Duck production strategy in Shibpur upazila under Narsingdi district

By:

Md. Tanvir-Ul-Alam

Roll No: 16/55; Reg No: 01674

Intern ID: 48

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Faculty of Veterinary Medicine

Chattogram Veterinary and Animal Sciences University

Khulshi, Chattogram-4225, Bangladesh

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Approved By:

Dr. Marjina Akter, PhD

Associate Professor

Department of Dairy and Poultry Science

Faculty of Veterinary Medicine

Chattogram Veterinary and Animal Sciences University

Khulshi, Chattogram-4225, Bangladesh

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Author

Abstract

The current study was conducted to assess the duck production strategies in Shibpur upazila under Narsingdi district. A total of 36 farmers were selected to conduct a survey from the study area. Data were collected from March to September, 2021 by using a structured questionnaire. Results showed that the majority of the farmers (47.22%) belonged to young aged group. About 50% of the farmers received secondary education and most of the duck farmers (47.22%) were housewives. Most (38.89%) of the duck house were made of tin shed. About 58.23% farmers reared deshi ducks following semi-scavenging system. Around 55% respondents reported that egg production of semi-scavenging deshi ducks was 51-70 eggs/year. Duck plague (22.22%) and cholera (25%) were the common diseases threatening duck production and 50% farmers failed to vaccinate their birds against the major diseases. According to 70% respondents, mongoose and jackal were the main predators. A majority of the famers (90%) mentioned that unavailability of sufficient amount of broody hen and rice husk incubators were the main constraints of successful backyard duck farming. Commercial duck farmer (100%) agreed that lack of good breed was the main constraints. Most of the farmers agreed that lack of finance, disease and predators, inadequate veterinary service were the main challenges for duck production. In conclusion, it can be said if the constraints and challenges of duck farming mentioned in this study can be addressed properly, the commercial and backyard duck farmers in the Shibpur upazila could be economically more benefitted.

Key words: Duck, Duck production, Backyard farming, Commercial farming

Chapter 1

Introduction

Bangladesh is an agricultural country. Poultry plays a significant role in the subsistence economy of the country. Among the poultry species, duck ranks second just after chicken in producing poultry meat and eggs. According to a report of Food and Agricultural Organization (FAO), the position of Bangladesh with respect to duck meat and egg production is 11th and 4th respectively among the Asian countries (Pingel et al., 2011). Duck farms can generate profit by producing egg and meat. Duck comprises of about 16% (42.68 million) of the total poultry population (270.71 million), occupying second place next to chicken in the production of table eggs in the country (Bangladesh Economic review 2010). There are about 52.2 million ducks in Bangladesh (DLS 2015-16).

At presents, prices of meat and eggs are beyond the buying capacity of the poor people. Increased duck eggs and meat production can play a vital role in solving these problems. Duck keeping is one of the possible means of breaking out poverty trap of poor small holder families in low incomes countries (Pym et al., 2002). Ducks are considered to be the most important asset and source of income for ultra-poor rural women. Small scale duck farming has not only been proved to be a beneficial occupation for small, marginal and landless farmers, but also a potential source of self-employment for the youth and distress women (Jabber, 2004). Besides, duck production has some unique advantages including; more disease resistance capacity than other poultry, longer economic egg-production life, good forager and hence need less food, do not need elaborate housing and ducks act as biological means of pest control by eating snails and other crop pests produced within a short time at reasonable cost (Alam et al., 2011).

Fluctuations in feed availability from natural sources often affect the production cost which varies from 72% to 87% of the total production cost. The average egg production

increased from 30% in the dry period to 62% in the scavenging period. Scavenging ducks are allowed to forage different types of faunas such as snails, fish, earthworms and flora such as duckweed and algae (Halder, 2007).

