

**Problems and prospects of Japanese quail farming in Pabna district.**



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**Problems and prospects of Japanese quail farming in Pabna district.**



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### **Abstract**

The aim of this study is to review the current status of quail production, constrains and its future prospects in pabna as well as Bangladesh. Required data were accumulated from the farms, farmers of pabna. Both broiler and layer quail farming found profitable in Pabna area as the smaller body size, hardiness against common poultry diseases, short generation gap, easy management, quick return over the invest, less labor cost and availability of the resource(i,e feed, DOC etc) is good in pabna . But still now the rearing quail is not yet popular like chicken farming due to poor marketing channel, subsistence farming, lack of specialized feed, lack of the availability of sufficient day-old chicks all over the country, high chick mortality etc. Scientific feeding, training to the farmers about their management, creating organized marketing channel will be the probable solution for vitalizing this species in pabna as well as Bangladesh.

Key words: Quail farming, constrains, Prospects.

## CHAPTER I

### INTRODUCTION

At present most of the poultry species are reared under scavenging conditions (FAO, 2013). But the productivity of scavenging bird is very low. So, people are getting more interest on intensive farming now a days. Despite rapid development of intensive poultry production in the private sector, per capita availability of poultry meat (20 g/head/day; FAO 2013) and egg (66.2 eggs/annum; DLS 2015) is still very low. To fulfill the deficiency, it will be a great opportunity to introduce quail farming in Bangladesh in a large way. It will also help to reduce unemployment problem.

In 1935 from foreign countries, improved variety of birds were first imported by the Government. In 1947, six poultry farms were setup in different locations in the country for supplying hatching eggs and chicks. After that, improved breed like White Leghorn, Rhode Island Red etc. from the western country like USA were imported by the Bangladesh government. In 1964, a commercial poultry farm namely “Eggs and Hens Ltd” which was established by the Late Mr. Ekramul Hossain. It could be recognized as a mother poultry industry in the private poultry sector. After the liberation of Bangladesh, BIMAN Bangladesh Airlines started a commercial poultry farm in the name of “Biman Poultry Complex” at Saver, Dhaka. They had done a contractual agreement with Poultry Breeding Farm of Canada for catering their own flying services and as well as transferring the commercial poultry farming technology to the farmers. In early nineties, a good number of private parent stock farms started their operation to produce commercial day-old broiler and layer chicks ( Redoy et al., 2017). From above discussion, it can be understand that chicken takes a lot of time to become fully commercialized. However, at present there are over 2683.93 million chickens in Bangladesh (DLS, 2016). On the other hand, Quail farming in Bangladesh was started in 1992 and remained static for about one decade (1992- 2003) since its inception, thereafter, gradually increased till 2009 (highest in 2009) and gradually declined thereafter (Nasar et al., 2016). The reasons

behind less popularity of quail farming in Bangladesh, might be outbreak of epidemics, faulty management systems, higher price of feeds, the higher incidence of different infectious diseases, and lack of veterinary care.(Das et al. 2008;Rahman et al. 2010; Siddiqui et al. 1996). So it is important to take necessary steps to overcome the limitation and encourage people in quail farming to fulfill the protein demand.

Japanese quail (*Coturnix coturnix japonica*) is a recent addition to the poultry farming in Bangladesh. For egg and meat, quail farming is quite popular in Japan, Hongkong, Korea, China, Singapore, India, Thailand, Malaysia, Indonesia, France, Italy, Germany, Britain and Russia. Quails were small game birds which are now used for commercial production of eggs and meat ( Onyewuchi et al.,2013). Only Bobwhite quail (*Colinus virginianus*) and Japanese quail (*Coturnix coturnix japonica*) have been domesticated for commercial purposes. Japanese quail has several breeds and varieties. Among these, Pharaoh (wild type), British Range, English White, Manchurian Golden, Tuxedo are most popular . Among these, Pharaoh is widely raised all over the world. However, adult female have pale breast feathers that are speckled with dark colored spots and on the other hand ,adult males have uniform dark rusted feathers on the breast and cheek (Mizutani, 2003)

Although quail farm has become rapidly expand in urban areas in Bangladesh, in rural area quail farming is less popular. So, It is very important to know the potential and constraints to commercial quail farming in the socioeconomic context of Bangladesh. It is very important to take necessary steps to overcome the limitations.

