

A Study on Backyard Chicken Farming and Management at Sakhipur, Tangail



A production report submitted in partial satisfaction of the requirement for the Degree of Doctor of Veterinary Medicine (DVM)

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Session: 2016-17

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A Study on Backyard Chicken Farming and Management at Sakhipur, Tangail



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Statement of Author

I, Sirajul Islam Sagar, am certain that I have completed all of the tasks listed in my report. The data was compiled using books, national and international journals, internet, and other sources. All citations have been properly credited. I am solely responsible for all data collection, processing, preservation, and dissemination in this report.

The Author

May, 2022

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List of Acronyms Symbols Used:

Abbreviation	Elaboration
%	Percentage
No.	Number
>	Greater than
<	Less than
etc.	Et cetera
sq. ft.	Square feet
et al.	And his associate
BDT	Bangladesh taka
GDP	Gross domestic product
ND	Newcastle disease
RDV	Ranikhet Disease Vaccine
IBD	Infectious Bursal Disease
BCRDV	Baby chick Ranikhet Disease Vaccine
SSC	Secondary School Certificate
HSC	Higher Secondary School Certificate
CVASU	Chattogram Veterinary and Animal Sciences University

Abstract

The rural populace of Bangladesh depends largely on backyard chickens for protein. From February 17th to May 28th, 2022, this research intended to examine the management system and production performance of backyard chickens in the Sakhipur Upazila, Tangail. The goal of the study was to learn more about the present condition of backyard chicken farming, including data on raising, feeding, housing, breeding, live weight, stocking density, sickness incidence, marketing, vaccination, and other management methods. Through a conducted questionnaire, data were gathered at random from 30 households in the Sakhipur Upazila and statistically evaluated. Farmers in the study region were mostly low producers, about 63.3%, with flock sizes averaging 13. Most (93.3%) of the chickens were raised in the housing of the farmers and 6.67% of chickens were raised in the poultry houses made on fallow land. About 70% of farmers did not use any litter materials in their poultry houses. Litter materials used by the farmers were ash (16.67%), rice husk (6.67%), sand (3.33%), and sawdust (3.33%). About 50% of farmers provided broken rice and rice polish, 13.33% provided steamed rice, and 26.67% provided rice and wheat bran as chicken feed. Additionally, 10% of the farmers provided ready feed. Almost all the poultry raisers reared their poultry through a scavenging system (80%). In 66.67% of the households, women were the main poultry raisers. Most (83.3%) of the farmers did not vaccinate their poultry. Diseases were present at about 93.3% of farms where the mortality rate was about 30.83%. Fowlpox and Newcastle disease was identified as the major threat to the backyard poultry. The disease was diagnosed by clinical signs and symptoms in most (85.71%) of the case. There were hardly any biosecurity measures taken by the farmers as most of them have no idea about it. The average body weight of an adult chicken was around 996 gm and the market price of an adult chicken was on average BDT 468. Egg production of chicken was on average 44.8 eggs per hen per year and the market price of an egg was BDT 11.83. All of the farmers used broody hens for incubation and about 37 chicks hatched per hen per year. Farmers sell their live birds to the nearest market and also to broker and middleman who comes to their house for buying chicken.

Keywords: Backyard, Chicken, Sakhipur, Fowl pox, Newcastle disease

1. Introduction

Backyard poultry raising is common in the rural communities of low-income countries. It is a valued resource for the livelihood of rural communities. It is not only important for food production but also generates income for subsistence farmers, especially women (R sultana et al.,2012).

Bangladesh is a low-income nation where chicken is raised by 90% of rural families and traditionally women and children are the raisers of these birds (Huque, 1999). Raising backyard chickens is a common activity. Dates back to the 1990s, backyard poultry was the source of 98% supply of poultry meat and eggs in the country, and the rest 2% would come from industrial poultry(UNDP/FAO, 1983). Bangladesh, where 40% of the population lives in absolute poverty in terms of calorie consumption. Village poultry is usually regarded as a “Walking Bank” or “Bank Coin” for the poor families (Alam et al.,2014). The method of keeping poultry under subsistence farminghas been characterized as backyard poultry farming (FAO, 2006)

In over 95 percent of Bangladeshi rural families, this is the oldest and most traditional method of rearing chicken (BBS,2017). This approach enables birds to roam freely in search of food sources, and in most instances, the birds are fed with kitchen garbage, leftovers from family meals, and self-produced food grains by the farmers (Sonaiya, 2007). Poultry contributes significantly to both rural households' livelihoods and the national economy.

