

**Assessing the productivity of BLRI-developed native ducks compared to indigenous ducks: Management and profitability in conventional farming systems in Bhanga, Faridpur, Bangladesh**

**Syidul Islam**

Doctor of Veterinary Medicine, Scientific Officer  
Bangladesh Livestock Research Institute  
1341, Dhaka, Savar, Bangladesh  
<https://orcid.org/0009-0004-5152-2623>

**Ashraful Islam**

Doctor of Veterinary Medicine, Scientific Officer  
Bangladesh Livestock Research Institute  
1341, Dhaka, Savar, Bangladesh  
<https://orcid.org/0009-0004-8271-1830>

**Shermin Sultana**

Scientific Officer  
Bangladesh Livestock Research Institute  
1341, Dhaka, Savar, Bangladesh  
<https://orcid.org/0009-0007-7374-7980>

**Rezwanul Islam**

Scientific Officer  
Bangladesh Livestock Research Institute, Regional Station  
Bhanga, Faridpur, Bangladesh

**Habibur Rahman**

Doctor of Veterinary Medicine, Senior Scientific Officer  
Bangladesh Livestock Research Institute  
1341, Dhaka, Savar, Bangladesh  
<https://orcid.org/0000-0002-3221-2144>

**Razia Khatun\***

PhD in Animal Husbandry, Principal Scientific Officer  
Bangladesh Livestock Research Institute  
1341, Dhaka, Savar, Bangladesh  
<https://orcid.org/0009-0009-6281-6076>

**Suggested Citation:**

Islam, S., Islam, A., Sultana, S., Islam, R., Rahman, H., & Khatun, R. (2024). Assessing the productivity of BLRI-developed native ducks compared to indigenous ducks: Management and profitability in conventional farming systems in Bhanga, Faridpur, Bangladesh. *Ukrainian Journal of Veterinary Sciences*, 15(4), 9-26. doi: 10.31548/veterinary4.2024.09.

\*Corresponding author



Copyright © The Author(s). This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (<https://creativecommons.org/licenses/by/4.0/>)

**Abstract.** This study aimed to disseminate BLRI-1 (Rupali) and BLRI-2 (Nageswari) ducks and evaluate their productive potential compared to indigenous ducks under existing farming conditions in the Chahala upazila of Faridpur. The experiment followed a completely randomised design, with BLRI-developed native ducks as the treatment group and indigenous ducks as the control group. Data on the productive performance of BLRI-developed native ducks were collected and compared with local germplasm. The highest average growth performance was recorded for Rupali male ducks, which reached 1,505.62 g by 24 weeks, compared to 1,486.07 g for Nageswari male ducks. The highest egg production was observed in Nageswari ducks, with  $192.00 \pm 5.70$  eggs, followed by Rupali ducks with  $181.65 \pm 7.55$  eggs. Approximately 84.4% of farmers vaccinated their ducks against duck plague and duck cholera. Disease outbreaks were prevalent, with the highest incidences of duck plague and duck cholera observed in native ducks. Farmers achieved the highest benefit-cost ratio of 1.60 with Rupali ducks, while the lowest ratio of 1.30 was recorded for indigenous ducks. The overall ratio for duck rearing was 1.49. Disease outbreaks were identified as the major constraint to duck farming, affecting 73.0% of farmers. The findings underscore the productive performance and economic viability of BLRI-developed ducks. The study highlighted the importance of breed-specific management strategies, including improved housing, feeding, and disease management practices, and recommended farmer training to enhance the profitability of duck farming.

**Keywords:** BLRI native duck; growth performance; disease outbreaks; benefit-cost ratio

## Introduction

Duck raising is popular worldwide; however, according to S. Ahmed *et al.* (2021), more than 75% of ducks are reared in Asia. Poultry farming plays a crucial role in livestock production, providing both nutrition and a source of household income for small-scale, marginal, and landless farmers (Rahman *et al.*, 2020). Many farmers who cannot afford to rear larger animals, such as cattle and goats, find it easier to raise poultry. Ducks are among the largest poultry species raised in Bangladesh's southern and coastal regions. Duck rearing is a favourable livelihood option for the landless, as ducks can utilise various feed sources available in natural water bodies, such as wetlands, lowland areas, beels, haors, rivers, and canals. The environment and climate of Bangladesh are well-suited to duck rearing. Ducks are hardy animals that adapt easily to diverse agro-climatic conditions and are more resistant to diseases than chickens. Duck meat is highly popular

in Bangladesh, particularly during the winter, when demand is significantly higher. According to the DLS (2024), the total duck population in Bangladesh is 68.261 million, making it the second-largest livestock group in the country.

According to the Food and Agriculture Organization of Bangladesh rears a substantial number of ducks and ranks 11<sup>th</sup> and 4<sup>th</sup> in duck meat and egg production, respectively, among Asian countries (Pingel, 2011). M. Begum *et al.* (2020) reported that ducks contribute approximately 22-25% to the country's total annual egg production, though this contribution has remained constant over the years. The northeastern and coastal areas of Bangladesh are particularly suitable for duck farming due to their land ecology, agro-climatic conditions, and abundant natural feed supplies, all of which significantly impact the duck population (Churchil & Jalaludeen, 2022). Ducks offer several advantages, including strong disease

ance, excellent foraging abilities in wetland environments, and natural flocking tendency etc. S. Ahmed *et al.* (2021) noted that native duck germplasm is reared in Bangladesh for both meat and egg production. Among livestock and poultry species, ducks are regarded as one of the most valuable resources.

Duck rearing in the traditional way has been practised for centuries, as noted by S. Parvez *et al.* (2020). In the low-lying regions of Bangladesh, native ducks are crucial for generating income, providing nutrition, and creating job opportunities. Duck farming represents an important component of sustainable livelihood development for poor rural communities and serves as an additional source of household income (Islam *et al.*, 2023). Bangladesh encompasses 16,488 square kilometres of haors, canals, ponds, and low-lying water reservoirs, which can be effectively utilised for aquatic poultry (duck) production. Duck rearing offers a holistic and self-sufficient strategy to empower small farmers and landless labourers. This approach not only improves income, employment, and nutrition but also promotes community development, gender equality, and environmental protection, all within the broader framework of rural development, with ducks serving as a key resource.

However, duck farming in Bangladesh has declined due to several challenges, including shrinking water bodies, pollution of grazing fields, difficulties in accessing inputs such as ducks, feed, and medications, marketing constraints, and disease outbreaks (Sheheli *et al.*, 2023). S. Das *et al.* (2020) stated that the growth performance of ducks surpasses that of chickens. Duck farming has significant potential to enhance egg and meat production in Bangladesh. Backyard duck farming, in particular, is a vital source of human resource development in the low-lying and coastal areas of the country. The Livestock Research Institute initiated a selective breeding programme

to improve the phenotypic, productive, and reproductive characteristics of two native duck breeds. These improved breeds were designated as BLRI-1 and BLRI-2. Various studies have been conducted to evaluate the productive, reproductive, and phenotypic traits of the BLRI-1 and BLRI-2 ducks. However, all such studies were conducted on-station under intensive management systems, with no evaluations performed at the field level.