The present study was conducted with the following objectives:

- a) To do focus on the management procedures in quail production.
- b) To review the prospects and problems in quail farming in Pabna.
- c) Some suggestions for profitable quail farming.

## CHAPTER II

### Materials and methods

#### 2.1. Study area:

The study was performed at Pabna, in a local quail farm name 'Rofiqul Islam quail farm'. This farm composed of two rearing unit, a brooding shade and a room for storage. During the study, I have found the total 1000 number of layer quail.

#### 2.2. Site selection:

The study area was selected on the basis of availability of quail farm and as a part of my internship program.

#### 3.2. Management related requirements of quail farm:

##### 3.2.1. Housing system:

The housing system of the farm was case system which was best for quail farming. The case was 6 feet long and 3 feet wide.

##### 3.2.2. Floor space:

In Brooding stage 75 cm<sup>2</sup>/bird, in Growing stage 100cm<sup>2</sup>/bird and in Laying stage 130 to 150 cm<sup>2</sup>/bird is needed for quail.

##### 3.2.3. Lighting schedule:

The owner of the farm provided 24h lighting for DOC up to 2 weeks which was brooding period for quail. From 3<sup>rd</sup> to 5<sup>th</sup> week, 12h of lighting was provided by the owner. It was increasing gradually from 6<sup>th</sup> week to 9<sup>th</sup> week. In case of broiler, need 23h light and 1h dark for upto 2 week.

#### **3.2.4. Incubation and hatching:**

A still-air type incubator was used in the farm. The turning system of egg tray was manual type. So owner needed to turn by himself 3 times in a day. The normal temperature of incubator was 38.3°C and the humidity was less than 70 percent. The eggs were hatched at 17<sup>th</sup> to 18<sup>th</sup> day which was normal. But it can be vary on the basis of type of incubator

#### **3.2.5. Temperature schedule:**

95°F temperature for DOC bird and 75 °F temperature for upto marketing age bird is recommended .The owner also followed the same process.

#### **3.2.6. Brooding:**

95°F temperature was provided by the owner for 24h in brooding period.

#### **3.2.7. Feeder and drinker:**

Owner provided case type feeder and nipple drinker for adult quail and for 5 birds, one nipple drinker was provided. Clean, fresh water was provided for 24h.

#### **3.2.8. Feeding and Nutrition:**

As the most of the farmers in Bangladesh are familiar with supplying the ready feed, they fall in a problem in quail rearing. Because, no feed miller produces specialized feed for the quail production in Bangladesh. So, they often use feed of other species. Mostly they use the commercial chicken feed. At the time of farm visit, farmer provided a company readymade feed named A I T poultry feed, where the percentage of CP was 17, CF was 4, NFE was 47, CF was 5, Ash was 15, Ca was 3.50 and P was 0.45.

#### **3.2.9. Disinfection procedure:**



Owner used to do disinfection of the shed before introducing any new batch by following fumigation procedure.

### **3.2.10. Disease prevention and treatment:**

Quail are more resistance to various diseases. Mortality rate is higher at the first two weeks of age as chicks need special care with more temperature.

### **3.3. Data collection:**

I was visited the farm named “Rofiqul Islam quail farm” and collected the data by own observation & by using structured questioner, interviewing the owner Rofiqul Islam of the respective farm from 10<sup>th</sup> February 2020 to 20<sup>th</sup> February 2020. Also some data were collected over phone with the owner. Following data were collected during the study:

1. Housing system, cost of housing and infrastructure.
2. Amount of feed intake and cost of feed.
3. Body weight gain.
4. Price of chicks at different age.
5. Selling price of quail.
6. Price of egg.
7. Disease prevalence and mortality.
8. Problems in quail farming as well as in marketing.

