# STUDY ON MANAGEMENT, BIOSECURITY AND MARKETING SYSTEM OF BROILER FARMS AT PHULPUR UPAZILA IN MYMENSINGH DISTRICT



A Production Report Submitted in Partial Fulfillment of the Requirement for the Degree of Doctor of Veterinary Medicine

# **A Production Report Submitted By**

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# A Production Report Submitted as per approved styles and contents

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#### ABSTRACT

A study report was undertaken with a view to partial fulfilment of the requirement for the Degree of Doctor of Veterinary Medicine (DVM) on "Farm management, Biosecurity and marketing system of broiler farms at Phulpur Upazila under Mymensingh District". I collected the relevant data for the study from 20 February 2022 to 20 April 2022, while I was residing at Phulpur Upazila during internship placement. I actively worked on the farm during this time and used an interview schedule to gather information about the farm management, biosecurity and marketing system as well as prospects and challenges of the Phulpur Upazila's broiler farming enterprises. In Phulpur Upazila, there are numerous broiler farms, and the proprietors of these farms are interested in raising broilers in a farming system for monetary earnings and make themselves economic solvency. With an average flock size found about 1308 birds over the working time, the estimated average **cost, gross and net profit** was estimated **Tk. 269,470; Tk. 333,278 and Tk.63,808** respectively for per batch per broiler farm. Which is indicated broiler farming a profitable enterprising in the study areas.

Most of farm owners sold their birds to urban poultry traders and wholesalers. However, they constantly pose a threat to continue rearing broilers due to a number of challenges they have, including a lack of electricity, poor feed, poor chicks, high chick mortality, transportation issues, etc. As a result, while the possibility was great, the facility was extremely low. They would be more motivated to set up large-scale broiler farms throughout the year if the challenges could be resolved.

# Key Words: Broiler farming, Management, Bio-security, Net farm Profitability, Marketing systems and Challenges.

# **CHAPTER-I**

#### **INTRODUCTION**

#### **1.1: Background of the study:**

In our country, broilers are raised for the commercial production of meat. A source of enjoyment, food, and cash from the sale of meat is broiler keeping. Both urban and rural areas have seen a rise in popularity of broiler farming. Small farmers, landless labourers, educated unemployed people, and industrialists have all been inspired to start small- and large-scale broiler farms as a result of the success of this industry. An increased feed intake may be the only factor affecting the broiler bird's growth performance. Feed consumption trended in the same direction as weight increase. These marginal growth performance variations are consistent with the findings of (Oliviera et al. 1974), (Shanmuga sundaran et al. 1976), (Haque& Chowdhury 1994), (Anisuzzaman & Chowdhury 1996), (Hussain et al. 1996), and (Sarica et al. 1998). According to the report, all broiler farms produced good profits. Bangladesh has a large population. Malnutrition affects the majority of the population. Bangladesh is unable to give her people the required nutrients. The vital component of diet is protein, which may be found in meat, eggs, and fish. Most individuals cannot afford the exorbitant prices of beef, chevon, mutton, etc. The simple and affordable source of protein may be broiler meat. Bangladesh consumes a substantial portion of its meat as poultry. Poultry has an important and slowly increasing impact on the GDP and foreign exchange.

#### **1.2: Objectives of the study:**

The overall objectives of the study was to assess the farm management, Biosecurity, marketing methods and farm profitability of broiler farming practices in the study area. The specific objectives of the study were as follows:

- (i) To understand and characterize the managerial abilities of broiler farming businesses.
- (ii) To be familiar with broiler farming systems' general husbandry methods.
- (iii) To calculate and evaluate the marketing methods and average farm profitability of broiler farming systems.
- (iv) To understand the production and marketing challenges the farm owner is facing.

# **CHAPTER-II**

# METHODS AND METHODOLOGY

#### 2.1. Study area:

During my two-month internship at Phulpur Upazila of Mymensingh District, the study was carried out to determine the opportunities and limitations of broiler farming in the area.