In Bangladesh, the meat and eggs of deshi chicken are more attractive to the consumer in both urban and rural areas (Das, 1995).In small-scale poultry, improvement in food security occurs through contributing to mixed farming practices, contributing to women's empowerment, and enabling access to healthcare and education (Wong et al., 2017). The eggs and meat from backyard poultry farming are primarily consumed at home, with the surplus being used to generate income, particularly by women, who use the money to support their children's education and close the financial gap in their families' severe needs, allowing them to become empowered in Bangladesh's male-dominated rural families (Islam et al., 2017).

Livestock is now one of the economy's subsectors that contributes 13.35% of GDP (BBS, 2020). The average per capita meat and egg need is 43.25 kg and 104 eggs, respectively, with just 9.12 kg and 36 eggs available each year (FAO/APHCA,2008). In 2004, 2 kg of the 4.6 kg per capita poultry meat consumption came from backyard poultry in Bangladesh. The annual egg production from the 'backyard system' is estimated to be 4.4 billion, which is 67% of the total egg production of Bangladesh (Dolberg.,2008). Meat and egg output grew by 19.38 percent and 7.77 percent, respectively, during the previous ten years (Hamid et al., 2017). With low-cost intervention, scavenging systems can significantly improve their output performance (Conroy et al., 2005). Farmers should be exposed to an extension program based on their requirements to raise awareness and focus on the industry (Billah et al., 2013)

Considering the above the present study was undertaken to address the following objectives:

1. To observe the socio-economic status of the farmers
2. To observe the management and production system of the rural chicken under backyard farming condition
3. To observe the marketing system of rural/local chicken

2. Materials and method

2.1 Study area and period

The present study was carried out at Sakhipur Upazila under Tangail district of Bangladesh for 2 months and 11 days from 17th February 2022 to 28th May 2022. Sakhipur upazila is located between 24°11' and 24°26' north latitudes and between 90°04' and 90°18' east longitudes. Data were collected from 30 households randomly from Sakhipur upazila. The survey was conducted using a pre-structured questionnaire based on farm-level epidemiological data through face-to-face interviews and observation.

