

A Study on Management, Prospects, and Problems of Broiler Farming at Chandanaish Upazilla in Chattogram District



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A Report Submitted By-

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A Study on Management, Prospects, and Problems of Broiler Farming at Chandanaish Upazilla in Chattogram District



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List of Abbreviation

Abbreviation	Elaboration
FCR	Feed Conversion Ratio
%	Percentage
Sq. ft.	Square feet
Kg	Kilogram

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Abstract

A study on the management, prospects and problems of the broiler farming system at Chandanaish Upazilla under Chattogram district was conducted from 15/02/2022 to 30/04/2022. Using a questionnaire-based survey the current study was conducted to understand the current broiler farming state of Chandanaish Upazila in the Chattogram district of Bangladesh. Using an interview schedule with 5 randomly chosen respondents who were engaged in broiler farming, information was gathered on various factors to assess the current farm management techniques. In the course of the investigation, it was discovered that the majority of farmers started their own businesses with their own money. The entire broiler houses in the research region had open sides and tin shed roofs, and the broiler growth rate in the kacha and concrete floor was nearly satisfactory. However, they constantly felt threatened by various challenges and issues of rearing broilers. As a result, while the possibility was great, the needed facilities were extremely few. People would be more motivated to develop large-scale broiler farms throughout the year if the issues could be solved.

Keywords: Broiler, Management, Prospects

Introduction

Bangladesh is a developing agricultural nation where most individuals are underprivileged, ignorant, and jobless. Large tracts of land are available for raising broilers, and there is a plentiful supply of cheap labor. A substantial part of our country's economy is played by poultry farming, especially broiler farming. The natural climates of Bangladesh are suited for the maintenance and expansion of broiler farms. Broiler refers to young, tender chicken meat that has a high FCR after a brief period of rearing in human captivity.

In Bangladesh, the broiler sector has been successful in elevating itself to a position of prominence. The poultry business contributed one-third of all agricultural GDP additions (18.60 percent) S.M.S, (2014). Even though, it began farming in this country in the middle of the 1960s, this industry has been expanding quickly for the past 20 years. More than 70% of rural households are engaged in broiler keeping, according to the Bangladesh Rural Advancement Commission (BRAC). However, these households face serious challenges because the mortality rate of broilers is said to be as high as 25% due to a combination of poor feeding practices, ignorance of management needs, and poor distribution of vaccines M.M (2012). With the increased acceptability of chicken meat in cities, towns, and villages, broiler has now emerged as the poultry industry segment with the quickest rate of growth. The demand for broilers is increasing quickly. According to professionals in the broiler business who spoke at a roundtable titled "Present Crisis and Prospects of Broiler Industry in Bangladesh" (Financial Express Bangladesh, 2010), the sector will provide employment opportunities for 10 million people.

A significant source of income for rural poor people has emerged in a vast number of developing nations worldwide through small-scale broiler farming. The acknowledgment of small-scale commercial broiler production during the past few years has aided in raising the rate of poverty reduction in Bangladesh. Because of this, broiler farming has been a key contributor to the production of meat that helps people overcome malnutrition and act as a tool for creating jobs

and reducing poverty. From the perspective of the nation's economic development and the satisfaction of fundamental necessities, to keep prices at a low level, and to ensure food, especially animal protein for humans, this industry has enormous potential.

The current study research topic is to evaluate the state of broiler farming in Chandanaish Upazila, Chattogram, Bangladesh at the moment. Poultry production increased while beef and mutton production remained essentially unchanged. This growth in meat production was attributed to poultry. Currently, chickens produce 51% of the nation's total meat production, while the share of broilers is not broken out and 5.9 kg of meat is consumed annually per person in the nation, which is barely 7.38 percent of the global average MoFL, (2006).