Therefore, this study was conducted to disseminate BLRI-1 (Rupali) and BLRI-2 (Nageswari) ducks at the field level, validate their production potential, and compare their performance with locally reared native ducks under farmers' conditions. This is particularly important because the productive performance and profitability of backyard ducks in community farming systems have not yet been evaluated in Bhanga, Faridpur. The study aimed to achieve the following objectives: to evaluate the socio-economic conditions, duck farming practices, and health management strategies at the community level; to assess the growth and productive performance of BLRI-improved native ducks in comparison with local germplasm; to analyse their profitability and identify constraints in duck farming within the selected community.

## Materials and Methods

The research was conducted at the BLRI Technology Village, Janda, a low-lying area in Bhanga Upazila within the Faridpur district of Bangladesh – from July 2022 to July 2024. Bhanga Upazila is located at 23.3971° N latitude and 90.0036° E longitude with an average annual rainfall of 2,000-2,500 mm and temperatures ranging from 12°C to 40°C. The experiment categorised the ducks into three distinct groups: Rupali, Nageswari, and indigenous ducks. Each group comprised 15 duck farmers. A total of 10 Rupali and 10 Nageswari ducks were distributed to each farmer, with each receiving eight

and two male ducks. In this study, local native ducks were designated as the control group. All ducks were reared under a scavenging system, with minimal or no supplemental feed provided by the farmers. The experimental design employed a completely randomised design (CRD). Data were collected on various parameters, then entered, sorted, compiled, and tabulated in a Microsoft Excel sheet (MS Excel 2021). Subsequently, the data were statistically analysed using the Statistical Package for the Social Sciences (SPSS, Version 25). Descriptive statistics, including frequency distribution, percentages, means, and standard error values, were used for interpretation. To calculate the net return, the following formula (1) was applied:

$$NR = GR - GC, \quad (1)$$

where NR is the net return; GR is the gross return; GC is the gross cost.

To calculate the benefit-cost ratio the following formula (2) was used:

$$\text{Benefit-Cost Ratio} = \frac{\text{Gross return (GR)}}{\text{Gross cost (GC)}}. \quad (2)$$

The gross return included the average return from the main product and by-products of different duck groups. Gross cost included the total cost of duck rearing. The benefit-cost ratio served as a relative measure to compare benefits per unit of cost, aiding in the analysis of financial efficiency. A multiple regression model was employed to determine the effects of key variables on overall duck farming. The relationship between Y and X was established through regression analysis, using a Cobb-Douglas function model, represented as (3):

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e_i, \quad (3)$$

where Y is the profit from duck-rearing (BDT/year); a is the constant; b is the regression coefficient; X1 is the hatched duckling value (BDT/year); X2 is the purchased duckling value; X3 is the purchased duck value; X4 is the stock value of duck; X5 is the feed value; X6 is the treatment cost; X7 is the labour cost; X8 is the housing cost (with 10% depreciation); X9 is the miscellaneous cost; X10 is the age; X11 is the family size;  $e_i$  is the disturbance factors.

For simplification, the equation (4) was converted into a multiple linear form by applying logarithms:

$$\text{Log } Y = \text{Log } a + b_1 \log X_1 + b_2 \log X_2 + \dots + b_6 \log X_6 + u. \quad (4)$$

The F-test was used to evaluate the overall significance of the regression model, determining whether the independent variables significantly influenced the dependent variable. Multicollinearity was assessed based on the correlation coefficients among the variables. When these coefficients exceeded certain thresholds, typically 0.60, though sometimes 0.50 to 0.55, multi-collinearity was indicated. A correlation coefficient of 0.60 or less suggested no significant multi-collinearity (Wantasan *et al.*, 2024). The study was conducted following the requirements of Regulation (EU) 2019/1010 of the European Parliament and the Council (2019).

In this study, the average age of farmers was  $38.58 \pm 1.72$  years and they had an average of  $12.38 \pm 1.44$  years of farming experience. The data on housing facilities for ducks, as shown in Table 1, revealed that 99% of farmers had separate duck houses, while 1% reared ducks and chickens in the same house. About 97.8% of the farmers used wood for duck house construction, while 2.2% used mud. This result highlighted a clear preference for wood as the

material for duck housing among the surveyed farmers. Regarding the flooring for duck housing, 95.6% of farmers used wood, and 4.4% used mud, indicating a strong preference for wood flooring. This preference is likely due to its practicality and durability in maintaining hygienic conditions for ducks. In this study, 100% of farmers reared their ducks under a scavenging system. Regarding house

cleaning practices, 55.56% of farmers used brooms, 33.33% used water, and 11.11% used disinfectant. Regular cleaning was performed by 68.89% of farmers. The study also revealed that all farmers (100%) consistently fed their ducks with paddy, rice, and rice bran (Table 1). Additionally, 82.2% of the farmers supplemented the ducks' diet with duckweed, 53.3% included snails, and 15.6% provided ready-made feed.

**Table 1.** Housing facilities and management systems for ducks

Parameters	Percentage (n)	Parameters	Percentage (n)
<b>Housing facilities</b>		<b>Floor-type</b>	
Separate duck house	82.2 (37)	Wood	95.6 (43)
Ducks and chicken at the same house	17.8 (8)	Mud	4.4 (2)
<b>System of rearing:</b>		<b>House cleaning practice</b>	
Scavenging	100 (45)	Cleaned by using a broom	68.89 (31)
<b>Housing material</b>		Cleaned by water	55.56 (25)
Mud and wood	2.2 (1)	Cleaned by disinfectant	33.33 (15)
Wood and tin	97.8 (44)	<b>Feeding ingredients</b>	
<b>Feeding ingredients</b>		Paddy	100 (45)
Paddy	100 (45)	Duckweed	82.2 (37)
Rice	100 (45)	Snail	53.3 (24)
Rice bran	100 (45)	Ready feed	15.6 (7)

*Source: experimental data*

Most of the farmers (73.3%) stored eggs for hatching for 10 days. In comparison, 17.8% of farmers stored eggs for 7 days, and 8.9% stored them for 15 days (Table 2). Farmers used various methods for storing hatching eggs, with

55.6% using earthen (a local storage method), 33.3% using pots, and 11.1% using freezing methods. Regarding hatching systems, 97.8% of farmers preferred hatching by hens, while only 2.2% used incubators.