### **3.4. Data analysis:**

By interviewing the farmer, all data related to the net profit estimation, constrains and prospects of quail farming were collected and numeric data were analyzed using Microsoft Excel 2013.

## CHAPTER III

### Results and Discussions

#### 4.1. Prospects of quail farming in Pabna area:

**a. Suitable environment:** The climate and natural condition of Bangladesh is also very suitable for quail rearing. Quail can be reared in this country throughout the year and shows a good performance in meat and egg production.

**b. Needed small place to rear:** Quail need small space as it is very small sized bird where mature male and female are approximately 140 and 200 g.

**c. Becoming quick maturity:** Quails need only 40-50 days to become mature and come in production from 45 days of age. On the other hand, chicken need average 6 months to be mature.

**d. Better nutritive value of meat and egg:** Quail meat is rich in micronutrients and a wide range of vitamins including the B complex, folate and vitamin E and K. On the other hand, Quail eggs contain 13 percent proteins compared to 11 percent in chicken eggs. The most essential amino acid (EAA) of quail egg whites are leucine (1139.0 mg/100g), valine (869.5 mg/100g) and lysine (790.0 mg/100g) (**Tunsaring karnet al. 2013**).

**e. Little investment needed:** Quail farming require less investment to start but easy to get quick return from it. Due to lower production cost and comparatively higher pricing quail farming provide higher cost benefit ratio. Cost benefit ratio is becoming higher compare to chicken layer farming (Owner analysis).

**f. Lower feed intake:** An adult japanese quail eat between 14 to 18 gm of feed.

**g. Short generation gap:** Quail are fast growing bird with short generation gap.

**h. Increasing awareness about quail meat and egg consumption:** Gradually people become more positive about quail's meat and egg and consumption of meat and egg of quail become increasing day by day.

**i. Lower rate of susceptibility to disease:** In case of quail, no need to follow proper vaccination schedule like chicken. Because, Japanese quails are comparatively more resistant to infectious diseases than chickens, like salmonellosis, coccidiosis, infectious coryza, enteric diarrhea, and pneumonia have etc (**Rahman et al., 2016**). If any medicine needed to provide, can administered through drinking water.

Now a days quail farming help to reduce the unemployment problem in pabna area day by day. Young people of pabna are getting soft loan from government and NGO easily so that they start to run quail farm. Availability of quail meat and egg helps to fulfill the nutritional deficiency especially protein demand of the people of Pabna.

#### **4.2. Problems of quail farming:**

**a. Quail chicks are very sensitive to temperature than chicken:** Kekeocha (1985) cited that layer quail performed better at 11-26° C and at 40° C or above temperature, quail started to reduce egg production with high mortality.

**b. Higher cannibalism rate than other poultry species:** Many forms of cannibalism occur in quail raised in captivity. Most common forms are vent pecking, feather pecking, toe pecking, head pecking and nose pecking. The latter, which is the most common type of cannibalism among quail, is generally seen only in birds of two to seven weeks of age (**Randall et al., 2008**). Cannibal birds peck at the top of the nose where the fleshy portion merges with the beak and the victim may die due to loss of blood. Even if the bird survives, the beak will be permanently deformed and males will be unsatisfactory for breeding stock. Common causes of

cannibalism include insufficient feeder or drinker space, underfeeding, insufficient nesting space, overcrowding, nutritional and mineral deficiencies, an excess of maize in diet, feed consisting compressed feed or pellets only, strong artificial light, high ambient temperatures and irritation from external parasites.

**c. Protein requirement is high and have no specialized feed:** There are 59 registered commercial Feed Mills in Bangladesh but no feed miller produces specialized feed for the quail production (**BPD, 2009**). Low level of dietary protein affects growth and egg production of quail negatively. As the most of the farmers in Bangladesh are familiar with supplying the ready feed, so they fall a problem in quail rearing. As they don't have enough knowledge about the nutritional profile of feedstuffs and nutritional requirement of quail, so they cannot formulate the balance ration for the quail. So, they often use feed of other species. Mostly they use the commercial chicken feed. This is an erroneous practice and it should be corrected.