Although Bangladesh's broiler business is a young one, there have been several issues that have prevented it from developing fully. Bangladeshi poultry farmers deal with a variety of diseases that hinder the flock's ability to produce at its peak levels. The poultry industry has recently been threatened by a number of new diseases including IBD (Infectious Bursal Disease), Ranikhet, Aflatoxicosis, Avian Influenza, Salmonella, and others that are yet not fully understood, Alkie TN, (2016). In addition to other issues including illiteracy, a lack of marketing expertise, the high cost of components for broiler feed, and an absence of modern equipment on broiler farms, these are also the key obstacles to successful broiler production and management.

The purpose of the current study is to identify the current management system of the broiler farm, to learn about housing design, feeding and litter management, the vaccination process, various constraints of broilers in Chandanaish Upazila, Chattogram as well as the issues related to broiler production and potential solutions.

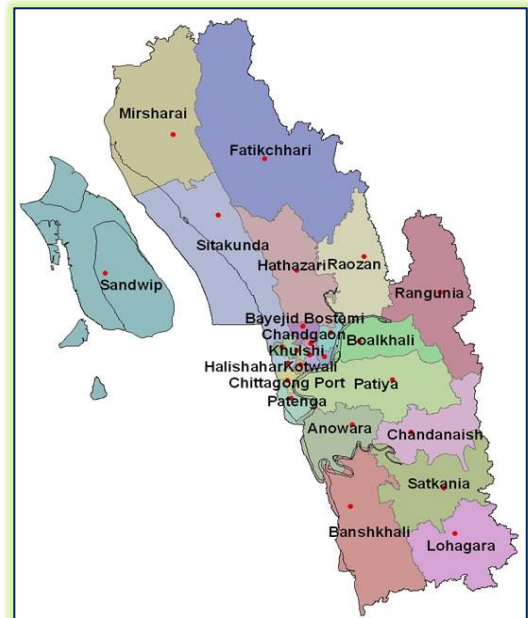
MATERIALS AND METHOD

Location of study area and duration:

The study was carried out at Chandanaish Upazila in the Chattogram district for a duration of around 2.5 months (from 15 February 2022 to 30 April 2022). The availability of a broiler was the criterion to select the study area.



Fig 1: Map of Bangladesh



**Fig 2: Map of Study area
(Chandanaish, Chattogram)**

Selection of study area:

This study area was selected based on the internship program allocated by our university Director of External Affairs, CVASU, Chattogram.

System of data collection:

Data collection was made according to the pre-formed questionnaire through surveying, which was given in the appendix. Actually, data were collected by visiting the farm areas and directly approaching the farmers through interviews and farm inspection. Direct conversations with farmers were used to get the data. During the interview, a brief explanation of the study goal was given to each respondent. The questions were asked methodically in a very simple manner with justifications when needed. The production and management systems of the broiler farm served as the foundation for the collection of all the data.

Selection of farms: The farms were selected randomly based on a number of criteria such as communication facility, farm size, age of the birds, farm owner agreement, and convenience of data collection. The broiler farms were selected based on the rearing length as well, it was counted mostly up to marketing age, on an average of 25 to 28 days.

Data collection: The following data were collected during my study period from the five selected broiler farms:

Demographic characteristics of the farmers: Under these criteria, we collected the farmer's name, age, occupation, farm size, and location.

Feed intake of the broiler chicken, Body weight gain of broiler chicken, FCR of broiler chicken, common diseases and vaccination, etc.

Calculation of data

Body weight: The body weight of the birds was measured by weighing with the balance at the marketing age (25 to 28 days).

FCR (Feed Conversion Ratio): The unit of feed needed per unit of production is termed as feed conversion ratio or FCR. FCR was calculated using the following formula-

$$\text{FCR} = \text{Total feed (kg) consumed up to the marketing age} \div \text{Live weight (kg) of the bird at marketing}$$

Husbandry Practices:

i. Collection of chicks:

For the farming of broiler chickens, the collection is important. From various hatcheries, the farm's owner collects the chicks. Almost the chicks were collected from the Nourish, CP. The price of a day-old chick was paid 45-60Tk per chick.

ii. Housing:

The most important requirement for raising poultry birds intensively is a good home. There are two different types of houses to be found in Chandanaish Upazilla.