Most of the farmers are poorly (below SSC) educated and have very poor knowledge about duck diseases. The farmers took advice from the government veterinary hospital and occasionally vaccinate their duck against infectious diseases. The prospect of duck rearing in Shibpur upazila, under Narsingdi district of Bangladesh lies in the fact that there are large areas of low-lying water reservoirs where waters stand throughout the year. These water reservoirs contain weeds, fishes, snails, insects, fallen grains etc, which are the important feeds for ducks when reared under scavenging and semi scavenging systems. Therefore, duck production is getting popular day by day in this region. There is a great potentiality in improving the productivity of duck through better feeding and management in this area. However, the problem and prospect of duck rearing has not been yet assessed and quantified in the reported area. In this investigation, an attempt was made to study the existing duck management systems in aforementioned study area. The objectives of this study were to determine the current duck production strategies by investigating the present management practices of duck farming in selected areas of Shibpur, Narsingdi.

Chapter 2

Materials and methods

Study area

A survey was carried out in several villages of Shibpur upazila under Narsingdi district of Bangladesh. There were 7 unions in Shibpur upazila. The unions (3) having higher duck populations were selected for this study. The survey areas were Dulalpur, Masimpur, Chakrada and the 36 farmers were selected from those villages purposefully and randomly.

Data collection

A questionnaire was prepared to survey the existing duck feed resources and feeding status of indigenous ducks and the socio-economic status of the duck farmers in the study area. It was designed in a simple manner so as to get accurate information from the farmers. The data were collected by interviewing with a fill up questionnaires on farmers knowledge regarding of duck rearing during March to September 2021.

Data analysis

Collected data were entered into Microsoft Excel 2013 for statistical analysis. The frequency, percentages, means were calculated to explain data scientifically.