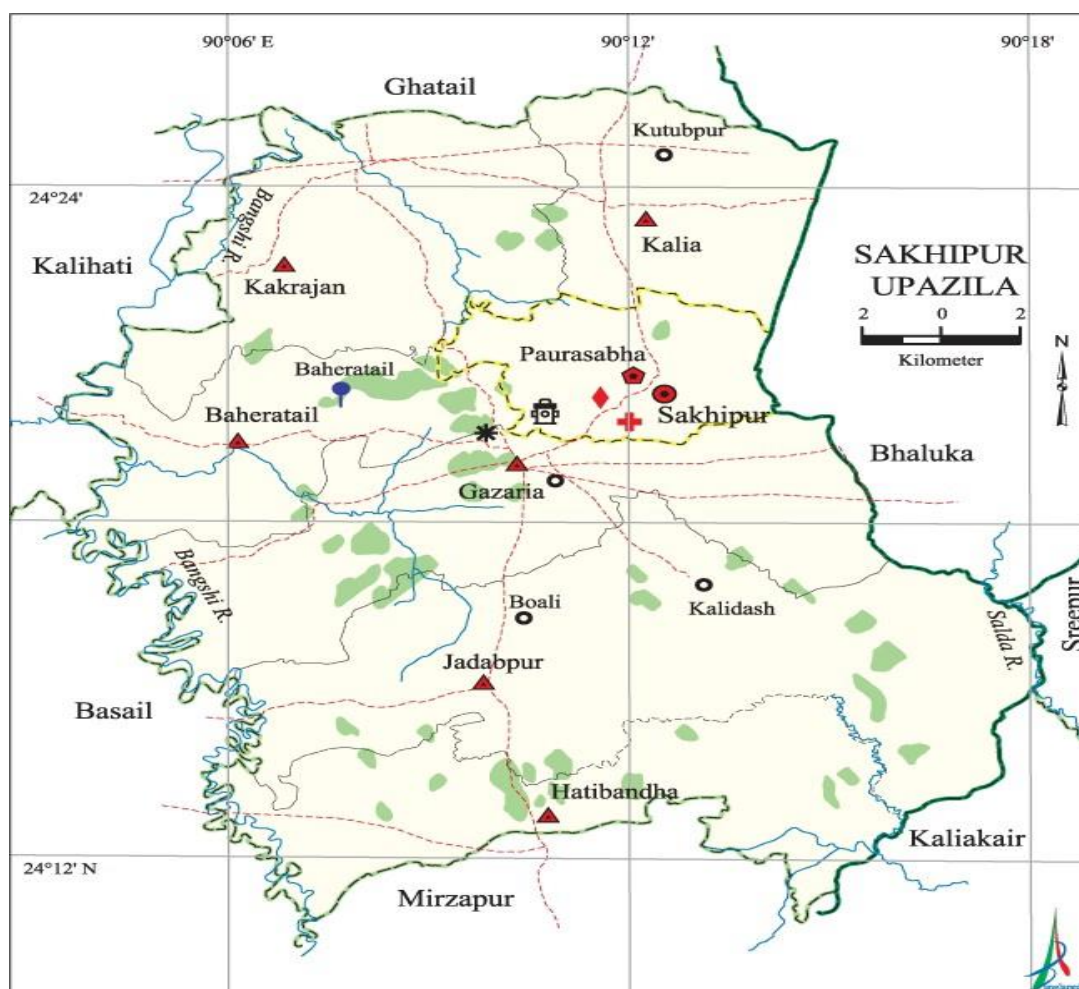


Figure-1: Geographical presentation of study area

Selection of farms: The farms were selected randomly based on the number of criteria such as communication facility, farm size, age of the birds, farm owner agreement, and convenience of data collection. The farms were selected based on the availability and rearing including others.

Husbandry Practices of household chicken Farming:

Collection of chicken

For the backyard farming, collection of birds is very important. From various hatcheries, the farm owners collected the chicks. Almost all the chickens were collected from the rural natural hatchery or purchased from the market.



Figure-2: Local Non-descriptive chicken

Housing/rearing

The chicken was reared in scavenging condition through free range system. They are fed on the housing premises or scavenging areas to collect their feed by their own venture. The most important requirement for raising poultry birds is housing. The housing type was just given them a night shelter, It was made with earthen or mud, concrete, wood, tin, bamboo and others. The farmer here exclusively uses tin, wood, brick, and soil to build chicken houses. There are some dwellings that just have an open roof with a net, which is insufficient for protection from the cold and fog in the winter.

Litter materials:

Variation of bedding materials in chicken house was observed. It was shown that most of the farmers did not use any bedding materials and only few farmers used any bedding materials in the house. The litters are rice husk, sawdust, ash, and sand are very common to be used by the farmers in their night shelter.

Feeding:

Feeding and nutrition is very much essential for rapid growth and development to bring them into a productive level. Usually we know ready-made feed (pellet, mash) and sufficient fresh cold water should always keep nearby the feeders while feeding the chicken for optimum production. Farmers in the study region used rice, rice polish, broken rice or a combination of steamed rice and wheat bran with water as supplemental feed. Most of the period they used to scavenge in the free range areas where they would collect feed materials say- green grass or plant, insect, cereal grains, and others feed materials from their housing areas.

Common diseases and vaccines applied in the study area:

In the study area, diseases regularly impact all the farms. The most prevalent of these disorders are Newcastle Disease, cholera, coccidiosis, IBD, pox, salmonella. In the current study region, some farmers vaccinated and some hardly use vaccines against these diseases.

Data collection

The data was collected by survey method through a pre-formed questionnaire from the household farmers of the selected areas in this study areas. In the research region, 30 families were chosen from various communities. Direct observation of various chicken houses was used to collect primary data on rearing, feeding, housing, breeding, stocking density, illness incidence, marketing, vaccination, and other management practices. It was designed in a simple manner to get accurate information from the farmers. The data were collected by interviewing with a fill up questionnaires on farmer's knowledge regarding of chicken rearing during February to May 2022. A sample of questionnaires is attached in the appendix.

The selection of the study field was affected by the following factors:

- i. In the study area, backyard chicken raising is quite common.
- ii. Easy communication.
- iii. This kind of study has never been done in these areas before.