- 1) Brooder House
- 2) Grower cum finisher house

In the study region, there was an open-sided, tin shed-roofed house system. In the current study area, the floor was categorized into kacha, brick. Among them 3 farms were made of bricks and 2 were of kacha.

iii. Floor and feeder space followed by the farmers are given below:

a. Floor space:

Table no.1: Average available floor space of broiler farming

Age of the bird	Floor space/bird
1 st week	0.5 sq. ft.
2 nd week	0.5 sq. ft.
3 rd week to finishing	1 sq. ft.

b. Feeder space:

Table no. 2: Average Feeder space of broiler farming

Age of the bird	Floor space / Bird
1 st week	1 inch
2 nd week	1 ½ inch
3 rd week to finishing	1 ½ inch

iv. Litter materials:

Farming success depends on having good litter management. Commonly used littering materials include sawdust, rice husks and wood shavings. The present

study revealed that, all the farmers used rice husk in brooding & growing ages as litter materials.

Table no 3: Litter management of broiler farming

Litter material	Depth(inch)	
	Winter	Summer
Rice husk	1.6-2 inch	1 Inch

v. Feeding:

The most important factor in raising broiler chicks is feeding. Weight gain increases with feed consumption. Adlibitum feedings for the chicks should be given three to five times per day. For the first week of age, the feed quantity changes often based on FCR (feed conversion ratio). There were three different types of feed: starter (0-12 days), grower (13-20 days), and finisher (21-26 days). On chick paper, the beginning meal was provided on the first day. The practice of Adlibitum feeding is common in broiler farming. There are three main types of feeders used. Tray feeders were employed from days three to five of rearing, linear feeders from days six to seventeen, and round feeders from days eighteen to the following days. Some knowledgeable unemployed farmers use enzymes, vitamin-mineral premixes, and digestive stimulants in their feeding practice schedule. They give out glucose and vitamin C on the first day as an anti-stress supplement. Along with water, certain amounts of vitamin ADE and vitamin B complex are also given. The farmer feeds the broilers in the manner described below:

Table no 4: Feeding practices of Broiler Farming

Age	Nature of feed
1 st week	Crumble
2 nd week	Crumble
3 rd week to finishing	Pellet

vi. Common diseases and vaccines applied in the study area:

In the study area, diseases regularly impact all chicken farms. The most prevalent of these disorders is Ranikhet, Gumboro. In the current study region, three vaccines- the BCRDV, IBD, and RDV vaccines were used (table-5). In the research region, farmers

on 4 farms adhered to the recommended immunization schedule, whereas 1 farmer showed no interest.

Table no 5: Vaccine applied in the study area

Days	Disease	Vaccine	Nature	Route
04	IB+ND	BCRDV	Live	Eye drop
09	IBD	IBD	Live	Water
18	IB+ND	RDV	Live	Water
21	IBD	IBD	Live	Water

Statistical analysis: All collected data are subjected to normal statistical analyses, mean, average, and percentage by putting them in excel sheet.

Photo gallery



Housing of broiler chickens



Litter materials



Brooding of chicks



Data collection from farm owner



Weighing of birds

RESULT:

1. Age, Education level and Occupation of the Farmers

Under these criteria, I collected farmer's name, age, occupation, farm size, and location which shown via Table 6.

Table 6: Demographic characteristics of the farmer

No. of Farm	Name of farmer	Age of farmer	Location of farmer	Occupation of farmer	Number of birds in the farm
1	Probakor Barua	30	Satbaria	Teacher	1000
2	Md. Alauddin	28	Satbaria	Businessman	1000
3	Md. Rahman	45	Jamirjuri	Businessman	2500
4	Mamunur Rashid	34	Jamirjuri	Businessman	1500
5	Md. Tarek	25	Jamirjuri	Cultivation	1800

2. Feed intake of Broiler of different farms

The feed intake of five different farms was 2000g (F1), 2100g (F2), 1900g (F3), 2250g (F4), and 2000g (F5), respectively, as shown via figure 1.