**Table 2.** Egg, hatching, and broodiness management for ducks

Parameters	Percentage (n)	Parameters	Percentage (n = 45)
<b>Egg storage for hatching</b>		Duck came to broodiness after egg-laying (days)	42.33 ± 2.52
7 days	17.8 (8)	Average broodiness cycles per year	1.11 ± 0.17
10 days	73.3 (33)	<b>Broodiness removal methods</b>	
15 days	8.9 (4)	Tying anklets with the neck	8.9 (4)

Table 2. Continued

Parameters	Percentage (n)	Parameters	Mean ± S.E. (n = 45)
<b>Storage material</b>		Dipping in water	46.7 (21)
Freezer	11.1 (5)	Smoke exposure	8.9 (4)
Rupali	55.6 (25)	Feathering the nose	4.4 (2)
Pot	33.3 (15)	No method used	31.1 (14)
<b>Hatching system</b>			
By hen	97.8 (44)	By incubator	2.2 (1)

Source: experimental data

On average, ducks spent 4.00 ± 0.17 broodiness cycles after laying 42.33 ± 2.52 eggs, with an average of 4.00 ± 0.17 broodiness cycles per year. For broodiness removal, 46.7% of farmers dipped the ducks in the water, 31.1% did not use any removal method, 8.9% tied anklets with the neck or gave smoke, and 4.4% feathered the nose

stages of development, as shown in Figure 1. At day-old, Rupali ducklings weighed between 38.85 g and 40.92 g for females and males, respectively, while Nageswari ducklings weighed between 36.75 g and 38.37 g. By 24 weeks, Rupali male ducks reached an average weight of 1,505.62 g, whereas Nageswari male ducks weighed slightly less at 1,486.07 g. These findings provided comprehensive insights into the growth patterns of these duck breeds over time.

**Results**

The growth trajectories of Rupali and Nageswari ducks were documented across various

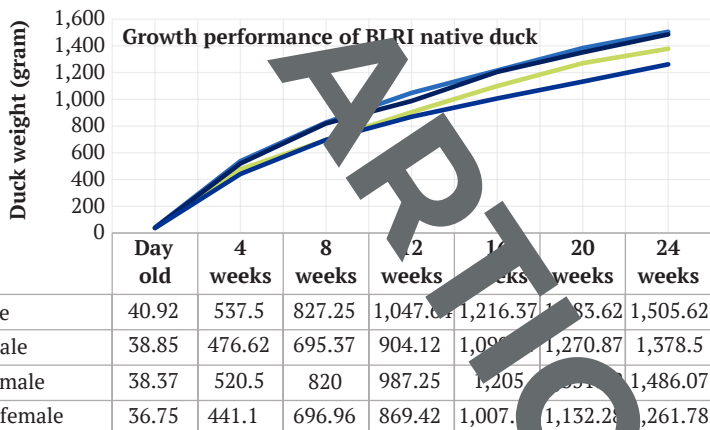


Figure 1. Growth performance of BLRI-developed male and female ducks

Source: experimental data

The study examined the productive and reproductive performance of different duck

breeds at the community level. Results indicated that Rupali ducks had an average of 5.86 ± 0.86

individuals per household, Nageswari ducks had  $7.5 \pm 0.71$ , and indigenous Deshi ducks had  $5.5 \pm 0.42$ . Adult female weights were recorded as  $1.57 \pm 0.06$  kg for Rupali,  $1.37 \pm 0.06$  kg for Nageswari, and  $1.25 \pm 0.11$  kg for indigenous Deshi ducks. Adult male weights averaged  $1.78 \pm 0.05$  kg for Rupali,  $1.56 \pm 0.04$  kg for Nageswari, and  $1.45 \pm 0.05$  kg for indigenous Deshi ducks (Table 3). Age at first laying was  $210.00 \pm 4.88$  days for Rupali,  $205.33 \pm 6.23$  days for Nageswari, and  $223.33 \pm 5.70$  days for indigenous Deshi ducks. Egg production per clutch was highest in Nageswari ducks at  $36.73 \pm 1.59$  eggs, followed by Rupali with  $34.33 \pm 1.68$  eggs and indigenous Deshi with  $26.67 \pm 1.16$  eggs. Overall egg production was highest in Nageswari ducks at  $192.00 \pm 5.70$  eggs, followed closely by Rupali at  $181.33 \pm 7.55$  eggs per

weight differed significantly among breeds, with Rupali eggs weighing  $64.93 \pm 0.67$  g, Nageswari eggs  $61.53 \pm 0.58$  g, and indigenous Deshi eggs  $62.06 \pm 0.62$  g. These findings underscore the variability in performance metrics across different duck breeds, highlighting areas for potential breed-specific management strategies. Based on these findings, it was determined that female weight ( $p < 0.01$ ), adult male weight ( $p < 0.01$ ), egg production per clutch ( $p < 0.01$ ), and egg weight ( $p < 0.01$ ) exhibited statistically significant differences among the duck breeds studied. Age at first laying also showed statistical significance ( $p < 0.04$ ), while total egg production exhibited a trend towards significance ( $p < 0.11$ ). However, duck number ( $p < 0.28$ ) and weight at laying ( $p < 0.98$ ) did not show statistically significant differences.

**Table 3.** Productive and reproductive performance of different ducks at the community level

Parameters	Rupali (Mean $\pm$ S.E.)	Nageswari (Mean $\pm$ S.E.)	Indigenous Deshi (Mean $\pm$ S.E.)	Overall (Mean $\pm$ S.E.)	Significant level
Duck number	$6.86 \pm 0.86$	$7.33 \pm 0.71$	$5.91 \pm 1.42$	$7.77 \pm 0.60$	0.28 <sup>(NS)</sup>
Adult female weight	$1.57 \pm 0.06$	$1.37 \pm 0.06$	$1.25 \pm 0.11$	$1.39 \pm 0.03$	$\leq 0.001$ <sup>(***)</sup>
Adult male weight	$1.78 \pm 0.05$	$1.56 \pm 0.04$	$1.45 \pm 0.05$	$1.59 \pm 0.03$	$\leq 0.001$ <sup>(***)</sup>
Age at first laying	$210.00 \pm 4.88$	$205.33 \pm 6.23$	$223.33 \pm 5.70$	$213.55 \pm 3.42$	0.04 <sup>(NS)</sup>
Weight at laying	$1.64 \pm 0.05$	$1.58 \pm 0.08$	$1.50 \pm 0.30$	$1.63 \pm 0.13$	0.98 <sup>(NS)</sup>
Egg production per clutch	$34.33 \pm 1.68$	$36.73 \pm 1.59$	$26.67 \pm 1.16$	$32.58 \pm 1.06$	$\leq 0.001$ <sup>(***)</sup>
Total egg production	$181.33 \pm 7.55$	$192.00 \pm 5.70$	$168.00 \pm 9.11$	$180.44 \pm 4.66$	0.11 <sup>(NS)</sup>
Egg weight, g	$64.93 \pm 0.67$	$61.53 \pm 0.58$	$62.06 \pm 0.62$	$62.84 \pm 0.41$	0.01 <sup>(**)</sup>