Data analysis:

The collected data were tabulated and evaluated using descriptive statistics such as average, percentage, and so on, using the software Microsoft Excel 2013.

3. Results and Discussion

3.1 Socioeconomic status of the farmers

The farmer's socioeconomic level has a significant influence on backyard poultry production. 30 households were monitored. **Table-1** reveals that the farmers were divided into three groups according to their income level, Poor (<10000tk), Middle-class (10000-15000tk), and Rich(>15000tk) where 63.3% of farmers were poor. This observation was acceding with Sultana et al. (2012) who reported poor farmers were 49%. **Table-1** shows that medium-aged farmers are more likely than other age groups to raise backyard poultry (66.67 %).

Table-1:Socio-economic status of the farmer

Parameter	Category	Percentage(%)
Income level	Poor (<10000tk)	63.3
	Middle-class(10000-15000tk)	36.7
	Rich(>15000tk)	0
Age	<20 years	6.67
	20-50 years	66.67
	>50 years	26.66
Sex	Male	33.33
	Female	66.67
Education	Educated	36.67
	Uneducated	63.3

Table-1 shows that female and male farmers, respectively, raise chickens in proportions of 66.67% and 33.33%. According to (Sultana et al., 2012), women raised most backyard hens. The farmers were also classified into two groups according to their education and **Table-1** shows that most(63.3%) of the farmers were uneducated.

3.2 Average flock size

Most of the farmers of Sakhipur Upazila were low producers. The average flock size of the chicken was 13, where the highest farm size was 30 and the lowest 3. The number of chickens was higher than the report of (Alam et al.,2014) who reported the average flock size of the chicken was 10.4.

Table2: Average flock size per household

Parameters	Number
Highest No.of chicken	30
Lowest No.of chicken	3
Average flock size/Household	13

3.3 Male-female ratio

In the study area, people usually don't maintain a male-female ratio of chickens. People opt to retain single or multiple numbers of cocks in their flock depending on their preferences. In the study, it was found that most farmers kept a single cock for a flock for breeding purposes which was also told by Popy et al., (2018).

3.4 Breeds of chicken

There has been seen very less variety in the breeds of chicken in backyard farming in the study area. The below figure shows that 83.3% of farmers are rearing Non-descriptive Deshi chicken and 6.67% of farmers are rearing Naked neck,3.3% of farmers are rearing Hilly chicken and some of the farmers (6.67%) are rearing both Non-descriptive Deshi and Naked neck chicken together.

