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Popular article

Comparative Study of Interior and Exterior Egg Quality Traits in Nageswari and Khaki Campbell Ducks of Tripura

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INTRODUCTION:

India's poultry business has grown significantly and is today recognized as a rapidly expanding sector. According to the 20th Livestock Census, there are 851.81 million poultry in India, a 16.8% growth from the 729.2 million birds reported in the 19th Livestock Census. Chickens make up a large amount of this population, with ducks coming in second. They are essential to meeting India's needs for meat and eggs, second only to chickens. Indigenous ducks make for about 90% of all ducks in India. Local farmers in the Northeast mostly cultivate native duck breeds using conventional farming techniques, which significantly improves the socioeconomic standing of small and marginal farmers. With 8.5 lakh ducks, Tripura ranks third among the Northeastern states, behind Assam and Manipur (Livestock Census, 2019; Das et al., 2020; Debnath et al., 2023). The Nageswari Duck and Khaki Campbell breed of duck found in Tripura that is well-known for its high egg production, adaptability to local conditions, and potential to improve rural incomes. In addition to having a thicker shell that keeps them fresher for longer, duck eggs offer twice the nutritious value of chicken eggs. Duck eggs are high in unsaturated fatty acids, which help control cholesterol levels, and offer nourishment in a well-balanced ratio. The goal of the current study was to compare the internal and external quality of eggs from Nageswari and Khaki Campbell ducks.

Materials and Methods

The study was conducted at the Livestock Farm Complex in the College of Veterinary Sciences and Animal Husbandry in R.K. Nagar, West Tripura. Fifty Nageswari eggs and fifty



Khaki Campbell duck eggs were gathered from Tripura's rural farmers. In this study, the eggs' external quality parameters—weight, length, width, and air cell depth were examined, and the Shultz (1953) formula was used to determine the shape index and surface area.

The height, length, and width of the albumen and yolk, as well as the yolk color score, weight, and thickness of the eggshell, were recorded as internal quality criteria of the eggs. The formulas from Heiman and Carver (1936), Sharp and Powell (1930), and Haugh (1937) were used to determine the albumen index, yolk index, and Haugh unit, respectively.

RESULTS

Internal and external characteristics of egg quality were shown in Tables 1 and 2, respectively. The average weight of the eggs laid by Nageswari and Khaki Campbell ducks in Tripura was recorded at 54.59 ± 0.13 g and 56.87 ± 0.17 g, respectively. It has been observed that Khaki Campbell ducks weigh somewhat more eggs than Nageswari ducks, which is probably due to the managemental techniques and genetic groups. The Nageswari and Khaki Campbell ducks had surface areas of 52.08 ± 0.18 cm² and 54.43 ± 0.1 cm², respectively. In Nageswari and Khakicampbell Ducks, the Shape Index (%) was 63.99 ± 0.31 and 68.21 ± 0.21 , respectively, while the Air cell depth was 2.12 ± 0.03 mm and 2.32 ± 0.02 mm. Differences in the record of Nageswari and Khaki Campbell duck may be attributed to the differences in the genetic groups and managemental practices.

Table 1. Mean (\pm SE) External Egg Quality traits in Nageswari and Khaki Campbell Ducks of Tripura.

| Parameters | N | Genetic Groups | |
|---------------------------------|----|------------------|---------------------|
| | | Nageswari Duck | Khaki Campbell Duck |
| Egg weight (g) | 50 | 54.59 ± 0.13 | 56.87 ± 0.17 |
| Shape Index (%) | 50 | 63.99 ± 0.31 | 68.21 ± 0.21 |
| Surface area (cm ²) | 50 | 52.08 ± 0.18 | 54.43 ± 0.1 |
| Air cell Depth (mm) | 50 | 2.12 ± 0.03 | 2.32 ± 0.02 |

In the current study, Khaki Campbell ducks had higher Albumen Index and Haugh Unit values of 0.11 ± 0.09 and 69.03 ± 0.55 compared to Nageswari ducks. The variations in the Albumen Index and Haugh Unit may be caused by variations in the duck breeds studied, the way eggs are handled during transportation, the amount of time between laying and quality assessment, storage conditions, and variations in duck raising management approaches. The yolk index of Khaki Campbell and Nageswari ducks showed differences, with average values of 0.39 ± 0.93 and 0.31 ± 0.11 , respectively. The shell weight of the Nageswari duck was found to be 6.77 ± 0.25 g, while that of the Khaki Campbell duck was 7.28 ± 0.04 g.



Table 2. Mean (\pm SE) Internal Egg Quality traits in Nageswari and Khaki Campbell Ducks of Tripura

| Parameters | N | Genetic Groups | |
|----------------------|----|------------------|---------------------|
| | | Nageswari Duck | Khaki Campbell Duck |
| Albumin Index | 50 | 0.098 \pm 0.00 | 0.11 \pm 0.09 |
| Haugh Unit | 50 | 67.2 \pm 0.03 | 69.03 \pm 0.55 |
| Yolk Index | 50 | 0.31 \pm 0.11 | 0.39 \pm 0.93 |
| Shell thickness (mm) | 50 | 0.42 \pm 0.006 | 0.38 \pm 0.01 |
| Shell weight (g) | 50 | 6.77 \pm 0.25 | 7.28 \pm 0.04 |
| Yolk Colour | 50 | 6.22 \pm 0.21 | 6.38 \pm 0.32 |

Conclusions

The current study found that the different egg parameters of Khaki Campbell and Nageswari ducks were significantly influenced by the genetic group, or breed.