**Note:** different superscripts in the same row differ significantly,  $p < 0.01$  or  $p < 0.05$ . \* $p < 0.01$  is significant at 1% level; \*\* $p < 0.05$  is significant at 5% level; NS $p > 0.05$  is non-significant

**Source:** experimental data

### Health management

Proper vaccination, maintaining good biosecurity, and regular deworming practices are essential tools for preventing various duck diseases (Debroy & Debnath, 2022; Serbesa et al., 2023). The current study documented

vaccination and deworming practices among duck farmers, revealing that 64.4% of farmers vaccinated their ducks overall, with 30.0% specifically vaccinating against duck plague and 40.0% against duck cholera. The majority of farmers (64.4%) administered vaccinations

every six months, while 20.0% opted for an annual schedule (Table 4). Additionally, 77.8% of farmers practised deworming, primarily at six-month intervals (71.1%). As not all

farmers practice vaccination and deworming at regular intervals, awareness programmes need to be implemented to improve health management practices.

**Table 4.** Vaccination and deworming practices by farmers

Parameters	Percentage (n)	Parameters	Percentage (n)
Vaccination practice	84.4 (38)	Deworming practice	77.8 (35)
Duck plague vaccination	80.0 (36)	<b>Deworming interval</b>	
Duck cholera vaccination	40.0 (18)	3 months	4.4 (2)
<b>Vaccination interval</b>		4 months	2.2 (1)
6 months	64.4 (29)	6 months	71.1 (32)
1 year	20.0 (9)	-	-

Source: experimental data

The study investigated disease outbreaks in duck farms (Table 5) and revealed that the highest outbreak rate of 73.33% for duck plague and 53.33% for duck cholera was observed in native ducks. In contrast, duck plague affected 46.66% and duck cholera affected 26.67% of Nageswari duck farms. Additionally, 40.00% of duck plague and 33.33% of duck cholera outbreaks were observed in Rupali duck farms during the respective periods. Farmers reported that the highest percentage of disease outbreaks occurred during winter (66.67%) in Nageswari ducks, with a reduced frequency the following year when outbreaks occurred during summer (13.33%) in both Nageswari and native ducks. Furthermore, Rupali ducks exhibited 40% disease occurrence during both the

summer and winter seasons, with the highest disease outbreak during the rainy season (20%). The research also examined biosecurity practices and management strategies for sick and deceased ducks among farmers (Table 5). Results indicated that 97.8% of farmers reported contact with wild birds, while 91.1% isolated sick ducks in separate sheds. Regular cleaning of excrement was practised by 57.8% of farmers. For deceased ducks, burial (53.3%) was the most common disposal method, followed by disposal in fields (26.7%), water (17.8%), and incineration (2.2%). Treatment was primarily sought from researchers at BLRI (75.6%), with additional care provided by quacks (33.3%), veterinary hospitals (14%), and the farmers themselves (3.3%).

**Table 5.** Disease outbreak and biosecurity management by duck farmers

Parameters (%)	Rupali (n)	Nageswari (n)	Native duck (n)
Duck plague	40.00 (6)	46.66 (7)	73.33 (11)
Duck cholera	33.33 (5)	26.67 (4)	53.33 (8)
<b>Season of disease outbreak</b>			
Summer	40.00 (6)	20.00 (3)	26.67 (4)
Rainy	20.00 (3)	13.33 (2)	13.33 (2)
Winter	40.00 (6)	66.67 (10)	66.67 (9)
<b>Parameters</b>	<b>Percentage (n)</b>	<b>Parameters</b>	<b>Percentage (n)</b>
<b>Biosecurity management</b>		<b>Sick duck management</b>	

Table 5. Continued

Parameters	Percentage (n)	Parameters	Percentage (n)
Contact with wild bird	97.8 (44)	Keep in the same shed	8.9 (4)
Cleaning of excrement	57.8 (26)	Keep it in a separate shed	91.1 (41)
<b>Facilities for duck management</b>		<b>Treatment facilities for duck</b>	
Grow in fields	26.7 (12)	By veterinary hospital	4.4 (2)
Buried	53.3 (24)	By BLRI researcher	75.6 (34)
Incinerated	2.2 (1)	By quacks	33.3 (15)
Throw in water	17.8 (8)	By farmers themselves	37.8 (17)

Source: experimental data

### Economic parameters

The research analysed economic parameters across different duck breeds, revealing significant variations in financial metrics (Table 6). Rupali ducks demonstrated the highest net income of 8,149.00 BDT (Bangladeshi Taka), with a benefit-cost ratio (BCR) of 1.60, whereas Nageswari ducks recorded a net income of 8,048.47 BDT and a BCR of 1.59. Indigenous Deshi ducks exhibited a lower net income of 4,303.67 BDT and a BCR of 1.30. The total net income of farmers from Rupali, Nageswari, and indigenous Deshi ducks averaged 21,721.33 BDT, 21,624.67 BDT, and 18,742.00 BDT, respectively. The overall net income and BCR of duckrearing farmers in the selected areas were calculated as 6,833.71 BDT and 1.49, respectively. These findings underscore the economic viability and

profitability of duck farming, while also highlighting breed-specific differences in financial performance and efficiency. A multiple regression model was employed to estimate the coefficients of income or profit generated from duck rearing (Rupali, Nageswari, and native ducks) in Jandi village, Bhanga, Faridpur district. A total of eleven (11) independent variables were considered for this analysis. Of these, three (03) variables were identified as key contributors influencing the production process, as they exhibited statistically significant results. In contrast, six (06) variables showed statistically non-significant results in the t-test, while three variables demonstrated negative regression coefficient values. The results of the multiple regression analysis for duck rearing are presented in Table 7.