#### 2.2. Study period:

I collected the essential data for the study from 20 February 2022 to 20 April 2022 while I was residing at Phulpur Upazila. I actively worked and gathered information about the prospects and issues related to broiler farming in Phulpur Upazila at this time.

#### 2.3. Population and sample size:

With an average flock size of 1308 birds of 13 broiler farms from the Phulpur Upazila were used in the study, along with a pre-required questionnaire.

#### 2.4. Methods of data collection:

A questionnaire was used to capture the data that were obtained through direct interviewing. Farm management factors such as farm size, housing system, commercial hybrid broiler strains, litter materials, drinks during day-old chick loading in house, brooding system, vaccination, de-worming, growth promoter use, day-old chick purchase, feed purchase, and live broiler marketing were studied. Farmers' characteristics such as education level, training, experiences, and work forces on broiler farming were recorded.

# 2.5. Data analytical Techniques:

When staying on the CVASU campus with the supervisor's correspondence, the obtained data were examined after coding, decoding, and summarizing of the collected raw data. The acquired data was examined using basic statistical techniques like mean, percentage, standard deviations, etc. by using Excel program to achieve the goals and specific objectives of the study.

# **CHAPTER-III**

# **RESULTS AND DISCUSSION**

#### **3.1: MANAGEMENTAL PRACTICES IN BROILER FARMS**

In this section I observed the existing husbandry, housing, feeding, lighting, vaccination, treatments and maintaining system of farm Biosecurity of broiler farming practices in the study area reported as under:

#### A. Husbandry practices:

#### 3.1.1. Collection of Day Old Chicks:

For the farming of broilers, collection of chicks is important. The farm's owner purchases chicks from various hatcheries. A day old broiler chick cost was about 30 taka average.

#### 3.1.2. Flock size:

I worked in several different sized broiler farms during my internship. The following typical flock sizes were observed:

Farm no	Flock Size
01	1500
02	1200
03	1400
04	1100
05	900
06	1700
07	1300
08	1250
09	700
10	1450
11	1350
12	1600
13	1550

Table-1: Flock Size of broiler at the study area.

Source: Field Survey, 2022

# 3.1.3: Housing

The most important requirement for raising poultry birds intensively is a suitable house. There are two different types of houses in Phulpur Upazila.

- 1. Brooder house
- 2. Grower cum finisher house.

#### 3.1.4: Floor space

#### Table-2: Average available floor space of broiler farming.

Age of the bird	Floor space / bird
1 <sup>st</sup> week	0.5 sqft
2 <sup>nd</sup> week	0.5 sqft
3 <sup>rd</sup> week	1 sqft
4 <sup>th</sup> week to finishing	1 sqft

Source: Field Survey, 2022

#### 3.1.5: Feeder space

#### Table- 3: Average Feeder space of broiler farming

Age of the bird	Floor space / bird
1 <sup>st</sup> week	1 inch
2 <sup>nd</sup> week	1.5 inch
3 <sup>rd</sup> week	1.5 inch
4 <sup>th</sup> week to finishing	2 inch

Source: Field Survey, 2022

# **3.1.6:** Waterer space

#### Table 4: Average Waterer space of broiler farming

Age of the bird	Floor space / bird
1 <sup>st</sup> week	0.5inch
2 <sup>nd</sup> week	0.75 inch
3 <sup>rd</sup> week	0.75 inch
4 <sup>th</sup> week to finishing	1 inch

Source: Field Survey, 2022

# **3.1.7.** Temperature Schedule:

#### **Table-5: Temperature Schedule of Broiler Farming**

Age of the bird	Temperature
1 <sup>st</sup> week	95° F
2 <sup>nd</sup> week	90° F
3 <sup>rd</sup> week	85°F
4 <sup>th</sup> week	80°F
5 <sup>th</sup> week	75°F
6 <sup>th</sup> week up to finishing	70°F

