

A Study on Backyard Farming System of Chicken at Kaptai Upazilla, Rangamati



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A Study on Backyard Farming System of Chicken at Kaptai Upazilla, Rangamati



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Statement of Author

I, Unusing Marma, would like to strongly assure that I have performed all the works furnished here in this report. The information has been collected from books, national and international journals, websites and other references. All references have been acknowledged duly. Therefore, I hold entire responsibility of collection, complication, preservation and publication of all data accumulation here in this report.

The Author

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List of Acronyms Symbols Used

Abbreviation	Elaboration
%	Percentage
No.	Number
>	Greater than
e.g.,	Example
etc.	Et ectera
sq. ft.	Square feet
et. al	And his associate
NGO	Non-government organization
GDP	Gross domestic product
ND	Newcastle disease
RDV	Ranikhet Disease Vaccine
BCRDV	Baby chick Ranikhet Disease Vaccine
SSC	Secondary school certificate
HSC	Higher secondary school certificate
CVASU	Chattogram Veterinary and Animal Sciences University

Abstract

The present study was performed to investigate the backyard chicken farming system at Kaptai Upazilla, Rangamati, from 1st February 2021 to 7th May 2021. About 20 household farms were selected randomly based on the availability of chicken at every house as well as a part of the study of the internship program. The study was aimed at observing the present status of backyard chicken farming, data on rearing, feeding, housing, breeding, live weight, stocking density, disease incidence, marketing, vaccination and other management etc. The data were collected from the farmers through a conducted questionnaire. The data demonstrated that the highest percentage of chicken was 6 to 10 in numbers in each household. Most of the farmers reared their chicken by scavenging system. Farmers provided around 40gm to 50gm feed daily for each bird as a supplement. The highest percentage of adult weight chicken was 1000 to 1500gm. Every household obtained a good number of eggs from their chicken. Most of the chicken was affected by parasites (22%), Newcastle disease (14%), fowl pox (14%) and Mycoplasmosis (14%). 85% of the farmers didn't vaccinate their chickens. Most of the farmers sold their products within the village market. The selling price of an egg was Tk. 9 to Tk.10 and the price of adult chicken was Tk. 350 to Tk. 500. Despite some problems, backyard farming is seemed to be profitable farming and contributed to family income to some extent.

Keywords: Backyard chicken, Egg production, Newcastle disease

1. Introduction

Bangladesh is the eighth-most populated country in the world, with almost 2.11% of the world's population. It has one of the highest population densities (1,265 people per km²) in the world with a population of 164.689 million people within the area of 147,610 km² (BBS, 2020). A vast quantity of the people of this country still lives in villages and are extremely poor.

Chicken rearing is supposed to have potential both for poverty alleviation and food production (Sumy *et al.*, 2010). It is suitable for widespread implementation as it costs less, requires little skills, and is highly profitable and can be incorporated into household works (Dolberg *et al.*, 1997). The poultry sector will generate job opportunities for 10 million people as claimed by poultry leaders in the country (Source: Financial Express, Bangladesh 23 July 2010). The poultry industry has been successfully becoming a leading industry in the country. The sector is also evolving rapidly for the last two decades though it started during the mid-60's in this country. This industry has vast potentialities from the point of view of the economic growth of the country as well as fulfilment of basic needs, keeping the price at a minimum level and securing food especially animal protein for the human being.

In Bangladesh, 74% of household keeps poultry to improve their livelihood (Khatun *et al.*, 2005). At present, livestock is one of the subsectors in the economy which contributes 13.35% to Gross Domestic Product (GDP) (BBS, 2020). The average per capita meat and egg requirement is 43.25 kg and 104 numbers respectively and the available values are only 9.12 kg and 36 numbers per year. In 2019, 2 kg of the 4.6kg 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 (Islam *et al.*, 2015). It has contributed about 19.75% of meat production (Dutta *et al.*, 2013). The growth rate of meat and egg production of the last 10 years was 19.38% and 7.77%, respectively (Hamid *et al.*, 2017).

Generally, 3 types of breeds of poultry are reared in backyard farm in Bangladesh, *i.e.*, Naked Neck (NN), Hilly, and Non-descriptive Deshi (ND) (Khatun *et al.*, 2005). Among them, Non-descriptive Deshi chicken (ND) comprises 90% of the indigenous poultry population (Islam *et al.*, 2015). The rearing system of backyard poultry is scavenging in nature with each family keeping an average of 6-10 chickens. The annual production of the egg from indigenous chicken is only 35 to 45 eggs (Azharul *et al.*, 2005).