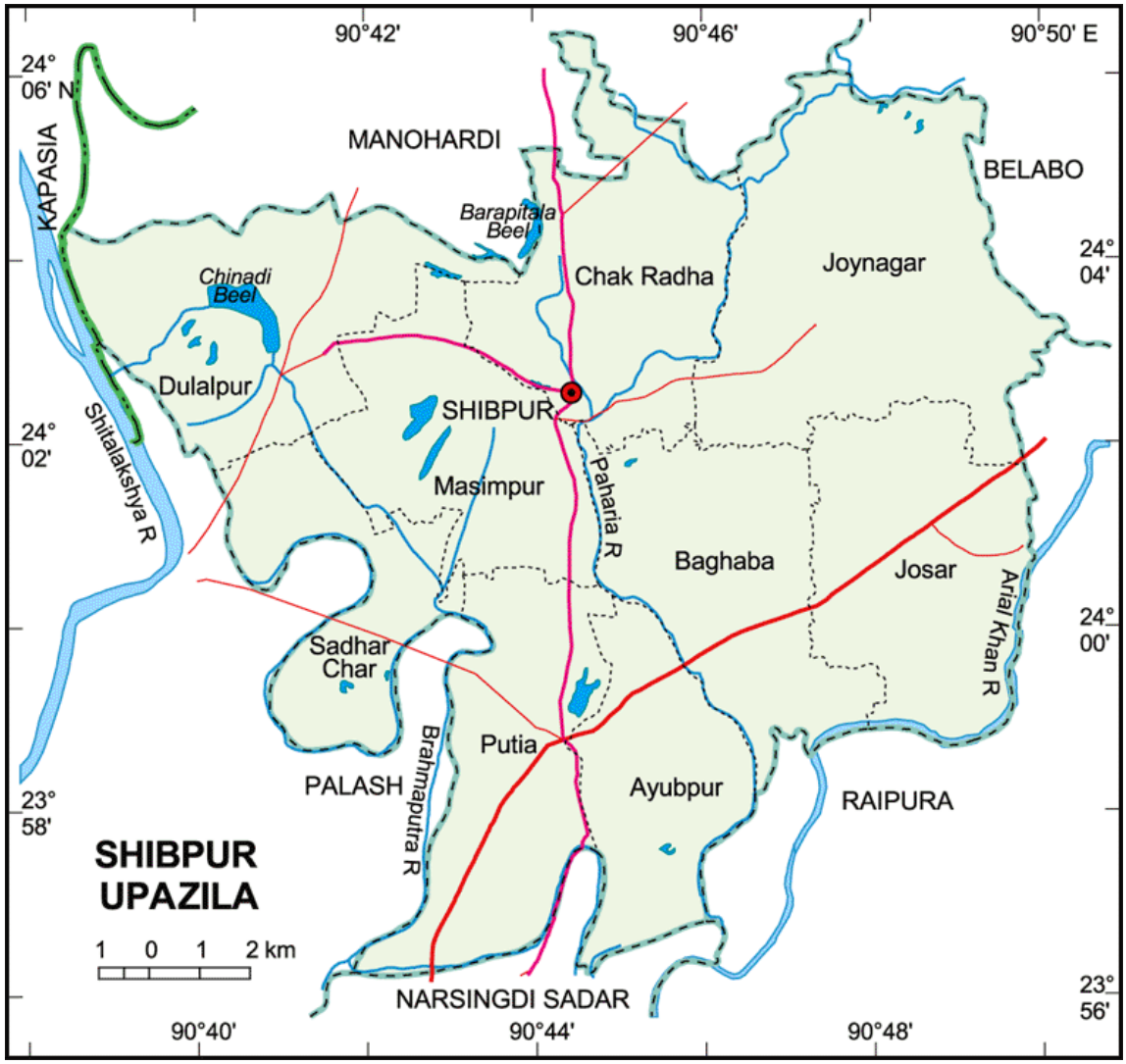

Fig 1: Map of study area (Shibpur upazila)

Chapter 3

Result and Discussion

3.1 Socio-economic profile of duck farmers

3.1.1 Age of duck farmers

The mean age of the duck farmers is shown in table 1. On the basis of age, the farmers of the study area were classified into three groups namely: young <36 years, middle aged (36-50) years and old > 50 years. The majority of the farmers (47.22%) in the study area were young followed by middle aged (41.67%) and old (11.11%) respectively. The mean age of the farmers in the present study was 33.45 years which agrees with Alam et al., (2013). He observed the average age of duck farmers was 34.48 years.

Table 1: Analysis of mean age of duck farmer

Parameter	Farmers	Frequency (n)	Percentage	Mean
Age	Young <35 years	17	47.22	33.45 years
	Middle: 36-50 years	15	41.67	
	Old >50 years	4	11.11	

3.1.2 Education

Figure 2 summarizes the educational status of the farmers of the study area. The highest proportion of farmers (50%) obtained secondary level of education. This result agreed with Zahan et al., (2016) who observed 60% farmers belonged to secondary level of education.