**Table 6.** The benefit-cost ratio in different types of duck rearing at the community level

Parameters	Rupali	Nageswari	Indigenous Deshi	Total
Hatched duckling value	753.33	826.67	253.33	831.11
Bought duckling value	580.00	503.33	673.33	585.56
Bought duck value	130.00	232.00	95.00	151.78
Stock duck value	1,726.67	2,253.33	3,540.00	2,506.67
Feed cost	4,554.33	4,608.87	3,411.00	4,191.40
Veterinary cost	860.00	483.33	473.33	805.56
Housing cost (10% depreciation)	318.00	280.67	275.33	291.33
Family labour cost	4,346.67	4,133.33	4,780.00	4,140.00
Other costs	303.33	254.67	278.67	275.33
<b>Gross cost (GC)</b>	<b>13,572.33</b>	<b>13,576.20</b>	<b>14,438.33</b>	<b>13,862.29</b>

Table 6. Continued

Parameters	Rupali	Nageswari	Indigenous Deshi	Total
Family feed duck value	2,003.33	2,123.33	2,640.00	2,255.56
Sold duck value	3,753.33	4,200.00	5,373.33	4,442.22
Stock duck value	4,096.67	4,533.33	4,261.33	4,297.11
Family purchased egg value	7,741.33	6,550.67	4,118.67	6,136.89
Sold egg value	4,126.67	4,217.33	2,348.67	3,564.22
<b>Gross return (R)</b>	<b>21,721.33</b>	<b>21,624.67</b>	<b>18,742.00</b>	<b>20,696.00</b>
<b>Net return (NI)</b>	<b>8,149.00</b>	<b>8,048.47</b>	<b>4,303.67</b>	<b>6,833.71</b>
<b>BCR</b>	<b>1.60</b>	<b>1.59</b>	<b>1.30</b>	<b>1.49</b>

Source: experimental data

Table 7. Multiple regression analysis

Parameters	Regression coefficients	t-value	Significant level
(Constant)	1,927.275	0.428	0.672
Hatched duckling value (X <sub>1</sub> )	0.527	4.276	0.000***
Bought duckling value (X <sub>2</sub> )	0.005	0.051	0.959
Bought duck value (X <sub>3</sub> )	0.161	1.368	0.181
Stock value of duck (X <sub>4</sub> )	0.011	0.099	0.922
Feed value (X <sub>5</sub> )	0.444	4.560	0.000***
Treatment cost (X <sub>6</sub> )	0.163	0.320	0.751
Labour cost (X <sub>7</sub> )	0.262	2.488	0.018**
Housing cost with depreciation (X <sub>8</sub> )	0.171	1.238	0.225
Other costs (X <sub>9</sub> )	0.088	0.883	0.383
Age (X <sub>10</sub> )	-0.121	-1.071	0.292
Family size (X <sub>11</sub> )	-0.080	-0.763	0.451
R-square		0.732	
Adjusted R-square		0.690	
F-change		8.200	0.000***
Y – Total Income			

Source: experimental data

The analysis of the production function indicated that the values of hatched ducklings, feed costs, and labour expenses significantly affected the gross returns and profits from duck production. Table 7 indicates that the regression coefficient for the value of hatched ducklings was estimated at 0.527, which is significant at the 1% probability level. This demonstrates a positive relationship between the value of hatched ducklings and gross

returns. Specifically, a 1% increase in the price of ducklings is associated with a 52.7% increase in gross returns for farmers raising ducks, assuming other variables remain constant. In the case of feed costs, the regression coefficient was 0.444, which was also significant at the 1% probability level. As a result, a positive relationship was observed between feed cost and gross returns. This finding indicates that a 1% increase in feed cost, on average, led to a 16.4%

increase in gross returns from duck farming, with all other variables unchanged. This result highlights that farmers who provided supplemental feed, purchased from local markets or other sources, realised 44.4% greater profits compared to those who did not use supplemental feed. The estimated coefficient for labour costs was 0.262, and this was significant at the 1% probability level. This value suggests that respondents who incurred labour expenses realised 26.2% greater profits than those who did not utilise labour for duck farming. Additionally, the regression coefficients for bought duckling value ( $X_2$ ), bought duck value ( $X_3$ ), stock value of ducks ( $X_4$ ), treatment costs ( $X_5$ ), housing costs with 10% depreciation ( $X_8$ ), and other costs ( $X_9$ ) were 0.005, 0.141, 0.016, 0.033, and 0.088, respectively, in this study. The  $R^2$  value of 0.732 suggests that 73.2% of the total variation in gross returns among native duck rearing farmers is explained by the variables included in the model. This also implies that 26.8% of the variation remains unexplained, likely due to other factors not accounted for in the model.

The adjusted  $R^2$  value of 0.643 reflects that approximately 64.3% of the total variation in gross returns from native duck farming is explained by the included variables, taking into account the adjustment for degrees of freedom, as noted by D. Gujarati (2003). The F-change value of 8.200 was significant at the 1% probability level, indicating that all the explanatory variables included in the model were important for explaining the variation in gross returns and profits from duck farming.

The multi-collinearity test was conducted to determine whether the regression model exhibited any correlation among the independent variables. This assessment involved examining the correlation coefficient ( $r$ ) values between the independent variables. Table 8 presents the correlation coefficients for the independent variables. The results indicate that all correlation coefficients were below 0.85, signifying the absence of multi-collinearity and no significant relationships among the independent variables. Consequently, the classical assumptions of the regression model were satisfied.

**Table 8.** Multi-collinearity analysis

	X1 Log	X2 Log	X3 Log	X4 Log	X5 Log	X6 Log	X7 Log	X8 Log	X9 Log	X10 Log	X11 Log
X1 Log	0.00	0.03	0.59	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
X2 Log	0.01	0.31	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00	0.00
X3 Log	0.01	0.25	0.22	0.15	0.00	0.16	0.00	0.00	0.00	0.00	0.00
X4 Log	0.18	0.08	0.03	0.30	0.04	0.01	0.00	0.00	0.00	0.01	0.00
X5 Log	0.24	0.18	0.02	0.24	0.00	0.31	0.00	0.07	0.00	0.00	0.01
X6 Log	0.21	0.00	0.01	0.05	0.00	0.00	0.01	0.26	0.00	0.11	0.01
X7 Log	0.02	0.01	0.00	0.03	0.68	0.02	0.03	0.00	0.00	0.01	0.01
X8 Log	0.00	0.00	0.00	0.02	0.02	0.03	0.19	0.02	0.23	0.13	0.12
X9 Log	0.26	0.06	0.00	0.14	0.12	0.02	0.04	0.06	0.07	0.00	0.56
X10 Log	0.07	0.01	0.02	0.04	0.04	0.08	0.64	0.56	0.06	0.54	0.26
X11 Log	0.00	0.07	0.11	0.01	0.09	0.01	0.08	0.03	0.37	0.11	0.00

**Source:** experimental data

The study also identified several constraints faced by farmers in duck rearing, as shown in Table 9. The most frequently reported issue was disease outbreaks, affecting 73.3% of farmers, ranking as the primary challenge.

High feed prices ranked second, impacting 64.4% of farmers. Other significant constraints included a lack of training (28.9%), vaccine shortages (28.9%), and attacks by predatory animals (22.2%).