There are some constraints to raise backyard poultry. With the indigenous poultry rearing, there are many diseases of poultry such as highly pathogenic avian influenza, Newcastle disease, infectious bursal disease, colibacillosis, salmonellosis, Mycoplasmosis, fowl pox, etc. that causes loss of production and high mortality in poultry. The constrain for improving productivity are not only diseases but also management system *i.e.*, lack of supplementary feed, lack of proper healthcare and housing.

Therefore, the present study was undertaken with the following objectives:

- To know the traditional scavenging poultry rearing system in Bangladesh.
- To know about the management system of breeding, feeding, housing, prevention and control of diseases on poultry.
- To observe the productive performances of backyard poultry.

2. Materials and Methods

2.1 Study area and population:

The study was carried out for periods of 3 months and 7 days from 1st February 2021 to 7th May 2021. The data were collected from 20 households in Kaptai upazilla under the Rangamati district. The survey was completed with a pre-structured questionnaire based on farm-level epidemiological data through face-to-face interview and by observation.



Fig-1: Geographical location of data collection site

2.2 Data collection process and tools:

The data were acquired through face-to-face interview of farmers regarding the objectives of the study using an interview schedule. Following qualitative and quantitative parameters were collected during the study period —

- Socio-economic status of the farmer
- Number and types of breeds of poultry reared
- Management system of the farm
- Diseases among the birds
- Mortality
- Annual income.

2.3 Data analysis:

The collected data were sorted and imported into Microsoft Excel 2019. Descriptive statistics were adopted mainly to demonstrate the results per the objective of the study.

3. Result and Discussion

3.1 Socio-economic status of the farmer:

Socio-economic status of the farmer impacted on the rearing of backyard poultry greatly. There were 20 households under observation. **Table-1** reveals that the land area of the household was classified into three categories *i.e.*, low (up to 0.4 hectares), medium (0.5 to 0.7 hectare), and high (>0.7 hectares) where 90% had medium farm size than low (5%) and high (5%). This observation was acceding with *Islam (2015)* who reported farm size per farmer was 1.74 acres. **Table-1** was showed that medium age farmer had a higher percentage (65%) than other categories to rear the backyard poultry.

Table-1: Socio-economic status of the farmer

Parameter	Category	Percentage (%)
Farm size	Low (up to 0.4 hectares)	5
	Medium (0.4-0.7 hectare)	90
	High (>0.7 hectare)	5
Age	20-35 years	25
	36-50 years	65
	>50 years	10
Sex	Male	10
	Female	90
Income level	Poor	40
	Middle Class	54
	Rich	6

Table-1 showed that the rearing percentage of the female and male farmer was 90% and 10% respectively. *Sultana et Al. (2012)* mention that women were the primary raiser of backyard chicken. Participants of the study were organized into the poor, middle class and rich according to their income level. The percentage of the poor, middle class and rich were 40%, 54% and 6% respectively. The present result doesn't agree with *Sultana et al., 2012* where the percentage of the poor, middle class, rich is 60%, 30%,10% respectively.

3.2 Breeds of poultry:

Several breeds of chicken have been reared in backyard farming *i.e.*, Non-descriptive Deshi (ND), Hilly, and Aseel in Kaptai, Rangamati. The figure shows that 83% of the farmer reared Non-descriptive Deshi (ND) followed by rearing 15.69% Hilly and 1.31% others.

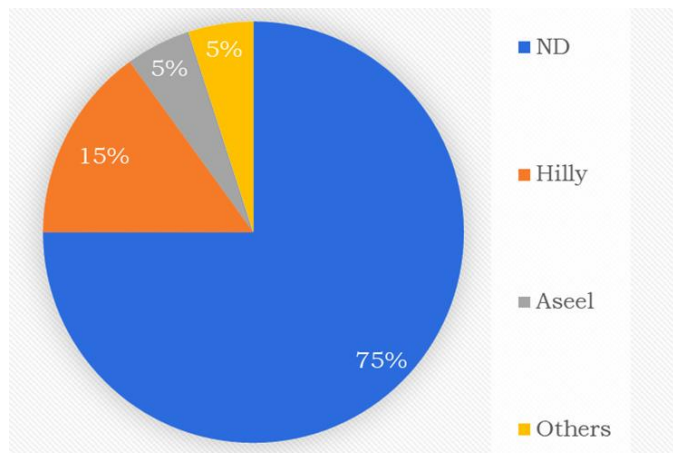


Fig-2: Breeds of poultry

In **Table-2**, the number of the chicken producer can be classified into three categories *i.e.*, low producer having less than 5 numbers, medium producer having 6 to 10 numbers, high producer having more than 10 chicken. From **table-2**, it can be seen that 41% of farmers were

medium producers than low (27%) and high (32%) producers. The present result does not agree with *Alam et al., 2014* which indicated that the number of chickens reared per family was 6 to 7.