**d. Low body and egg weight:** Nowadays, meat type (broiler) quail strains are slaughtered at 5 weeks of age with a weight of 160-250 g (**Nasar et al., 2016**). Females enter into full lay at about 8-9 weeks of age. Layers are usually kept up to 8-10 month of age and produce about 300 eggs per year. Each of the egg become 7-11 g (**Ophir et al. 2003; Ophir et al. 2005**). Whereas 150-175 eggs in the second year. So, it is not economic to rear quail up to 2nd years. Again, average dressing percentage of quail meat is 70-73%. On the other hand, in case of chicken it will be 67-70%. So, 100 g quail meat is obtained from a quail having the live weight 140 g. But in our country the average marketing weight of chicken is 1.5 – 2 kg. So, 1.0-1.3 kg meat is obtained from a chicken, which is 10- 13 times higher than a quail. So, people don't prefer the quail meat in Bangladesh.

**e. They are very noisy:** Male quails usually make a different sound, which is usually disturbing to the human. When rearing the male and female quails together, the male quails peck the other quails and make them blind.

**f. Non attractive color of egg:** people become de-motivated to eat quail egg due to having black pigment on the quail egg.

**g. Narrow market range:** compare to chicken, The market range of quail is very limited. Chicken products can be marketed all over the Bangladesh but in case of quail it is very much limited. Quail egg has some popularity in the several regions, but meat is less popular in the Bangladesh. So, due to narrower market range, farmers are not becoming interested about the quail farming (**Siddiquiet al. 1996**).

**h. Lack of continues electricity supply:** For maximum egg production, 16- 16.5 hours of lighting period is required daily inside the quail house. To ensure proper lighting schedule, continuous electricity supply is needed. But due to lack of continuous electricity problem, farmer becomes looser.

**i. Necessity of incubator for hatching:** As quails never incubate their eggs, chicks can be produced by hatching their eggs through chickens or artificially through using incubators. Rural people are less experienced about incubator. So they become de-motivated on quail farming.

**j. Problems of raising quail chicks:** Quail chick are very sensitive. There are a lot of factor should be considered during raising quail chicks like adequate temperature, sufficient light, proper air movement, density of quail chicks, supply of food and water, hygienic rearing rules etc (**Randall et al. 2008**).

**k. Lack of knowledge:** Due to having lack of knowledge about nutritive value of meat and egg of quail, people avoid to buy quail meat and egg.

**l. Low quality chick:** Due to supply of low quality chicks in the market of Bangladesh, farmer can not get adequate profit which makes a negative overview about quail farming among the farmer.

**m. Lack of government influence:** Due to lack of government influence, farmer become discourage to quail farming.

### **4.3. Suggestions to improve quail farming in Bangladesh:**

- a.** Adequate provisions should be made to ensure the short term loan for quail farming on easy terms and conditions.
- b.** Necessary steps should be taken to ensure adequate supply of feed and feed ingredients at reasonable price all over the country for raising quail.
- c.** To ensure the supply of necessary medicines and vitamins at reasonable prices by the private pharmaceutical industries, necessary steps should be taken.
- d.** Short-term training programmes on farm management, quail husbandry, quail diseases and its control should be arranged by the relevant government agencies and NGOs.
- e.** Through the provision of extension services such as publicity through mass media like Radio, TV, newspapers, leaflets, folder etc, marketing opportunities should be expanded.
- f.** Private breeders and government sector research organizations should be involved in quail improvement activities.
- g.** As the 60-70% of the rearing cost of quail is feeding cost so we must give emphasis on it. As the quail ready feed is not available so we must use chicken feed with some moderation.