**Table 9.** Constraints faced by farmers in duck rearing

Parameters	Percentage (n)	Rank	Parameters	Percentage (n)	Rank
Outbreak of disease	73.3 (33)	I	Poor veterinary services	15.6 (7)	VI
High feed prices	64.4 (29)	II	Lack of quality ducklings	13.3 (6)	VII
Lack of training	28.9 (13)	III	Theft	11.1 (5)	VIII
Vaccine shortages	28.9 (13)	III	Profit not guaranteed	2.2 (1)	IX
Attacks by predatory animals	22.2 (10)	IV	Unavailability of ducklings	2.2 (1)	IX
High duckling prices	17.8 (8)	V	-	-	-

Source: experimental data

In addition, high duckling prices (17.8%), poor veterinary services (15.6%), and theft (11.1%) were noted as constraints. A small proportion of farmers reported a lack of quality ducklings (13.3%), unavailability of ducklings (2.2%), and uncertainty in profitability (2.2%) as challenges in duck rearing. These findings underscore the diverse challenges faced by farmers and highlight critical areas where targeted support and interventions are necessary for the duck farming sector.

### Discussion

The housing management of ducks indicated that most farmers used separate housing for their ducks, which was constructed using tin and wood. F. Rahima *et al.* (2023) mentioned that most poultry houses were made of tin and bamboo, while a smaller proportion of farmers reared ducks with inadequate housing facilities. These findings align closely with the current study. All farmers raised their ducks in a scavenging system. Conversely, M. Alam *et al.* (2014) reported that a relatively lower percentage of farmers used housing materials compared to

the findings of the present study. The study by B. Jha *et al.* (2016) was slightly related to the present research, noting that during the rainy season, ducks were raised solely on natural feed sources under a scavenging management system. Approximately 88.89% of farmers practised cleaning their duck houses. That study also revealed that a small proportion (14%) of farmers never adhered to cleaning practices on their farms. According to F. Rahima *et al.* (2023), about 73.53% of farmers routinely cleaned poultry houses, whereas a different scenario was observed in the current study. This study also found that almost all farmers supplied paddy, rice, and rice bran, with the lowest number of farmers (15%) providing ready-made feed to their ducks. Gonzalez *et al.* (2020) observed that 50% of farmers provided additional supplementary feed to optimise egg production in their ducks. The main ingredients of supplementary feeds include paddy, a mixture of rice and broken rice, a combination of rice polish and wheat bran, and a mixture of various feed ingredients, which is consistent with the current study. The findings of F. Rahima *et*

*et al.* (2027) also support the present study. Variations in outcomes were observed due to farmers selecting locally available feed ingredients and using them as supplementary feed for duck rearing in the studied area.

In the study by M. Islam *et al.* (2014), it was stated that the average body weights of BLRI-1 (Rupali) and BLRI-2 (Nageswari) ducks at DOC and four weeks of age were lower than those observed in the present study but were slightly similar to the body weights at eight weeks of age, while higher body weights were observed at twelve weeks. However, Morduzzaman *et al.* (2014) reported higher adult body weights for native ducks in the Mymensingh district. A comparatively lower average body weight of ducks than the findings of the present study was observed by F. Rahima *et al.* (2023) in the Jhenidah district.

The productive and reproductive performance of different ducks in this study was found to be slightly different compared to the findings of H. Khatun *et al.* (2016). They reported that the age at first egg production was 141, 147, and 161 days, with the weight at first egg laying recorded as 1,437 g, 1,455 g, and 1,435 g for Rupali, Nageswari, and local ducks, respectively, under farmers' existing conditions with supplementary feeding. They also noted higher egg weights for Rupali and native ducks, while Nageswari ducks produced eggs of lower weight, in contrast to the current findings. M. Islam *et al.* (2014) reported a lower average age at sexual maturity for BLRI-1 and BLRI-2 ducks than in the present study. However, higher egg weights were observed in Rupali, Nageswari, and native ducks in this study compared to the results of M. Islam *et al.* (2014). In the study conducted by M. Morduzzaman *et al.* (2015), lower annual egg production was reported compared to the findings of the present study. Similarly, F. Rahima *et al.* (2023) observed lower average egg production and egg weights than the current study. The differences in these results may have arisen

because the ducks consumed feed from natural sources, and farmers did not provide consistent supplementary feed to their ducks.

In terms of vaccination and deworming, 84.4% and 77.8% of farmers practised these measures, respectively, though not all followed the vaccination schedule in the study location. Approximately 86% of farmers did not vaccinate their poultry (chickens and ducks) due to insufficient knowledge and inadequate vaccination facilities, as stated by M. Alam *et al.* (2014). Additionally, B. Jha *et al.* (2016) reported that about 65% of farmers were unaware of the importance of vaccination and did not vaccinate their ducks. Conversely, F. Rahima *et al.* (2023) found that 30.50% of farmers did not regularly adhere to vaccination schedules, 14.50% followed regular schedules, and only 8.82% vaccinated their poultry under backyard poultry production systems. These variations may have been influenced by differences in location and the year in which the studies on duck-rearing farmers were conducted.

Infectious diseases are the most common constraint in duck rearing, with duck plague being the most prevalent (Khan *et al.*, 2018). Although duck plague, botulism, and duck cholera are major causes of mortality, local ducks exhibit significant resistance to several prevalent diseases (Debnath *et al.*, 2020). This research finding contrasts with those of K. Khan *et al.* (2018), who reported a higher incidence of diseases during the rainy season. The variation might be attributed to differences in agroecological locations, climatic conditions, animal-rearing methods, housing systems, and sample sizes. M. Alam *et al.* (2014) reported cases of duck plague, duck cholera, and limb-neck poisoning in duck farms within the Mymensingh district. Additionally, B. Jha *et al.* (2016) stated that most farmers lacked a comprehensive understanding of duck diseases. A nearly similar result was observed in the case of Rupali and

Nageswari ducks, where F. Rahima *et al.* (2023) noted that duck plague and duck cholera were among the more frequent diseases.

K. Hennin *et al.* (2009) reported that contact with wild birds is the primary source of duck plague. They also mentioned that only 7.25% of farmers practised modern treatment methods. Furthermore, 90.5% of farmers disposed of dead ducks indiscriminately, leading to environmental hazards. The difference in results in the recent study indicates a gradual increase in awareness regarding the management of sick and deceased ducks among farmers in the study area. It was common for only a few farmers to report cases to health centres or utilise treatment facilities until the situation became severe with increased mortality rates (Ebimh *et al.*, 2020). These findings highlight the diverse approaches to biosecurity and disease management in duck farming communities.