Table-2: Categories of chicken producer

Category	Percentage (%)
Low (Up to 5)	27
Medium (6-10)	41
High (>10)	32

3.3 Housing of poultry:

The housing system of chickens in the backyard was quite distinct from the literature. About 62% of participants of the study required up to 1 sq. ft. floor space where 31% required 1 to 2 sq. ft. and 7% required >2 sq. ft. floor space for the rearing of backyard chicken (**Table-3**). The majority of the bedding materials were ash and sand. It was seen that 40% of farmers used sand more than other litter materials in their poultry houses. *Alam et al. (2014)* reported that the most used litter material was ash. The percentage of rice husk, sawdust, ash, treated litter were 20%, 10%, 25% and 5% respectively. There was also a report on the rearing system of backyard chickens. About 60% of the farmers reared their chicken by scavenging system and 20%, 19%, 1% were reared the backyard chicken by floor, free-range and night shelter respectively (**Table-3**). *Islam et al. (2015)* comment that, the production system of backyard poultry was scavenging in nature.

Table-3: Housing system of chicken

Parameter	Category	Percentage (%)
Floor space	Low (Up to 1 sq. ft.)	62
	Medium (1-2 sq. ft.)	31
	High (>2 sq. ft.)	7
Litter material	Rice husk	20
	Sawdust	10
	Sand	40
	Ash	25
	Treated litter	5
Rearing system	Floor	20
	Slat	0
	Cage	0
	Scavenging	60
	Free range	19
	Night shelter	1



Fig-3: Housing system

About 50% of the farmer used feeder and 50% of them did not use any equipments to rear their chicken in the village. 25%, 20%, 5% and 5% of the farmer were used drinker, paper, chick guard and electric balance respectively (**Figure-4**).

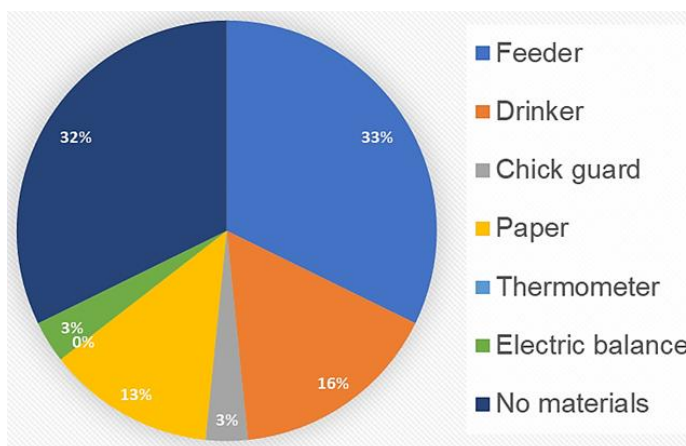


Fig-4: Using of equipments in poultry house

3.4 Feeding of poultry:

Table-4 indicates the feeding pattern of chicken which was categorized into low (up to 40gm), medium (40 to 50gm), and high (>50gm) intake. More than 51% of farmers were supplied feed around 40 to 50 gm per day. This finding was nearly the same as *Yeasmin et al. (2003)* which cited that supplied feed per day was 52.50gm.

Table-4: Amount of feeds supplied to poultry

Category	Percentage (%)
Low (up to 40gm)	33.5
Medium (40 to 50gm)	57.5
High (>50gm)	9



Fig-5: Feeding system

3.5 Productivity of chicken:

The study was showed the adult weight, egg production, hatching of chick per hen per year. In **Table-5**, adult weight of chicken was categorized into low (up to 1000gm), medium (1000 to 1500gm), high (>1500gm). The study showed that the adult weight of 52.4% chicken was medium (1000 to 1500gm) rather than low (31.28%) and high (16.32%). This observation is similar to *Islam et al. (2003)* and *Sarker (2005)* where they stated the adult weight of deshi chicken was 1200gm to 1500gm.