Source: Field Survey, 2022

#### 3.1.8: Litter management

#### Table- 6: Litter management of Broiler farming

Litter material	Depth		
	Winter	Summer	
Rice husk	2 inch	1.5 inch	

Source: Field Survey, 2022

# 3.1.9. Feeding:

The first task in raising broiler chicks is feeding them. For the first week, the chicks should receive tiny amounts of feed often. The owner was employed in the following **manner for the broiler's feeding.** 

# **Table-7: Feeding Practices of Broiler Farming**

Age of the bird	Nature of feed	
1 <sup>st</sup> week	Crumble	
2 <sup>nd</sup> week	Crumble	
3 <sup>rd</sup> week	Pellet	
4 <sup>th</sup> week	Pellet	
5 <sup>th</sup> week up to finishing	Pellet	
6 <sup>th</sup> week up to finishing	Pellet	

Source: Field Survey, 2022

# 3.1.10: Weight gain

Following proper feeding, the farm owner's recorded weight gains are presented below:



Figure-1: Graphical Representation of weight gain.

# **3.1.11: Vaccination schedule**

#### Table-8: Vaccination schedule of Broiler farming system.

Age	Vaccine	Disease	Dose & route
Day 1 to 3	BCRDV	Ranikhet	1 drop in 1 eye
Day 12 to 14	Gumboro vaccine	Gumboro	1 drop in 1 eye
Day 21 to 22	BCRDV	Ranikhet	1 drop in 1 eye
Day 23 to 24	Gumboro vaccine	Gumboro	1 drop in 1 eye

Source: Field Survey, 2022

# **B.** Feeding practices:

The farm owner purchases additional feed from several companies for the broilers who require it. For the management of their feeding program, the owner mostly refers to the material produced by Quality Pro Vita Feed, CP, Nourish, and other companies. The company offers three different types of feed: starter, grower, and finisher for broilers.

# 3.1.12: Nutritional level of Quality feed is as follows

		Quality feed	
Nutrients	Broiler Starter	Broiler Grower	Broiler Finisher
Moisture %	11	11	11
CP %	22	21	20
CF %	3.5	3.5	3.5
Fat %	3	3	3
P %	0.5	0.5	0.5
Ca %	1	1	1
ME kcal/kg	2900	3000	3100

 Table- 9: Feeding Practices of Broiler Farming

Source: Field Survey, 2022

 Table- 10: Standard Level of Broiler Feed

	Quality feed		
Nutrients	Broiler Starter	Broiler Grower	Broiler Finisher
Moisture %	11	11	11
CP %	22	21	20
CF %	3.5	3.5	4
Fat %	3	3	3
P %	0.5	0.5	0.5
Ca %	1	1	1
ME kcal/kg	2900	3000	3000

Source: Jadhav M. F. Siddiquei-1999, Hand book of Poultry Production & Management.

# **3.2. Bio-security Management:**

# **3.2.1: Entry of the farm**

One of the most important aspects of preserving farm biosecurity is controlling access, as this is the route through which individuals bring diseases to the farm. The following significant biosecurity precautions were implemented:

# **3.2.2: Foot Bath:**

When entering the farm, all staff should wash their feet. Cleaning is accomplished using foot baths.

# **3.2.3:** For Visitors

- As much as possible, visits should be avoided. When a visit is required, it's critical to adhere to a strategy that will protect the birds on the farm and on neighboring farms while also warning visitors about the dangers of disease transmission.
- Information on the risk of disease transmission from people, equipment, and vehicles should be provided to visitors.
- Upon visiting the farm, visitors must use the foot bath.

# **3.2.4:** Entry of the farm shed

Another vital component for maintaining the farm's biosecurity was observed on entry of the shed. Use of foot bath, separate sandals and dress to prevent infectious disease in the farm shed.