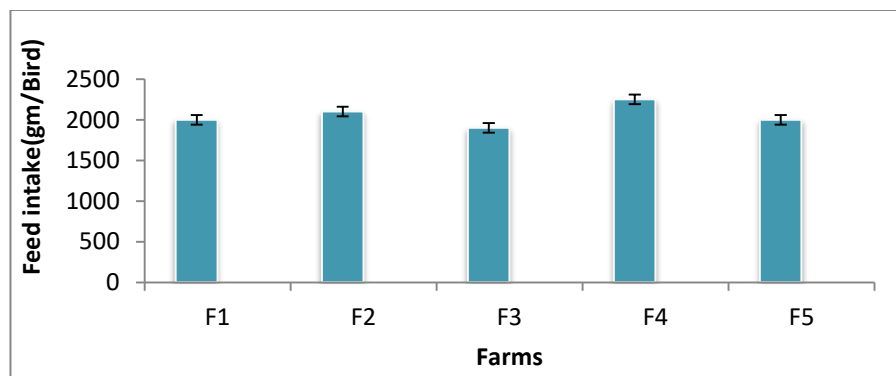


Fig 1: Feed intake of different farms at marketing age

3. Body weights of Chicken at marketing age:

In the study area, the body weight gain of Chickens at marketing age was 1600g (F1), 1800g (F2), 1700g (F3), 1600g (F4), and 1650 (F5), respectively, shown via a figure 2.

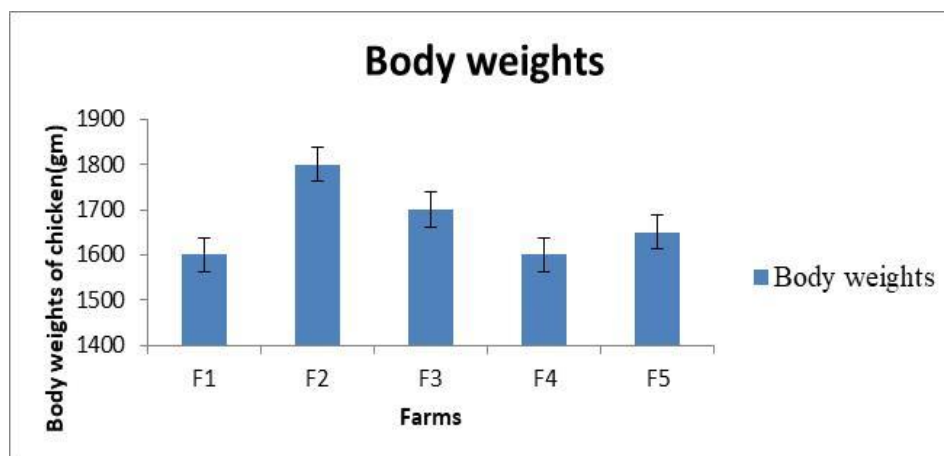


Fig 2: Body wt. gain of Chicken at the marketing age

4. FCR (Feed Conversion Ratio):

The FCR of five different broiler farms is given in Table 7. Shows from Table 7 that the FCRs of the five farms are 1.29, 1.207, 1.15, 1.48, and 1.286, respectively,

Table no 7: FCR of Broiler farms in the study area

No of farms	FCR
1	1.29
2	1.207
3	1.15
4	1.48
5	1.286

Discussions:

1. Demographic characteristics of the farmer:

The present study revealed that the majority of the farmers were in their middle age (31-50 years), one farmer was young (up to 30 years) in the Chattogram region and their education level was under Secondary Education and one was graduate-level farmers in the study, while Hauque (2005) found junior level educated, higher secondary level educated and graduate level farmers in their study. Sultana et al. (2012) reported that the majority (60%) of the respondents were between the ages of 31 and 50, 34% were under 30 years old, and the remaining respondents were beyond the age of 65 (above 50 years). While research by Aganga et al. (2000) in Botswana, the Southern area found that most farmers who raise poultry are between the ages of 35 and 50. Most farmers in the area under study have been raising broilers for longer than five years. However, according to Islam et al. (2005), around 75% of farmers in Mymensingh and 33.30% of farmers in the Barguna area had experience raising broilers for at least 3 years. Most farmers in the study area were discovered to have begun broiler farming without having received any instruction in these techniques. In the study area, all farmers began raising broilers with their own funds. According to Hussain et al. (1997), Farmers launched businesses by obtaining a loan from Bangladesh Krishi Bank. In the Chandanaish upazilla, most farmers were found to be raising Cobb 500 as a broiler strain. In addition, the Lohmann and Ross were discovered to be in use, and Hauque (2005) discovered the Ross hybrid strain in 19 out of 20 farms in the Sherpur sadar upazila.

2. Feed intake of broiler of different farms:

Feed cost is one of the most important factors for broiler production. Approximately 70% of the overall production cost goes toward the cost of the feed. In the study area, the average feed consumption per bird varies from 1900 grams to 2300 grams in 25-28 days of age. Birds in the Mymensingh district consumed 2400gm of feed at the age of 35 days, according to Sultana et al. (2012) which is similar to current findings.

3. Body weights & FCR of chicken at marketing age:

In the study area, the average body weight per bird varies from 1600-1800gm at 25-28 of age and the average FCR varies from 1.12-1.48 at marketing age (25-28 days). Farms to farm body weight and FCR varies due to different feeding, and flooring of farms. Akter et al. (2009) reported that in Bangladesh the maximum floor is kacha and brick. It is suggested that the increased growth and higher FCR were discovered in kacha compared to others. Perry et al. (1999) found a market weight of 1.07-1.70 kg per bird that supports current findings.

4. Common diseases and vaccines applied in the study area:

Ranikhet (Newcastle disease) and Gumboro are prevalent in the research area. Coccidiosis and Infectious bursal disease are prevalent in Mymensingh, according to Islam et al. (2015). In the current study area, BCRDV (Ranikhet) and IBD (Gumboro) vaccines are often used. According to Rahman (2004), 70% of farmers who raise broiler chickens regularly vaccinate their birds, whereas only 30% do not. 90% of farmers use vaccinations frequently, according to Sultana et al. (2012). As stated by Bhattu et al. (2016), just 16% of farmers were implementing vaccination schedules in broilers.

PROBLEMS OF BROILER FARMING IN CHANDANAISH UPAZILA

1. Low-quality chick:

Low-quality chicks are supplied by the hatchery owner. As a result, the farm owners are deprived of having good and healthy chicks. Early in life, a lot of chicks pass away. It is extremely detrimental to a farm, and farmers lose interest in operating one.

2. Lack of Post Mortem facilities:

There aren't enough post-mortem facilities for disease diagnostics on dead birds. They are therefore unable to identify the precise cause of the diseases and cannot adopt the appropriate preventive measures.

3. Lack of bio-security knowledge:

Some owners do not maintain bio-security strictly. At the farm's entrance, many farmers do not utilize foot baths.

4. High cost of feed:

The feed which are found in the market are of low quality and high price. As a result, most farmers are discouraged from raising chickens.

5. Lack of Govt. influence:

The Govt. does not provide assistance to anyone in this region who raise broilers. As a result, this region is behind in this industry.