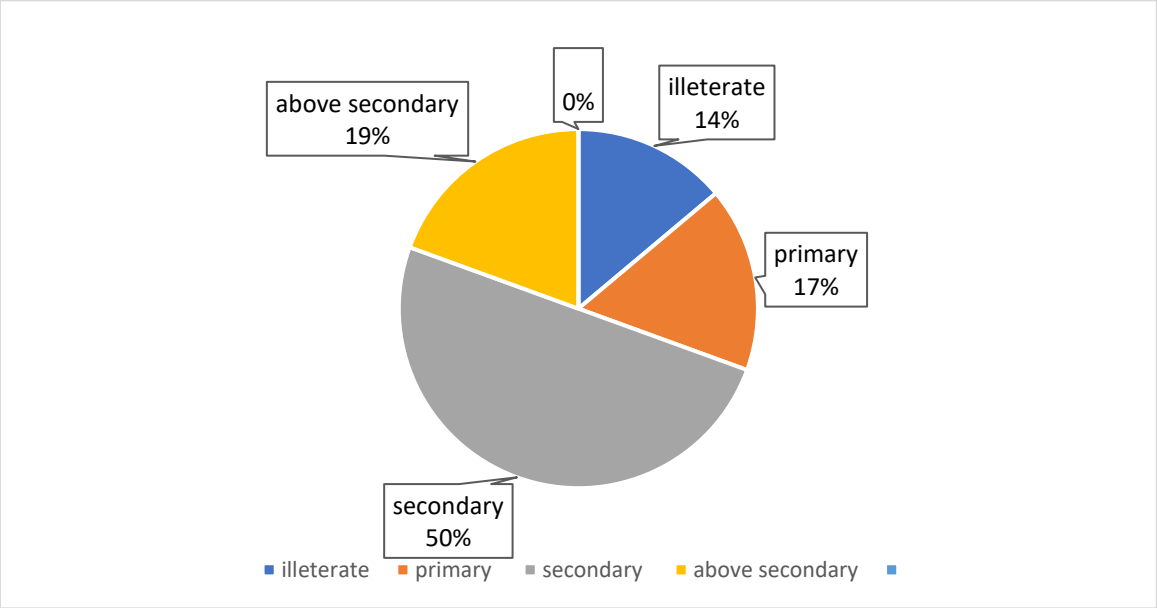

Fig 2: Educational qualification of the farmers

3.1.3 Occupation

The occupation of the participant farmers is shown in Table 2. From the table it is evident that 47.22% of the duck farmers were housewives followed by agriculture (19.44%), service holder (13.89%), business (8.3%) and others (11.11%). This indicates that duck rearing in the study area is mostly carried out by women/housewives that mean the housewives were contributing in income generation for their family for better livelihood. This also signifies the women empowerment through financial stability in the study area.

Table 2: Occupation of the participant's farmers

Occupation	Frequency(n)	Percentage (%)
Agriculture	7	19.44
Business	3	8.33
Housewife	17	47.22
Service	5	13.89
others	4	11.11

3.2 Duck production strategy

3.2.1 Housing materials of ducks

Table 3 shows that most of the houses were tin shed (38.89%) followed by straw and bamboo made (36.11%), tin and wood made (22.22%) and other (2.78%). Rahman et al., (2012) found almost similar result regarding type of duck houses in coastal region of Noakhali and Lakshimpur district of Bangladesh. This might be the due to the fact that tin-shed houses are permanent and long lasting.

Table 3: Materials of duck house

Materials of house	Frequency(n=36)	Percentage (%)
Tin and wood	8	22.22
Straw and bamboo	13	36.11
Tin	14	38.89
others	1	2.78

3.2.2 Rearing system of ducks

The rearing system of duck in the study area is presented in Table 2. Majority of the farmers reared duck in semi-intensive system (77.78%) followed by intensive system (22.22%). That means most of the duck are semi-scavenging and consume snail, different kind of pest**.** Using natural resource as feed is considered one of the main reasons behind the low feed cost and subsequently low production cost of duck rearing. About 55.55% farmers used rice and rice polish while 25% and 19.44 % farmers used rice and commercial feed, respectively. This finding contradicts with Rahman et al. (2012) who did not find any farmer to use rice in the supplemented diet.

Table 4: Rearing system of duck

	Name of ingredients	Number (n)	Percentage (%)
Rearing system	Intensive	8	22.22
	Semi-intensive	28	77.78
Supplementary feeds	Rice and rice polish	20	55.55
	Rice (boiled and broken)	7	19.44
	Commercial feed	9	25

3.2.3 Breeds of duck

Table 5 shows that most of the respondents reared deshi ducks (58%), followed by khaki Campbell (22.22%) and cross breed (19.44%). Halder et al (2007) observed that higher number of farmers (96.88%) was rearing desi duck while a small percentage (1.60 %) farmer had crossbreed duck. In 2005, Rahman et al., (2012) found that 82% farmers reared deshi, 12% crossbred and hybrid 6% in the same coastal areas.

Table 5: Breeds of duck

Breeds of duck	Numbers	Percentage (%)
Deshi	21	58.33
Khaki Campbell	8	22.22
Cross	7	19.44

3.2.4 Productive characteristics and related information of indigenous duck

The average body weight of an adult duck in the study area ranged from 1300 to 1500g. Fifty five percent of the farmers reported that egg production of a semi- scavenging desi duck to be 51-70 eggs/year followed by 30-50 eggs/year for 25% and 70-90 eggs/year for 19.44% farmers (Table 6). Previous studies reported that (Salam and Bulbul, 1983;

Huque and Ukil, 1994) a duck produced 60-91eggs/year egg which is in close agreement with the current study. Fouzder et al. *(*1999) reported annual egg production of local duck was 89/duck in haor (large marshy land) areas. However, variation in different reports has probably due to the differences in diversity of scavenging feed resources and the availability of supplementary feed.