# **3.2.5: Source of water**

Water must come from sources that are secure. Clean, cold, and pathogen-free water should always be available. A water source can be hygienically treated via chlorination. In addition to preventing slime and algae buildup in water lines, it aids in bacterial control. At the drinker level, 3-5 ppm of chlorine are advised. It is recommended to analyze the water every three months to assess the need for treatment.

#### **3.2.6: Hand washing**

Unwashed or dirty hands spread infection. The site should require all visitors to wash their hands before entering. Every employee should wash their hands before beginning work, after breaks, and whenever they switch tasks.

#### **3.2.7: Water Sanitizing**

Water used for drinking has the potential to spread disease widely. It is necessary to routinely clean and disinfect pipelines and header tanks with a non-tainting disinfectant.

# 3.2.8: Cleaning and disinfecting procedure

Pressure washing, scrubbing, and disinfectant (phenyl, Lysol, etc.) water wash can effectively lean shed. In between batches of birds, poultry sheds should be fully cleaned and properly disinfected. After washing and disinfecting the birds, residences need to rest for a minimum of 17 to 30 days in order to disrupt the natural cycle of microbial transmission.

#### 3.2.9: Disposal of dead birds and waste

This is one of the crucial aspects of biosecurity, although it is frequently disregarded because of ignorance. The source of the virus that is carried via vultures, wild birds, dogs, and other animals is dead birds. As a result, the deceased birds must be either heavily buried or hilly burned in an incinerator. To reduce contamination of ground water, farm dressing waste should be burned to the greatest extent possible before being sent to a manure pit.

# 3.2.10: Rodent and wild bird control

To prevent panic deaths and the transmission of viral and parasitic infection through them, birds should be kept safe from predators including rats, bandicoots, snakes, cats, and dogs. To effectively control rats and mice, use a rodenticide. Birds can bring diseases to farms from distant locations. Therefore, measures should be implemented to stop exotic birds from entering farms. Regularly use anthelmintic to prevent parasitic infection.

#### **3.3: Farm Profitability**

#### **Recurring expenditure:**

**3.3.1. Land** – Own

3.3.2. Housing Rent - Own

3.3.3. Day old chick cost:

Average chick per farm per batch 1308 At the average rate of Tk. 30 per chick Total DOC cost=1308×30

= Tk. 39,240

**3.3.4. Feed cost:** 

Average feed3.5kg /bird Total feed = 1308×3.5 = 4,578 kg. At the rate of Tk. 35 per kg of feed

Total Feed Cost =  $(4,578 \times 35)$ 

= Tk. 1,60,230

3.3.5. Other cost:

Electricity, medicine and labor = Tk. 70,000

Total Cost = (39,240+1,60,230+70,000) Tk

= Tk. 2,69,470

#### **3.3.6:** Gross income and net farm profitability per batch:

- Average weight 2kg / bird
- o Mortality: 2%

• Total number of dead birds: 26.16

- Total number of live birds: 1281.84
- Total weight: 1281.84×2 = 2563.68 (2% mortality)
- At the rate of 130 Tk/kg live bird
- Total income: 2563.68×130 = 3,33,278 Tk.
- Net profit = 3,33,278-2,69,470 = Tk. 63,808

# **3.4: Marketing System**

The entire process of moving commodities from the point of initial production to the final consumers is covered by marketing systems. It is the procedure used to transport a product from a farmer to a producer's hand via a channel.

# 3.4.1. Marketing Channel:

A marketing channel is a network of middlemen or intermediaries that allows for the exchange of goods between producers and consumers. Bangladesh has a sizable market for commercial poultry farming due to the previously existing economic opportunity. The majority of the live broiler was sold by broiler farmers directly to urban poultry traders/local dealer. Someone small-scale broiler farmers in Bangladesh sell their products in the local market; however some also sell to large retailers. Both the local market and farms sell their products to consumers. The cost of broilers changes every day on the market demand.

#### **Direct marketing channel:**

• Farm/ poultry farm $\rightarrow$  consumer

#### **Indirect marketing channel:**

• Some farmers sell their poultry to wholesalers, retailers, or other businesses. They can communicate with fast food vendors as well as hotels and restaurants directly. In other cases, hawkers in the city will also sell poultry.