In terms of net income, the present findings for different ducks at the community level were consistent with those of S. Parve *et al.* (2020), who reported a net return of 1,922 BDT per batch and an annual net profit of 6,735 BDT from rearing 50 ducklings, with a BCR of 1:1.30. Comparatively higher net income and BCR were observed in this study, likely due to variations in study location, year, and the number of respondents considered. The current research also identified several challenges faced by farmers in duck rearing. These findings align with those of M. Alam *et al.* (2014), who identified conventional rearing methods, feed scarcity, poor housing facilities, disease outbreaks, limited access to vaccines and medicines, and predatory animal attacks as the major issues affecting backyard poultry (chicken and duck) farming in the Mymensingh district.

## Conclusions

In the study, ducks were raised under scavenging conditions with locally available feed

supplements. However, 82.2% of farmers used separate duck houses, and while 68.89% of farmers practised regular house cleaning, it was not satisfactory. Regarding growth rates, it was observed that Rupali male ducks weighed approximately 1,505.6 g, and females weighed 1,378.5 g, compared to Nageswari male ducks, which weighed 1,486.07 g, and females, 1,262.8 g, at 24 weeks. The highest egg production was 192 eggs in Nageswari ducks, followed by 181 eggs in Rupali ducks, with the lowest egg production of 168 eggs in local indigenous ducks. These findings indicate that the BLRI native ducks demonstrated higher productivity than local ducks. About 84.4% of farmers vaccinated their ducks against duck plague and duck cholera, primarily due to the regular vaccination programme conducted by BLRI in this community. However, biosecurity practices were not at an acceptable level. The BCR in duck farming was 1.60 for Rupali ducks and 1.59 for Nageswari ducks, which were almost similar, but it was lower in local ducks at 1.30, primarily due to poorer productivity. The overall BCR in duck farming was 1.49. This BCR could improve if challenges faced by duck farmers – such as disease outbreaks, high feed prices, limited knowledge, and the unavailability of improved duck or duckling varieties – are addressed. Overall, duck farming remains a profitable enterprise in waterlogged, low-lying areas of Bangladesh. The growth performance of BLRI native duck-1 (Rupali) was superior to that of BLRI native duck-2 (Nageswari) and indigenous duck breeds, whereas the egg production of Nageswari ducks surpassed that of Rupali and indigenous ducks. From this study, it can be concluded that the socioeconomic status of farmers, along with housing, feeding, breeding, health, and biosecurity management, remains inadequate. Therefore, extension services combined with technical interventions, informed by the identification of research gaps,

essential to addressing the challenges in duck farming. Future research should focus on technology-based improvements in duck farming within lowland areas of Bangladesh.

### Acknowledgements

The researcher gratefully acknowledges the staff of BLRI Regional Station, Bhanga,

Faridpur, for their cooperation in conducting this research. Acknowledgement is also extended to the Poultry Production and Research Division, BLRI, Savar, Dhaka, for providing research inputs.

### Conflict of Interest

There is no conflict of interest.

### References

- [1] Ahmed, S., Islam, M.A., Famous, M., Hossain, M.T., Zonayet, M., & Hossain, N. (2021). [A report on problems and prospects of duck rearing system at Jaintiapur Upazila, Sylhet, Bangladesh](#). *Journal of Global Agriculture and Ecology*, 11(2), 25-35.
- [2] Alam, M.A., Ali, M.S., Das, N., & Rahman, M.M. (2014). Present status of rearing backyard poultry in selected areas of Mymensingh district. *Bangladesh Journal of Animal Science*, 43(1), 30-37. doi: 10.3329/bjas.v43i1.19192.
- [3] Begum, M., Farid, M.S., Rahman, M.M., Barua, S., & Sharkar, M.S. (2020). Competitive advantage and constraints associated with duck farming in north eastern region of Bangladesh. *IOSR Journal of Humanities and Social Science*, 25(2), 62-66. doi: 10.9790/0837-2502096266.
- [4] Churchil, R.R., & Jalaludeen, A. (2022). Duck farming: Opportunities, constraints and policy recommendations. In A. Jalaludeen, R. Churchil & E. Baéza (Eds.) *Duck production and management strategies*. (pp. 617-657). Singapore: Springer. doi: 10.1007/978-981-16-6100-6\_16.
- [5] Das, S., Rahman, S., Das, S., Kalita, G., & Khomba, T. (2020). A socio-economic analysis of the duck farmers of Tripura. *International Journal of Livestock Research*, 10, 144-151. doi: 10.5455/ijlr.20200623072018.
- [6] Debnath, J., Sarkar, D., & Das, T.K. (2020). [Socio-economic status of duck farmers and duck rearing system in India: A review](#). *Journal of Entomology and Zoology Studies*, 8(6), 1262-1266.
- [7] Debroy, B., & Debnath, J. (2022). Diseases of duck and its prevention. In *Duck production and management* (pp. 69-95). Boca Raton: CRC Press. doi: 10.1007/978-1-4939-7810-3\_47293-5.
- [8] DLS. (2024). *Livestock economy at a glance 2023-2024*. Retrieved from <https://dls.gov.bd/site/page/22b1143b-9323-44f8-bfd8-647087828c9b/Livestock-Economy-at-a-Glance-2023-2024>
- [9] Gujarati, D.N. (2003). *Basic econometrics* (4<sup>th</sup> ed.). New York: McGraw-Hill.
- [10] Henning, K.A., Henning, J., Morton, J., Long, N.T., Ha, N.T., & Meunier, J. (2009). Farm- and flock-level risk factors associated with Highly Pathogenic Avian Influenza outbreaks on smallholder duck and chicken farms in the Mekong Delta of Viet Nam. *Preventive Veterinary Medicine*, 91(2-4), 179-88. doi: 10.1016/j.prevetmed.2009.05.027.
- [11] Islam, M.S., Khatun, H., Islam, M.N., Faruque, S., & Sarker, M.S. (2014). Study on the productive and reproductive performances of BLRI-1 and BLRI-2 ducks in Bangladesh. *The Agriculturists*, 12(1), 10-14. doi: 10.3329/agric.v12i1.19485.
- [12] Islam, R., Hussain, J., Sarma, M., Mahanta, J.D., Sapkota, D., Ali, A., & Saharia, J. (2020). [Duck production and management practices in the rural areas of Assam](#). *The Pharma Innovation*, 12(11), 1671-1675.