Table 6: Egg production of indigenous duck per year

Egg/duck/year	Numbers(n)	Percentage (%)
30-50	9	25%
51-70	20	55.55%
70-90	7	19.44%

3.2.5 Disease and vaccination status of the duck

Table 7 stated the disease and vaccination status of the study farm. It was observed that most prevalent diseases of duck in the study farm were duck plague and cholera. About 25% farmers stated that their ducks were affected with duck cholera while 22.22% ducks were affected with duck plague. This finding coincides with the previous studies (Rahman et al., 2012; Baki et al., 1986). Rahman et al. (2012) found that 100% of the duck owners in Noakhali Sadar and Ramgati reported duck plague and cholera as most prevalent diseases of ducks. Baki et al. (1986) mentioned that duck plague and duck cholera is the common diseases of duck in Bangladesh.

About 50% farmers did not vaccinate their ducks (Table 7). Among the vaccinated farm (50%), most of the farmers (88.89%) were only administered duck plague vaccine while a small percentage (11.11%) vaccinated their duck with duck cholera vaccine. It can be due to the high price of duck cholera vaccine or lack of knowledge about duck cholera. This result agreed with Jha et al. (2016).

Table 7: Disease and vaccination status of duck

Parameters	Categories	Frequency(n)	Percentage (%)
Disease	No disease	19	52.78
	Duck plague	8	22.22
	Duck cholera	9	25
Vaccination status	Non vaccinated	18	50
	Vaccinated	18	50
Name of the vaccine	Duck plague	16	88.89
	Duck Cholera	2	11.11

3.2.6 Cleaning of shed

Most of the farmers (47.22%) cleaned their duck houses daily followed by (30.56%) weekly and (22.22%) monthly (Table 8). This result agrees with Alam et al. (2013). Irregular cleaning could be due to lack of proper knowledge about biosecurity.

Table: 8: Frequency of cleaning of duck shed

Frequency of cleaning	Number(n)	Percentage (%)
Daily	17	47.22
Weekly	11	30.56
Monthly	8	22.22

3.2.7 Predators of duck farming

About 70% farmer said that mongoose and jackal were main predators followed by 15% crow and 15% others (Figure 3). This result indicates that predator was also a significant cause of duck mortality in the present study area. Roy et al. (2018) found 23.08% of death in poultry farm occurred due to predators.

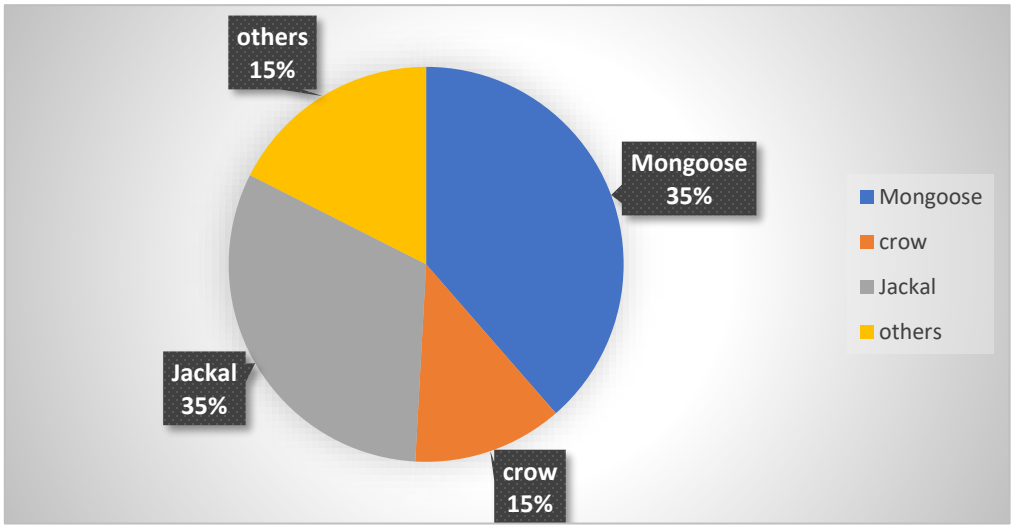

Fig 3: Predator attack in the duck farms

3.2.8 Season for duck rearing

In study area, commercial duck farming reared mainly (60%) in rainy season. The farmers purchased laying duck in the beginning of rainy season due to the availability of natural sources of duck feeds. However, after end of the rainy season, most of the farmers sold the duck in local market due to the scarcity of natural feeds and high prices of commercial feeds. This is why most of the respondent reared duck during rainy season. On other hand backward farmers reared duck all over the years as well as rainy season (40%), because they reared only few numbers of ducks and they did not require lots of feeds supplement.