In this study egg production was ranged from 35 to 55 per chicken per year. About 67% obtained less than 40 eggs per chicken per year (**Table-5**). This observation concedes with the previous report *Dutta et al (2013)*. They reported that the egg production of deshi chicken was 35 to 40 per bird per year. The hatching of chick was ranged from less than 25 to 45 and

classified into three categories *i.e.*, low (up to 25), medium (25 to 40), High (>40). Approximately 58% obtained 25 to 40 hatching chick per year per hen.

Table-5: Production performance of backyard chicken

Parameters	Category	Percentage (%)
Adult body weight	Low (up to 1000gm)	31.28
	Medium (1000 to 1500gm)	52.4
	High (>1500gm)	16.32
Egg production	Low (up to 40)	67
	Medium (40-50)	29
	High (>50)	4
Hatching of chick per hen per year	Low (up to 25)	27
	Medium (25-40)	58
	High (>40)	25

3.6 Diseases of chicken:

Diseases that frequently occurred in backyard chickens were Newcastle disease (ND), fowl pox, infectious laryngotracheitis (ILT), coccidiosis, fowl cholera etc. From figure-6, it was realized that 22% chicken was affected by parasites (ectoparasites and endoparasites), 14% was affected by ND, fowl pox and Mycoplasmosis each. This study also acknowledged the other diseases were salmonellosis (9%), infectious laryngotracheitis (ILT) (7%), infectious bronchitis (IB) (4%) and others (16%).

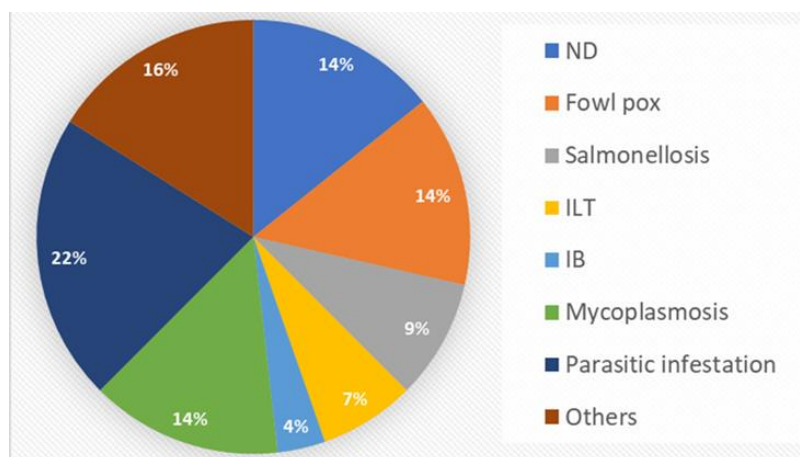


Fig-6: Diseases of poultry

3.7 Mortality of chicken:

In this study, mortality of chicken was ranged from less than 20 to 35. From the **Table-6**, it was observed that more than 50% mortality obtained in medium category (20 to 30) followed by low (20%) and high (25%). The mortality percentage in this observation is higher than that of *Ershad (2005)*. He mentioned that the mortality of Deshi chicken was around 14.

Table-6: Mortality percentage of chicken

Category	Mortality (%)
Low (up to 20)	24
Medium (21 to 30)	57
High (>30)	19

3.8 Methods of treatment:

Around 73.5% of farmers of backyards farming was followed the traditional method of treatment procedure in chicken. Rest 26.5% was followed the treatment protocol of the veterinary surgeon.

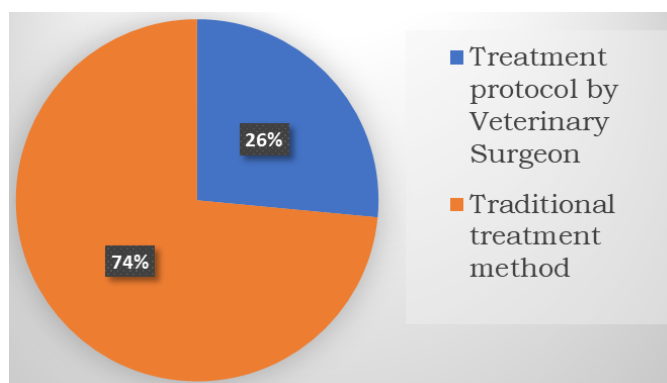


Fig-7: Methods of treatment in poultry backyard farming

3.9 Vaccination:

About 85% of the farmers did not vaccinate their poultry due to lack of facilities and knowledge of vaccination (Figure-8). Among 15% of farmers gave BCRDV, RDV and fowl pox vaccines to their chicken and chicks.