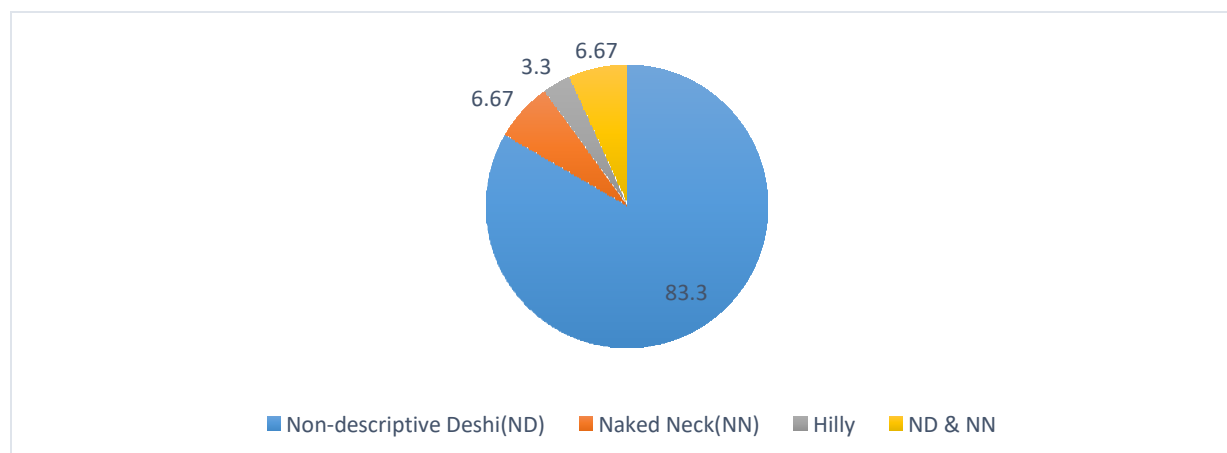


Figure-3: Breeds of chicken

3.5 Housing system

There is no conventional housing available for backyard chickens. The construction of chicken houses in the Sakhipur area was strikingly similar. The majority (93.3 %) of persons in the study locations built their chicken houses near their residences. **Table-3** reveals that almost 60% of research participants provided medium (>1-2 sq. ft.) floor space for backyard chicken raising, while 33.33% provided low (1 sq. ft.) and 6.67% provided high (>2 sq. ft.) floor space. The majority of farmers (70%) did not utilize any bedding materials while raising chickens. The remaining 30% of farmers utilized ash (16.67%), rice husk (6.67%), sand (3.33%), and sawdust (3.33%) as bedding materials. Alam et al. (2014) found that ash was the most often utilized litter item.

Parameter	Category	Percentage(%)
Rearing system	Floor	6.67
	Scavenging	80
	Free-range	13.33
Litter material	Not used	70
	Ash	16.67
	Rice husk	6.67
	Sand	3.33
	Sawdust	3.33
Floor space	Low(1sq.ft.)	33.33
	Medium(>1-2 sq. Ft.)	60
	High(>2 sq. Ft.)	6.67

Table-3:Housing system

Table-3 shows that 80 % used a scavenging technique to rear their chickens, whereas 13.33 % and 6.67 % were reared free-range and floor, respectively. According to Islam et al. (2015), backyard poultry production is scavenging in nature, and this observation also revealed that.



Figure-4: Housing of chicken

3.6 Feeding of chicken

Scavenging feed sources are typical for backyard poultry species. There are two sorts of scavenging sources: outside the owner's home, where the birds foraged for seeds, grass, earthworms, and insects; and inside the owner's house, where they consume kitchen and household garbage, as well as scattered food grains during harvesting season (Rahman and Howlider, 2006)

Table-4: Feed ingredients provided by farmers

Feed ingredients	Percentage(%)
Broken rice, rice polish	50
Steamed rice	13.33
Rice, wheat bran	26.67
Ready feed and others	10

In comparison to commercial poultry raisers, backyard raisers often use less supplement feed. **Table-4** shows that 50 % of the farmers utilized very little other than broken rice and rice polish. 26.67 % said they solely utilized rice and wheat bran. Steamed rice was utilized by 13.33% of farmers, while 10% of farmers provided supplementary ready feed and mixed feed. Farmers delivered the above feed components once or twice a day as a result of the scavenging strategy.

3.7 Production performance

The production performance of backyard poultry is much lower than commercial poultry. The study showed the adult weight, egg production, and hatching of chick per hen per year. In **Table-5**, the adult weight of chicken was categorized into low (< 1000gm), medium (1000 to 1200gm), and high (>1200gm).

Table-5: Production performance of backyard chicken

Parameter	Category	Percentage (%)
Adult body weight	Low (< 1000gm)	30
	Medium (1000 to 1200gm)	63.33
	High(>1200gm)	6.67
Egg production	Low(<40)	16.67
	Medium(40-50)	56.67
	High (>50)	26.66
Hatching of chick per hen per year	Low(up to 30)	36.66
	Medium(>30-40)	46.67
	High(>40)	16.67

The study found that the adult body weight of 63.33% of chickens was medium whereas low body weight was found in 30% and high in 6.67% of chickens. Egg production in 56.67% of the chickens ranges from 40 to 50 per year. This result is very close to the report of Bhuiyan et al., (2005) who showed that egg production of indigenous birds was 45 to 50 per year. The farmers of the study area use fertile eggs for table purposes and also for incubation. Broody hens were used mainly for the incubation of chicken. The number of chicks hatched per brooding hen per year is on average 37.7.

3.8 Diseases of chicken

Several infectious diseases cause massive bird mortality in rural regions. Newcastle disease (ND), fowl pox, salmonellosis, coccidiosis, infectious bursal disease (IBD), Mycoplasmosis, parasitic diseases, and other diseases were common in backyard chickens.