## CONCLUSION

Gradually, quail farming has gotten a sound acceptance among the young people in Pabna. By following proper steps, farmer with a very little investment, can become profited by doing quail farming. Quail farming should be encouraged and promoted in Bangladesh to minimize the unemployment problem and to fulfill the protein demand. However, the major constraints of quail farming throughout the country which brought about many challenges to the researchers, academicians and professional people to adopt the strategies to make quail farming economically and commercially viable in near future in Bangladesh. A strong and repeated publicity and awareness raising campaign among the people by the government and various NGOs, especially through mass media will solve most of the existing problems in quail farming.

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## APPENDIX

### Profitability analysis of quail farming :

Profit estimation of broiler quail farm of 10000 birds in a batch, 4 batches per year  
(based on the data recorded from the farm owners)

A. Cost:

a. Land : Own

b. Hosing Rent: 1,00,000 taka

c. Day old chick cost:

Cost of 10500 number of DOC, 7 Tk. Each (5 percent extra to compensate mortality)

4 batches in a year;  $10500 \times 4 = 42,000$

Total cost for day old chick:  $= 7 \times 42,000 = 2,94,000$  taka

d. Feed cost: At an avg. feed intake

cost = 5000 taka

f. Cost for Electricity, medicine, water and accessories): 1 Tk per bird = 42,000 taka

g. Labor: 1 person, at 5000/month with two of 0.014 kg per day per bird up to 40 days =  $0.014 \times 40 \times 42000 = 23,520$  kg at rate of 55 Tk. Per kg of feed =  $23,520 \times 55 = 12,93,600$  taka

e. Equipments:

Cost for case: 50000 taka, at 10 % depreciation bonuses = 70,000 taka

Total cost :  $(1,00,000 + 2,94,000 + 12,93,600 + 5000 + 42,000 + 70,000)$  taka  
 $= 17,731,000$  taka

B. Income: Sold at 60tk per bird =  $60 \times 40000 = 24,00,000$  taka

Net profit= 24,00,000 – 18,04,600 taka = 5,95,400 taka per year.

Profit estimation of layer quail farm of 10000 birds in a batch per year:

A. Cost:

a. Land : Own

b. Hosing Rent: = 1,00,000 taka

c. Day old chick cost: Cost of 10500 female pullets of 7 week of age 40 Tk. Each (5 percent extra to compensate mortality)

Total cost for female pullets =40x 10500 = 4,20,000 taka

d. Feed cost: At an avg. feed intake of 0.018 kg per day per bird for 365 days = 0.018 x 365 x 10500= 689850 at rate of 55 Tk. Per kg of feed = 689850 x 55 = 37,94,175 taka

e. Equipments:

Cost for Cages: 50000 taka, at 10 % depreciation cost = 5000 taka

f. Cost for Electricity, medicine, water and accessories): 1 Tk per bird = 10500 taka

g. Incubator: 1,00,000 taka 20% depreciation cost = 20,000 taka

h. Labor: 2 person, at 5000/month with yearly bonus =1,40,000 taka

i. Transport: 50,000 taka

Total cost : (1,00,000 + 4,20,000 + 37,94,175+ 5000+ 10500 + 20,000 + 1,40,000 + 50,000) = 45,39,675 taka

B. Income:

i. Egg sale: at 4 taka/egg, 260 eggs/year/bird =  $260 \times 3 \times 10000$  taka = 78,00,000 taka

ii. Sold at 55 taka per bird =  $55 \times 10000 = 5,50,000$  taka

Total income: =  $78,00,000 + 5,50,000 = 83,50,000$

Net profit =  $83,50,000 - 45,39,675$  taka = 38,10,325 taka per year

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## Biography

I am Sumia Bin-Te kawser, daughter of late. Nurul Alam and Salma Alam. I have passed Secondary School Certificate examination in 2012(GPA 5.00) from Pabna Govt. Girls High School, followed by Higher Secondary Certificate examination in 2014(GPA 5.00) from Pabna woman College. Now I am an intern veterinarian under the Faculty of Veterinary Medicine in Chattogram Veterinary and Animal Sciences University. In the future I would like to work as a veterinary practitioner.