Figure- 2: The marketing channel of poultry & poultry meat product

# 3.4.2: Market Participants

In case of poultry & poultry meat products market participants involved are-

- Poultry hatchery
- Poultry farm owner
- Wholesaler cum retailer
- Retailers
- Hotel & restaurant owners
- Fast food traders
- Hawker
- Super store traders

# **3.4.3. Major Marketing functions:**

#### A. Exchange functions

• Farm owners set prices for poultry marketing based on production. All poultry traders set the price at the time of purchasing and selling using the open negotiation approach. Exchange functions are pricing, buying & selling.

#### **B.** Physical functions

- Storage & packaging: Like other regions of the nation, Mymensingh markets live poultry. The dressed broiler is sold right now. For temporary storage, a type of iron and bamboo case is utilized. The traders have a three-day storage limit on live birds. For storing poultry meat, hotels and restaurants use refrigerators.
- **Transportation:** Transporting poultry from farms to urban areas typically involves buses, trucks, and pick-up vans. Using rickshaws and vans, hoteliers and fast food vendors transport poultry from the poultry sellers.
- **Processing:** Every trader in poultry has a dressing facility where the birds are prepared. After bringing live or dressed poultry from the poultry traders, it is sliced into a few pieces

of the ideal size in the hotel business. Various fast food items are made from poultry meat in the fast food market.

# **C.** Facilitating functions

- Grading & standardization: In the marketing of poultry, poultry traders usually grade poultry according to size and weight.
- **Financing:** In the study area, only a small portion of the farm owner is self-financed. The majority of farmers and traders depend on institutional credit to operate their businesses.
- **Risk bearing:** Physical and market risks emerge when chicken and poultry meat are marketed. Physical threats include theft, mortality, and weight loss. Market risk results from price movements in the market.
- **Market information:** In the current study, chicken traders gathered data from other traders by seeing the current marketing trend and reading newspaper and leaflet articles.

# **CHAPTER-IV**

# **CHALLENGES OF BROILER FARMING PRACTICES**

#### 4.1: Problems Faced by the Broiler Farmers

The farmers who raised broilers had a number of issues. The most important issues in this regard were determined in an effort. The price of DOC (Day Old Chicks) and feed fluctuated way too much, which was the farmers' number one issue. The high cost of medication and vaccinations, as well as their poor quality and significant price fluctuations, were the second and third major issues.

#### **4.1.1: Production problems:**

- High price of day-old chick.
- Higher price of feed.
- Shortage of feed & proper nutrition.
- Low quality feed.
- Low quality chick and growth problem.
- High mortality rate of chicks.
- Lack of credit.
- Electricity problem.
- Lack of capital.
- Non-availability of day-old chicks.
- Unavailability of poultry vaccine.
- Lack of training facilities.
- Uncertainty of profit.

#### 4.1.2: Marketing problems

- Unstable market of live broiler in the local market.
- o Late payment.

# 4.1.3: Social and natural problems

- Outbreak of diseases.
- Pollution of environment.
- Lack of proper bio-security management.
- Lack of knowledge.

# **4.1.4: Others Problems**

- Lack of proper vaccination.
- Influence of Drugs Company.
- Influence by feed supplying company.
- Absence of proper disease control model.

# **CHAPTER- V**

# **CONCLUSION AND RECOMMENDATIONS**

#### 5.1: Conclusion:

There is no doubt that broiler farming is a successful industry in Bangladesh. Employment chances are declining daily as a result of the increasing population expansion, which is particularly extremely suitable for educated unemployed young people. Therefore, broiler farming is a significant source of employment and money in addition to being self-sufficient and a profitable farm business in the study area.

