience and economic potential in poultry farming. Known for high egg production, quality meat and suitability for wetlands, it plays a vital role in rural livelihoods, food security and sustainable farming. This article explores its journey from traditional rearing to formal recognition while addressing challenges like large-scale breeding, disease resistance and market acceptance. Emphasizing the need for conservation, research and policy support, it highlights the breed's ecological and economic significance in Indian poultry sector.

INTRODUCTION

The poultry industry in India has experienced significant growth since its inception and is now recognized as a rapidly expanding sector. According to the 20th Livestock Census, India's poultry population stands at 851.81 million, reflecting a 16.8% rise from the 19th Livestock Census, which recorded 729.2 million birds. The major

proportion of this population is chicken followed by ducks. They hold a significant position after chickens in fulfilling the demand for eggs and meat in India. Due to its many advantages, it is popular in the coastal states and states having large water bodies. In the North-Eastern region, local farmers primarily raise indigenous ducks under traditional

farming systems, contributing significantly to the socio-economic well-being of small and marginal farmers. These indigenous ducks are known for their resilience, adaptability to challenging environmental conditions and resistance to common poultry diseases. In rural areas, ducks are predominantly reared under a free-range system due to their excellent foraging abilities, allowing them to source a substantial portion of their own feed. Indian total duck population stands at 33.51 million, with major concentrations in states such as West Bengal, Assam, Kerala, Bihar, Andhra Pradesh, Odisha, and Tamil Nadu (Das and Rahman, 2019). Among the North-Eastern states, Tripura has a duck population of 8.5 lakh, ranking third after Assam and Manipur (Livestock Census, 2019; Das *et al.*, 2020).

Indian poultry sector is witnessing a new revolution with the introduction of the *Tripureswari* duck, an indigenous breed developed in Tripura. Known for its high egg-laying capacity, adaptability to local conditions and potential to boost rural livelihoods, this duck breed is poised to make a significant impact on the national duck farming industry. As India continues to explore sustainable and region-specific poultry farming solutions, the *Tripureswari* duck stands out as a promising addition. This article delves into the significance, benefits, challenges and future prospects of this breed in shaping a more resilient and productive poultry sector.

Duck production status

Indian duck population has seen fluctuations over the years. According to the 19th Livestock Census (2012), the total duck population was 23.5 million, reflecting a 4.1% decline from 27.6 million in 2007. However, the 20th Livestock Census reported a significant rise, with the duck population reaching 33.51 million—an increase of 42.35%. Globally, India ranked fifth in duck

population in 2020, with 35.51 million ducks, while China led with 682.94 million, followed by Vietnam, Bangladesh, and Indonesia (Naik *et al.*, 2022). Despite the growing numbers, India's meat-type ducks have lower market weights compared to global standards due to the lack of targeted breeding programs. While Pekin ducks, commonly reared for meat, reach slaughter weight (2.75–4 kg) within 4–5 weeks, Indian meat ducks weigh significantly less. In 2019, India produced 43,941 tonnes of duck meat, with an average carcass yield of 1,069 g per bird. Backyard duck farming remains dominant, with 32.5 million ducks reared under this system, compared to only 1.01 million in farms. Among layers, desi ducks constitute over 87% of the total duck population, with average egg yields of 116.87 eggs per year in backyard systems and 168.19 eggs on commercial farms. Improved breeds show higher productivity, laying up to 209.65 eggs annually. These variations highlight the potential for genetic improvement in Indian duck farming, offering opportunities for enhanced productivity in both egg and meat production (Kamal *et al.*, 2023; Padhi and Giri, 2024).

Indigenous duck germplasm

Status of different indigenous breeds of duck (as reviewed by Kamal *et al.*, 2023; Padhi and Giri, 2024) in India is not well documented, though it was reported that in the country 20 breeds and 34 varieties of duck are present, but these are to be documented. Only four duck breeds (25 in total poultry) in the country are being registered including *Tripureswari* and more indigenous ducks in different states are being reported but this needs detailed studies for its registration and conservation. Breeding and selection programme in both indigenous and exotic ducks are almost nil, except a few, which needs much attention. Infrastructure for breeding programme in ducks needs to be developed so that the same may be carried out for improvement of egg type duck. Though

crossbreeding seems to be beneficial to improve performance in crosses than the indigenous ducks, but that needs to be carried out by conservation of indigenous duck germplasm before large scale supply of crossbred ducklings, as it may mix up genetic makeup of our indigenous ducks which are being exposed to natural selection since years and are well adapted to our harsh climate and poor management conditions under backyard. Table 1 has a summary (adapted from Padhi and Giri, 2024; NBAGR, 2025) of registered breeds of duck. India possesses a diverse and uncharacterized indigenous duck germplasm beyond the four officially registered breeds. Several native duck populations, including Nageshwari, Kuttanad, Kuzi, and Moti, as well as those found in various states such as Tamil Nadu, Odisha, Kashmir, Jharkhand, West Bengal, Andhra Pradesh, and Chhattisgarh, have been identified but not yet formally recognized as distinct breeds. These indigenous ducks have been documented in previous studies, including those by Naik *et al.* (2022), Kamal *et al.* (2023), and Padhi and Giri (2024), highlighting their potential significance in genetic diversity and conservation efforts.