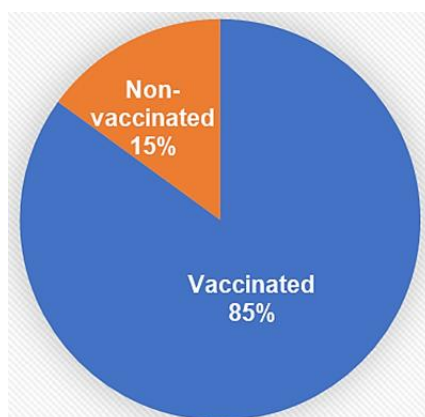


Fig-8: Use of vaccine in chicken

3.10 Bio-security:

Bio-security applied to the household chicken using chemical agents was negligible in the rural area. Approximately 90% of the farmers didn't maintain the commercial bio-security and rest 10% maintained to some extent. But they followed the traditional system and bio-security. In that case farmer used ash as disinfectant to control ectoparasite and cleaning of floor. Some of them were used lime as disinfectant. 35% farmer disposed their waste product by burying (Table-7).

Table-7: Disposal system of waste product

Category	Percentage
Burying	35
Burning	15
Pit	10
Selling, consuming	30
Other	10

3.11 Procurement and sell:

Most of the farmers rear chicks from their own chicken. About 90% of the respondents found that there was no problem in procuring or selling chicken in the village. As far as the sales

go, 85% of the farmers indicated that the selling was performed within the village itself and rest 15% of them sold to others. The selling price of an egg was Tk. 9-10 in the village. The value of an adult chicken was ranged from Tk. 350 to Tk. 500 based on their body weight. By rearing chicken farmer can add Tk. 4000 to Tk. 6000 to its family income yearly.

4. Limitation

There were some limitations in this study. The study period was limited and study area restricted to a particular area. An ongoing pandemic also limited proper data collection from the selected area. For this reason, the findings may not reflect the whole country.

5. Conclusion

The backyard poultry farming system in Bangladesh is revealed as a source of income for the rural and marginal people of the rural areas. Poultry rearing knowledge such as breeding, feeding, housing, biosecurity, prevention and control of diseases are not satisfactory of the farmers. Experts from government, research institutes, universities, NGOs and other relevant sector should work in a collaboratively manner in order to allow sustainable production and fight challenges jointly from time to time.

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7. Appendix

QUESTIONNAIRE	
Farm no.:	Date:
Farmer's name:	
Location:	
Area:	
Socio-economic status of the farmer:	
i. Age:	ii. Sex:
iii. Education level:	iv. Marital status:
v. Income level: Low/ Medium/ High	
Type/breed:	
No. of chicken:	
Price of adult:	
Adult body weight of chicken:	
Price of day-old chick:	
Egg production number/year:	
Number of chicks hatched by broody hen per year:	
Presence of any farm beside this farm: Yes/No If <i>YES</i> , how distance from this farm?	
Litter used: Rice husk/saw dust/sand/ash/treated litter	
Floor space given per bird (in sq. ft.):	
Types of tools used for the rearing of birds: Feeder/ Drinker/ Thermometer/ Electric Balance/ Chick guard/ Paper/ Night -shelter	
Supplied feed to birds/day:	
Any vitamin supplement supplied the chickens: Yes/No	
Vaccine given or not, if <i>YES</i> , give details:	
Disease incidences, if <i>YES</i> , what type of diseases are found:	
Diagnosis of disease done? If <i>YES</i> , done based on: a. Clinical signs and symptoms b. Post mortem findings	
Mortality rate (%):	
Any bio-security measures taken: If <i>YES</i> , what type of measure used:	
Disposal system of dead bird/waste product: Burying/ Burning method/ Pit/ Selling, consuming/ Others	
Selling price of a bird:	
Selling price of an egg:	
Yearly income from selling chicken and or eggs:	

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And finally special thanks to Dr. Tahmina Arjo, Veterinary Surgeon of Kaptai Upazilla, Rangamati for her authorization and helpfulness.

Biography

This is Unusing Marma, child of late Aongkyajai Marma and Minupru Marma, doing his graduation on Doctor of Veterinary Medicine (DVM) at Chattogram Veterinary and Animal Sciences University under Faculty of Veterinary Medicine. He passed the Secondary School Certificate Examination (SSC) in 2013 from Narangiri Government High School, Chattogram and got GPA 5.00 and then Higher Secondary Certificate Examination (HSC) in 2015 from Chattogram Biggan College, Chattogram and got GPA 4.75. Currently he is doing his yearlong internship. He has a great enthusiasm in research and do research on clinical animal diseases and parasitism in animals in Bangladesh.