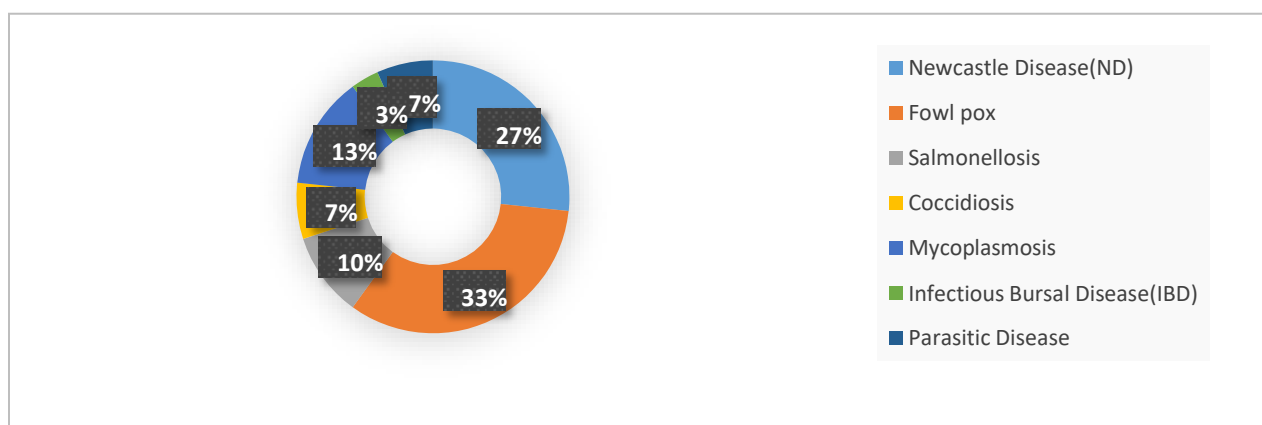


Figure-5: Diseases of backyard chicken

From **Figure-4**, it was realized that 33% of chicken was affected by fowl pox, 27% was affected by ND, 13% was affected by mycoplasmosis, 10% was affected by salmonellosis, 7% of chicken was affected by parasites (ectoparasites and endoparasites) and 3% was affected by Infectious Bursal Disease (IBD). According to Hossain et al., (2013), ND is one of the most important infectious diseases affecting the quantity and productivity of traditionally kept chickens.

3.9 Mortality of chicken:

During this study period, the mortality rate of chicken was quite high, which was 30.83% on average. From **Table-6**, it was observed that most (40%) of the mortality was obtained in the medium category (21 to 35) followed by low (26.66%) and high (33.33%). The mortality percentage in this observation is closely similar to the report by Alam et al. (2014), who mentioned that the mortality ranged from 10 to 37% with an average of 27.82%.

Table-6: Mortality of chicken

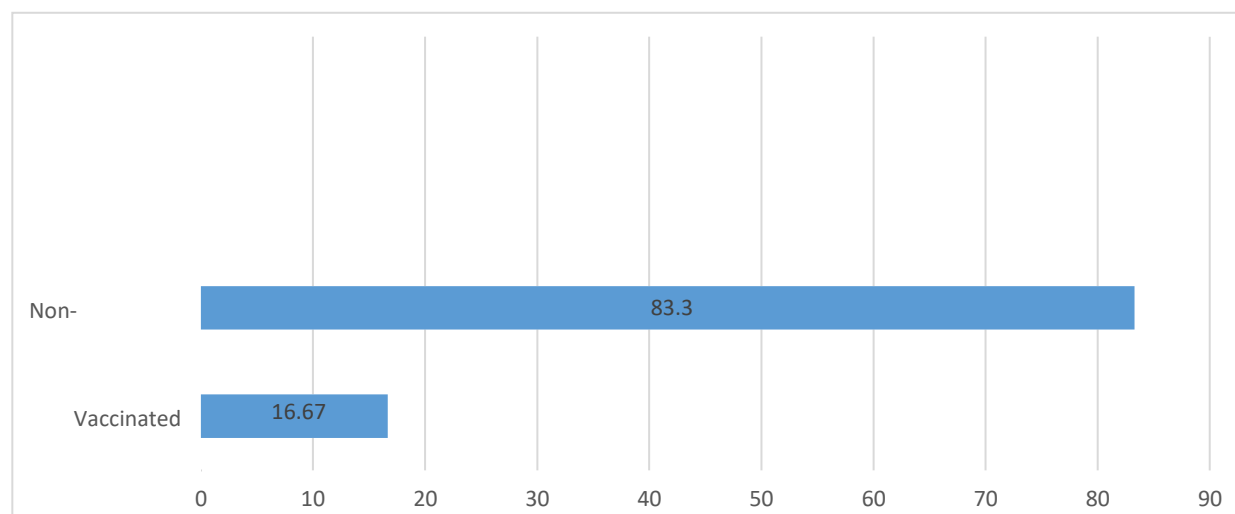
Category	Mortality(%)
Low (10-20)	26.67
Medium(21-35)	40
High (>35)	33.33