Table 1. Duck germplasm in India

Sl. No.	Germplasm	Description	References
1.	Pati	Native state: Assam Accession number: INDIA_DUCK_0200_PATI_11001 Utility: Meat, egg and ritual sacrifices.	Kaushik <i>et al.</i> , 2021
2.	Maithili	Native state: Bihar Accession number: INDIA_DUCK_0300_MAITHILI_11002 Utility: Meat and egg	Kamal <i>et al.</i> , 2020
3.	Andamani	Native state: Andaman & Nicobar Accession number: INDIA_DUCK_3300_MAITHILI_11003 Utility: Meat and egg	NBAGR, 2025

***Tripureswari* duck: origin, identification and characterization**

The indigenous duck population of Tripura is distributed across the state, with a higher concentration in the Sepahijala, Gomati, Kowai, Dhalai, Unokoti, West, North and South districts. Debnath *et al.* (2023) conducted genetic characterization of these ducks by analysing 36 randomly selected native individuals using 25 duck-specific microsatellite loci. All studied loci exhibited polymorphism, resolving 112 alleles with counts ranging from 2 to 15 and an average (N_a) of 4.480 ± 0.659 . Allele sizes varied between 96–357 bp, and frequencies ranged from 0.014 to 0.819. Nei's heterozygosity, effective allele number (N_e), and Shannon's Information Index (I) averaged 0.617 ± 0.036 , 3.538 ± 0.527 , and 1.184 ± 0.112 , respectively. Botstein's polymorphic information content (PIC) ranged from 0.252 to 0.911, with an average of 0.562 ± 0.040 , indicating that 16 loci were moderately to highly polymorphic and informative ($PIC \geq 0.5$). At all loci, N_e was lower than N_a , suggesting a predominance of heterozygosity. Chi-square and G-square tests indicated significant deviations from Hardy-Weinberg equilibrium across all loci. The moderate to high levels of polymorphism observed in the analyzed microsatellite markers indicated their potential utility in genetic characterization and the development of suitable conservation strategies to maximize the genetic potential of indigenous duck populations in Tripura. Later on, the said duck populations have been registered as a new duck breed and recognized as *Tripureswari*.

Traits of *Tripureswari* duck

This indigenous duck of Tripura is widely distributed across the state, with a higher prevalence in the Sepahijala, Gomati, Khowai, Dhalai, Unokoti, West, North and South districts. These ducks exhibit a mix of feather colours, predominantly dark brown plumage,

while their head colour varies, including shades of green, black, white, brown, grey, and yellowish brown. Additionally, their bill, shank, and feet are either orange or yellow (Phookan *et al.*, 2018). Currently, India has only four recognized duck breeds, while the rest comprise various non-descript populations (NBAGR, 2025). These indigenous ducks possess a natural ability to produce a significant quantity of eggs and meat with minimal input, and their eggs and meat are highly preferred over chicken in this region (Phookan *et al.*, 2018). These birds are mainly reared for egg (average egg production 70-101 eggs) and meat purposes (average body weight 1.199 Kg in 12 months) (NBAGR, 2025).

Significance, challenges and future prospects

The Tripureswari duck is a valuable indigenous breed that enhances the Indian poultry sector, particularly in Tripura, by offering high egg production, resilience, and adaptability to local conditions. Its adoption can improve food security and provide sustainable income for rural farmers while promoting agricultural biodiversity and reducing dependence on imported breeds. However, challenges such as lack of recognized breeds, limited scientific breeding programmes, poor nutrition & feeding practices, lack of veterinary support, limited market access, predation & environmental challenges, water source dependency, limited awareness and economic constraints hinder widespread acceptance. Overcoming these barriers requires targeted education, investment in veterinary services, and better supply chains. With strategic interventions, including government support, optimized breeding, and cooperative farming, the Tripureswari duck has the potential to become a key component of sustainable poultry farming in India, offering both economic and ecological benefits.

CONCLUSION

The introduction of the *Tripureswari* duck marks a significant milestone in India's poultry sector, particularly in the northeastern region. With its promising traits—high egg production, adaptability to local conditions, and economic viability—this indigenous breed has the potential to enhance rural livelihoods and boost the country's duck farming industry. By promoting such region-specific breeds, India can move towards a more sustainable and self-sufficient poultry sector, reducing dependency on imported breeds while preserving local biodiversity. As research and breeding efforts continue, the *Tripureswari* duck could emerge as a game-changer for farmers, contributing to food security and economic growth in the years to come.

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