Prospects of broiler farming in Chandanaish Upazilla:

Chandanaish is an Upazila of Chattogram district with an area of about 201.99 square kilometers. About 2.0 lakhs people live in this area. The geographical location and environmental conditions are ideal for successful broiler farming programs. The majority of the population lives in poverty and has a modest standard of living. People without jobs are in favor of setting up large-scale broiler farms in this region. The ability to hire skilled labor at a low cost is very beneficial for the broiler farming industry. Nowadays women or housewives are getting involved in the broiler industry to escape poverty. By taking loans from the Govt. and different NGOs in our country, the majority of the population can run broiler farming successfully. As a result, both poverty and protein deficiency should be reduced easily. Therefore, there is a great opportunity to become self-reliant and self-supporting by broiler farming in my area.

Conclusion

The broiler industry plays a significant role in the development of human resources. In order to meet the domestic market's demand for protein, broiler farming can play a vital role. The study was conducted to check mainly the management practices, prospects, and problems of broiler farming at Chandanaish upazilla. Overall the management practices of the studied farms were found to be good. The body weight gain of broilers and FCR were good in all the studied farms though FCR was found to be slightly higher in one of the farms which could be due to feed quality. The findings of this study will help farmers and researchers understand the general issues with broiler farming and how to address them through management, marketing, and feeding. It is urgently necessary to remove the above-mentioned issues and other limitations related to broiler farming in order to encourage people to undertake broiler farming and alleviate poverty thereby.

Limitations

There were several limitations even though the study was properly conducted. Following are the restrictions:

1. It took only a short time to complete the investigation.
2. As a result, the study's results cannot accurately represent the overall state of the nation because they were restricted to a single area.
3. Data collection was challenging in some farm cases because of poor transportation infrastructure.
4. To provide information on their farms, some farmers weren't very cooperative.
5. Some farmers don't keep up with their recording systems, which makes it difficult to gather reliable data.

References

- Aganga, A. A., Omphile, U. J., Malope, P., Chabanga, C. H., Motsamai, G. M., & Motsumi, L. G. (2000). Traditional poultry production and commercial broiler alternatives for small-holder farmers in Botswana. *Livestock Research for Rural Development*.
- Akter, S., & Uddin, M. (2009). Bangladesh poultry industry. *Journal of Business and Technology*, 4(2), 97-112
- Ali, M. M., & Hossain, M. M. (2012). Problems and prospects of poultry industry in Bangladesh: an analysis. Dhaka: Americal International University Bangladesh (AIUB).
- Alkie, T. N., & Rautenschlein, S. (2016). Infectious bursal disease virus in poultry: current status and future prospects. *Veterinary Medicine: Research and Reports*, 7, 9.
- Bhattu, B. S., Sharma, A., & Singh, G. (2015). A Study on Constraints of Broiler Farming Entrepreneurship in Mansa District of Punjab. *International Journal of Computer Applications*, 975, 8887.
- Financial Express Bangladesh. "Present crisis and prospects of Broiler Industry in Bangladesh"; 23 July, 2010
- Hauque, S. (2005). Status of broiler farming in Sherpur sadar upazila (Doctoral dissertation, MS Thesis, Department of Poultry Science, BAU., Mymensingh).
- Hussain, S. (1997). Recent trends in the rural economy of Bangladesh poverty and development. Dhaka, Bangladesh. *Institute of Development Studies Journal*, 216-236.
- Islam, F., Begum, S., Majumder, A., & Hossain, M. S. (2015). Broiler production at central and southern region of Bangladesh. *Journal of Bioscience and Agriculture Research*, 5(02), 73-79.