3.10 Diagnosis and treatment

This study found that around 85.71 % of farmers of backyards farming followed the diagnosis by observing clinical signs with the help of a quack or medicine shopkeeper and this proportion of birds deprived of the proper treatment protocol. The rest of the farmers seek help from a veterinarian and are diagnosed by clinical signs and symptoms and by performing post-mortem examination of the bird. These minimal amounts of farmers followed the treatment protocol provided by a veterinarian.

3.11 Vaccination

Figure-5 shows that about 83.3% of farmers did not vaccinate their chickens. Lack of knowledge, inadequate facilities, and cost of vaccination are major factors behind this scenario. BCRDV, RDV, and fowlpox vaccinations were administered to the remaining 16.67 % of farmers' chickens and chicks

**Figure-6:** Vaccination of chickens

3.12 Biosecurity

In the study area, almost no farmers manage biosecurity on their farms, and they do not utilize commercial disinfectants as preventive measures for disease prevention and to clean the farm. Fig-5 shows that only 20% of farmers buried and burned their farm waste and carcasses, while the remaining 80% did not have a proper disposal strategy in place.

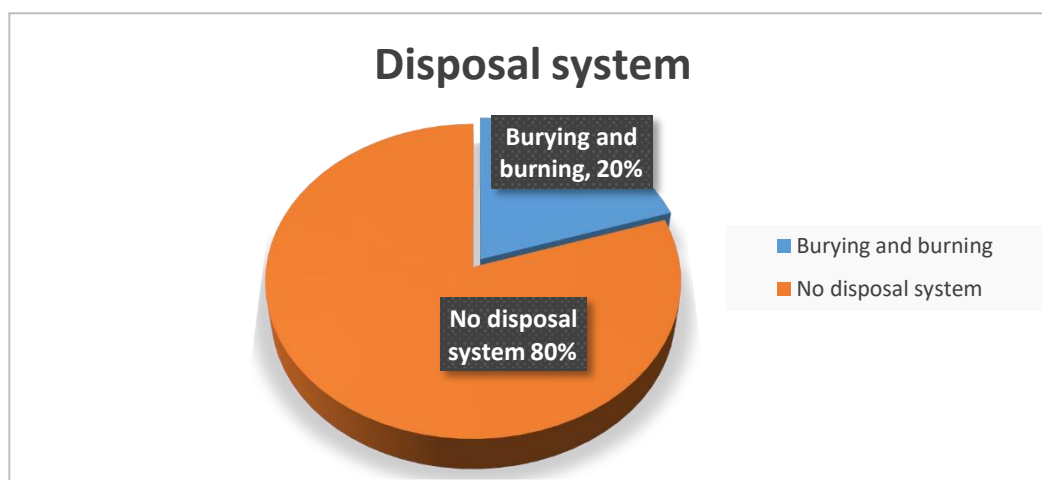


Figure-7: Disposal system of farm waste

3.13 Selling system

The observation reveals that most of the farmers sell live chickens and eggs to the nearest market on their own. According to Islam et al., (2017), farmers, faria (live poultry broker), bepari (year-round broker), wholesalers, market developers, superstores, retailers, and customers are the primary participants in the backyard poultry and egg marketing. In this study area, the selling price of an egg was BDT 11.83 on average and the value of an adult chicken ranged from BDT 400 to BDT 600 based on their body weight.

4. Conclusion:

Backyard poultry farming is a long-standing practice in Bangladesh's agricultural sector, and it remains a viable option for improving rural socioeconomic conditions. This may assist assure the family's animal protein intake, provide additional revenue for female family members to aid with children's education and reduce the family's financial load, and so empower them in the family.

According to the findings of this research, backyard poultry farming is a significant home industry in Sakhipur Upazila's rural villages. It is beneficial to poverty reduction in terms of nutrition and as a source of additional revenue. As a result, its significance in bolstering the lives of farmers with limited living resources and landless rural people cannot be overlooked. Routine vaccination and a well-balanced diet may make a significant difference in the production of high-quality chicken products for human consumption, helping to alleviate malnutrition and poverty in the country.