Following the adoption of broiler farming, the socioeconomic position on secondary occupation, monthly household income and expenditure, cash on hand, savings in a bank, household assets, number of school-age children, monthly consumption of meat, eggs, vegetables, milk, and fish, and health status of broiler farmers all improved. However, the annual cost of treatment for diseases also decreased. The high cost of feed and day-old chicks, as well as their inferior quality and high cost of medication and vaccinations, were among the issues that broiler producers had to deal with. The relevant authorities should be required to take the appropriate actions which were already recommended in suggestions to resolve these issues.

The development of production and management systems in various farms is crucial for the development of the poultry industry, particularly the broiler sector. The government needs to step up and provide a reliable institutional and methodological framework for our nation's management and production system. Since profitability in the production of broilers depends on both the production and management system of broiler farming as well as the successful marketing of the product, the quality judgment of feed of various companies should be established in every possible location of the country and assisted by the government. The management abilities of the growers have an effect on the mortality rates and broiler growth rates. From a management perspective, an operator can boost profitability by keeping an eye

out for feed waste and making the required adjustments to eliminate it, keeping an eye out for drinker leaks, maintaining dry and clean litter, and being aware of symptoms of stress.

# 5.2: Recommendations for Improving Broiler Farming

- Day old chicks (DOC) of high quality should be available all year round at reasonable prices.
- Regular, enough supply of high-quality feed at an affordable price.
- Appropriate vet care should be provided.
- Intervention by the government to increase capital.
- Market stability can be achieved by government authorities monitoring the market.
- Feed prices for poultry should be lowered.
- Maintaining a regular market price for broiler meat throughout the year.
- Broiler growers can benefit from efficient and qualified training programs.
- $\circ\,$  Management staff members need to have good training.
- Vaccines for poultry should be obtainable.
- A regular supply of electricity.
- The farmer should have access to bank loans.
- It is important to maintain proper biosecurity.

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# Appendix

Study on Management, Biosecurity and Marketing System of Broiler Farms at Phulpur Upazila in Mymensingh District

# Questionnaire for data collection

1.
a. Name of the farm
b. Name of the owner
c. Father's name
d. Address:
2. Husbandry practice:
A. Housing:
a. Brooder house b. Grower cum finisher house
B. Feeding:
Collection of feed
Storage of feed
• Types of feed
• How many times feed supplied daily
C. Watering:
• Source of water
a. Deep tube well b. Pond
• System of water storage
a. Water tank b. Water house
• Frequency of water supply

#### a. Adlibitum b. Insufficient

D. Litter materials
E. Litter change
F. Ventilation
a. Sufficient. b. Insufficient
G. Natural light
H. Artificial light
I. Bio-security
J. Foot bath:
a. Yes b. No
K. System:
a. all in all out b. Not
3. Number of sheds
4. Drainage facility:
a. Sufficient b. Insufficient.
5. Have electric fan?
a. Yes b. No
6. Most common diseases prevalence in the farm
7. Management of disease condition:
a. Self
b. Quack
c. Veterinary doctor
8. Feature of Veterinary doctor calling:

a. Actively b. Occasional c. In critical situation d. Not at all.		
9. The farm is profitable or not		
✤ Cost:		
a) Chick cost per ch	nick	
b) Feed cost per kg		
c) Liter cost		
d) Medication & Vaccination co	ostper broiler	
✤ Income:		
a) Selling Priceper b	roiler	
Name of the interviewee	Name of the interviewer	
Date	Date:	

Date	•••••	

Signature
-----------

Signature .....

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The Author

#### **Biography**

Md. Jahirul Islam, son of Md. Akiqul Islam and Juleka Begum was born in Mymensingh District. He earned his S.S.C. from Kakni Model Academy High School in 2014 and H.S.C. from Agricultural University College in 2016. He was granted admission to the Doctor of Veterinary Medicine (DVM) program at Chattogram Veterinary and Animal Sciences University for the 2016–17 academic year. In future, he would like to do research work about public health, zoonotic diseases and animal welfare those take public health significance in the world regarding one health constitution.