- Khaled, S. M. S. (2014). Poultry industry: Realities and prospects. The Financial Express, International Publication Limited. Available online: [http://www. The financial express-bd. com](http://www.thefinancialexpress-bd.com) (accessed on 26 April 2014).
- MoFL. National Livestock Policy and Action plan, Department of Livestock Services, Dhaka, 2006.
- Norusis, M. J., & Incorporation, S. P. S. S. (1994). SPSS statistical package for the social sciences. Chicago, SPSS.
- Perry, J. E., Banker, D. E., & Green, R. C. (1949). Broiler farms' organization, management, and performance (No. 748). US Department of Agriculture.
- Rahman, M. W. (2004). Livestock poultry raising as a poverty alleviation strategy in some selected areas of Mymensingh District (Doctoral dissertation, MS thesis, Department of Rural Sociology, Bangladesh Agricultural University. Mymensingh).
- Sultana, F., Khatun, H., & Islam, A. (2012). Small scale broiler farming at Santhia upazilla of Pabna District of Bangladesh. Bangladesh Journal of Animal Science, 41(2), 116-119.

Biography

I am Sanjida Ali, an intern student of the Faculty of Veterinary Medicine at Chattogram Veterinary and Animal Sciences University. I completed my Secondary School Certificate (SSC) and Higher Secondary Certificate (HSC) in 2013 and 2015 respectively from Chattogram. As a future veterinarian after completing my DVM degree, I would like to be a researcher and pursue higher studies in the field of public health and one health and contribute to the world with my knowledge and skills.

Appendix

Questionnaire for data collection:

Farm No: -----

Date: -----

Data from the local/backyard /commercial Poultry/Goat Farm in the ----- Upazila, Chittagong /Tangail/Kurigram/.....elsewhere in Bangladesh: _____

1. Farmer's name: _____
2. Address: _____
3. Location: _____
4. Type of Farm: _____ Farming size: _____
5. Socio-economic status of the farmer: a) Age: ____ b) Sex: ____ c) Education level: _____ d) Marital status: ____ e) Income level: low/high/medium..... f) Type of land and size: arable/fallow/housing/garden g) Livestock type and numbers: cattle/poultry/pet/others
6. Type/breed of local chickens/Goat/cattle and numbers: _____
7. Price of adult and day old chick/ Kid/goat/animal: _____
8. Adult body weight of chicken/goat /animal and market price: _____
9. Meat /Egg /Milk production number/year and market price: _____
10. Supplied feed to birds/ animals/day: _____
11. Vaccine given or not, if so, give details: _____
12. Any vitamin supplement supplied the chickens/animal: a. Yes b. No
13. If supply, which types of vitamin are supplies? Along with their dose, date, age, generic name, trade name, price and volume:
14. Disease incidences: a. Yes b. No
15. If yes, what type of diseases are found?: -----
16. Diagnosis of disease done?--by a. Clinical signs and symptoms b. Post mortem findings
17. Treatment given by farmer: _____
18. Mortality rate (%): _____
19. Rearing length (age): _____
20. Amount of feed intake during selling (Kg): _____
21. Selling cost of bird /animal and or egg: _____ Tk/kg

22. Housing type/system: (Direction): _____
23. Presence of any farm beside this farm: a. Yes b. No
24. If yes, how distance from this farm? _____
25. Disposal system of dead bird/waste product: a. Burying b. Burning method d. pit
e) Others
26. Any bio-security measures taken: _____
27. Any disinfectant used: a. Yes b. No
28. If used, what types of disinfectant are used?
29. Length of rearing chickens /animals _____
30. Rearing system---floor/slat/cage/ scavenging/ free-range/night shelter_____?
31. Litter used? _____ rice husk/saw dust/sand/ash/treated litter?
32. Floor space given per bird/animal _____ sq.ft.
33. Type of housing _____ open/close/others?
34. Selling system of birds or animals _____ live/dressed/processed?
35. Number of tools used for the rearing of bird, animals _____
i) Feeder ii) Drinker iii) thermometer iv) Hygrometer v) Balance vi) Scraper
vii) Belcha viii) Brooder/hover/canopy ix) Chick guard x) paper xi) night -
shelter?
36. Yearly income from selling chicken and animal or egg or meat s:
37. Incubation of egg: or gestation period by broody hen or incubator? Number of chick
hatched or litter size by gravid animal/ broody hen per year-----