The families that raise chickens have identified the need for education and training in chicken raising. By incorporating the relevant farmers, the problems and requirements of these rural farmers must be recognized and emphasized. The solutions to these challenges, as well as the associated technical requirements, must then be rated scientifically. This might assist farmers to adopt effective tactics for developing viable technologies and implementing successful extension programs, which would eventually raise backyard poultry production and strengthen the enterprise's role in poverty reduction and economic uplift.

5. Limitations:

Data were collected from some villages, it is possible that practices could be different in other villages of the country. The study period was limited, and the study area was restricted to a particular area. The poultry and human interaction patterns described in this study were collected mainly through observation. There is a chance that the observations were biased during data collection as people might change their usual behavior in the presence of an observer.

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7. Appendix

QUESTIONNAIRE

Farm No: -----

Date: -----

Data from the backyard chicken farm in the Sakhipur Upazila, Tangail 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 : _____
7. Adult body weight of chicken and market price: _____
8. Egg production number/year and market price: _____
9. Supplied feed to birds _____
10. Vaccine given or not, if so, give details: _____
11. Any vitamin supplement supplied the chickens: -- a. Yes b. No
12. If supply, which types of vitamin are supplies?
Along with their dose, date, age, generic name, trade name, price and volume
13. Disease incidences: a. Yes b. No
14. If yes, what type of diseases are found?: -----
15. Diagnosis of disease done?--by a. Clinical signs and symptoms b. Post mortem findings
16. Treatment given by farmer _____

17. Mortality rate (%): _____
18. Rearing length (age) _____
19. Presence of any farm beside this farm: a. Yes b. No
20. If yes, how distance from this farm? _____
21. Disposal system of dead bird/waste product: a. Burying b. Burning method d. pit e) Others
22. Any bio-security measures taken: _____
23. Any disinfectant used: a. Yes b. No
24. If used, what types of disinfectant are used?
25. Length of rearing chickens _____
26. Rearing system----floor/slat/cage/ scavenging/ free-range/night shelter_____?
27. Litter used ? _____
rice husk/saw dust/sand/ash/treated litter?
28. Floor space given per bird_/animal _____sq.ft
29. Type of housing _____open/close/others?
30. Selling system of birds or animals _____live/dressed/processed?
31. 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?
- 32: Incubation of egg: by broody hen or incubator ?
- 33.Number of chick hatched per broody hen per year-----

Acknowledgement

It gives me heavenly delight to convey my appreciation, obligation, and divine adoration to the almighty, whose blessings have assisted me in completing this study project.

I highly express my deepest perception of gratitude, respect, and immense gratefulness to my honorable teacher and supervisor, **Dr. M. A. Hossain (Rony)**, Professor and Head (**In-charge**) of Department of Dairy and Poultry Science, Faculty Of Veterinary Medicine, Chattogram Veterinary and Animal Sciences University.

I would like to convey my sincere appreciation and respect for facilitating this internship program to **Prof. Dr. Md. Alamgir Hossain**, Dean of the Faculty of Veterinary Medicine, and **Prof. Dr. A. K. M. Saifuddin**, Director of External Affairs at Chattogram Veterinary and Animal Sciences University.

For his permission and assistance, I would like to express my gratitude to **Dr. Mohammad Samiul Basir**, Upazilla Livestock Officer of Sakhipur Upazilla, Tangail.

I'd also want to express my gratitude to the people of Sakhipur Upazilla for their kind assistance throughout the survey.

The Author

May,2022

Biography

This is Sirajul Islam Sagar, the eldest child of Md Ab. Latif and Shirin Akter, is completing his Doctor of Veterinary Medicine (DVM) degree at Chattogram Veterinary and Animal Sciences University, Faculty of Veterinary Medicine. He passed the Secondary School Certificate Examination (SSC) in 2013 from Ghonerchala High School, Sakhipur, Tangail with a grade point average of 4.69 and the Higher Secondary Certificate Examination (HSC) in 2015 from Ghatail Cantt. Public School and College, Tangail with a grade point average of 5.00 out of 5.00. Currently, he is completing his internship of one year. He is keen to become a qualified veterinarian in the future and has a tremendous passion for research.