- [14] Jha, B., Hossain, M.M., Baishnab, P.C., Mandal, P.K., & Islam, M.R. (2016). Socio-economic status of duck farmers and duck farming in haor areas of Sylhet district in Bangladesh. *International Journal of Natural Sciences*, 5(2), 73-79. doi: 10.3329/ijns.v5i2.28615.
- [15] Khan, M.A., Saha, S., Hossain, M.T., Haque, M.E., Haq, M.M., & Islam, M.A. (2018). Epidemiological investigation of recurrent outbreaks of duck plague in selected haor (wetland) areas of Bangladesh. *Journal of Advanced Veterinary and Animal Research*, 5(2), 131-139. doi: 10.3329/javar.2018.e256.
- [16] Khatun, S., Islam, M.N., Bhuiyan, A.A., Hasan, M.N., & Islam, M.S. (2016). Performance of BLRI developed native duck under farmer's condition with supplementary feeding. *Bangladesh Journal of Livestock Research*, 19(1-2), article number 18. doi: 10.3329/bjlr.v19i1-2.26423.
- [17] Morduzzaman, M., Bhuiyan, A.K.F.H., Rana, M., Islam, M.R., & Bhuiyan, M.S.A. (2015). Phenotypic characterization and production potentials of Nageswari duck in Bangladesh. *Bangladesh Journal of Animal Science*, 44(2), 92-99. doi: 10.3329/bjas.v44i2.26007.
- [18] Parvez, S., Miah, M.Y., & Khan, M.H. (2020). Smallholder duck farming: A potential source of livelihood in haor women in Bangladesh. *Asian Journal of Medical and Biological Research*, 6(1), 73-80. doi: 10.3329/ajmbr.v6i1.46831.
- [19] Pingel, H. (2011). [Waterfowl production for food security](#). *Lohmann Information*, 46(2), 32-42.
- [20] Rahima, F.F., Jalil, M.A., Hossain, M.T., & Rahman, M.S. (2023). Management system and productivity of backyard poultry in Moulvibazar district of Bangladesh: A survey. *Asian Journal of Medical and Biological Research*, 9(1), 1-8. doi: 10.3329/ajmbr.v9i1.62846.
- [21] Rahman, K.M.M., Jamal, H.M., & Shihab, M. (2020). Livestock and poultry rearing by smallholder farmers in haor areas in Bangladesh: Impact on food security and poverty alleviation. *Bangladesh Journal of Agricultural Economics*, 41(1), 73-86. doi: 10.22004/ag.econ.304171.
- [22] Regulation (EU) 2019/1010 of the European Parliament and of the Council. (2019, June). Retrieved from [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L\\_.2019.170.01.0115.01.ENG&toc=OJ:L:2019:170:TOC](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2019.170.01.0115.01.ENG&toc=OJ:L:2019:170:TOC).
- [23] Serbessa, T.A., Geleta, Y.G., & Terfa, I.O. (2023). Review on diseases and health management of poultry and swine. *International Journal of Avian & Wildlife Biology*, 7(1), 27-38. doi: 10.15406/ijawb.2023.07.00187.
- [24] Sheheli, S., Mithun, N.A.S., & Banik, S. (2023). [Profitability and problems of farmers in duck farming: A study on haor areas in Bangladesh](#). *International Journal of Agricultural Science, Research & Technology*, 13(3), 195-202.
- [25] Wantasen, E., Umboh, S.J.K., & Leke, J.R. (2024). Profit analysis of intensive chicken farming business in Kakas District, Regency of Minahasa, Indonesia. In *IOP Conference Series: Earth and Environmental Science*, 1341, article number 012110. doi: 10.1088/1755-1315/1341/1/012110.

## Оцінка продуктивності качок BLRI порівняно з місцевими качками: менеджмент та прибутковість у традиційних системах землеробства у Бханзі, Фарідпур, Бангладеш

### Сайдул Іслам

Доктор ветеринарної медицини, науковий співробітник  
Бангладешський науково-дослідний інститут тваринництва  
1341, Дакка, м. Савар, Бангладеш  
<https://orcid.org/0009-0004-5152-2623>

### Ашрафул Іслам

Доктор ветеринарної медицини, науковий співробітник  
Бангладешський науково-дослідний інститут тваринництва  
1341, Дакка, м. Савар, Бангладеш  
<https://orcid.org/0009-0004-8271-1830>

### Шармін Султана

Науковий співробітник  
Бангладешський науково-дослідний інститут тваринництва  
1700, Дакка, м. Савар, Бангладеш  
<https://orcid.org/0009-0007-7374-7980>

### Звадул Іслам

Науковий співробітник  
Бангладешський науково-дослідний інститут тваринництва, Регіональна станція  
Бханга, Фарідпур, Бангладеш

### Хасбул Рахман

Доктор ветеринарної медицини, старший науковий співробітник  
Бангладешський науково-дослідний інститут тваринництва  
1341, Дакка, м. Савар, Бангладеш  
<https://orcid.org/0000-0002-7371-2142>

### Разія Хатун

Доктор ветеринарних наук, головний науковий співробітник  
Бангладешський науково-дослідний інститут тваринництва  
1341, Дакка, м. Савар, Бангладеш  
<https://orcid.org/0009-0009-6281-6076>

**Анотація.** Метою цього дослідження було розведення качок BLRI-1 (Rupali) і BLRI-2 (Nageswari) та оцінка їх продуктивного потенціалу порівняно з місцевими породами в умовах існуючих методів ведення господарства у районі Бханга, Фарідпур. Експеримент проводився за повністю рандомізованим планом, де качки BLRI слугували експериментальною групою, а місцеві качки – контрольною. Зібрані дані про продуктивність качок BLRI порівнювалися з місцевим генетичним матеріалом. Найвищі середні показники зростання були зафіксовані у самців породи Rupali, які досягли 1,505,62 г до 24-го тижня, порівняно з 1,486,07 г у самців породи Nageswari. Найвища продуктивність яєць спостерігалася у качок Nageswari ( $192,00 \pm 5,70$  яйця), за ними йшли качки Rupali ( $181,33 \pm 7,55$  яйця). Ці результати

8) фермерів вакцинували своїх качок проти чуми і холери, однак спалахи захворювань залишаються поширеною проблемою, особливо серед місцевих качок. Найвищий коефіцієнт вигоди-витрат (1,60) був досягнутий для качок Rurali, тоді як найнижчий (1,30) – для місцевих качок. Загальний коефіцієнт для розведення качок становив 1,49. Основною перешкодою для розведення качок, яка вплинула на 73,3 % фермерів, були спалахи захворювань. Отримані результати продемонстрували високі показники продуктивності та економічну доцільність качок BLRI. Дослідження підкреслило важливість специфічних для кожної породи стратегій управління, включаючи покращення умов утримання, годівлі та профілактики захворювань, а також рекомендувало проведення тренінгів для фермерів з метою підвищення рентабельності вирощування качок.

**Ключові слова:** качки BLRI; продуктивність росту; спалахи захворювань; коефіцієнт вигоди-витрат