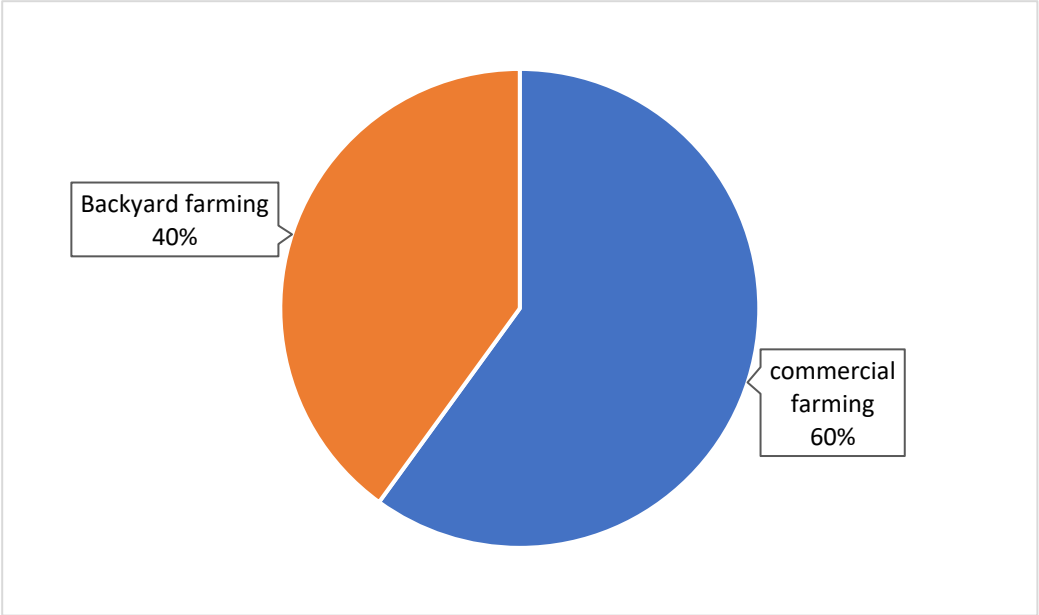

Fig 4: Season of duck rearing

3.2.9 Main purpose of duck production

In the current study area, around 75% farmers reared duck commercially for cash income followed by 16.67% for consumption of duck eggs and 8.33% for consumption of duck meats. In backyard farming, 37% of the farmers reared duck for consuming duck eggs and meat, followed by 25% for cash income. Duck farming is profitable because less investment is required. Better utilization of feed resources like water hyacinths and wastage feed materials; duck produces more eggs than chicken. Most of the land of Bangladesh is low land which is very much suitable for duck rearing.

Table 9: Reasons for duck production

Reasons	Commercial farming (12)	Backyard farming (24)
Cash income	75% (9)	25% (6)
Consumption of Duck eggs	16.67% (2)	37.5% (9)
Consumption of Duck meats	8.33% (1)	37.5% (9)

3.2.10 Constraints of successful duck production

Table 10 describes the main constraints of successful duck production in the study area. In case of commercial duck farming, majority (100%) of the farmers mentioned that lack of good breed is one of the main limitations in profitable duck production. A large percentage (75%) of farmers also pointed out that lack of available rice husk incubator and frequent predator attack also has negative impact on profitable duck production. Majority (91.66%) of the backyard farmers needed good broody hen and protection from the predators to improve the profitability of duck farming. Besides, 75% backyard farmers thought that scarcity of good duck breeds is another constraint of successful duck production. About 25% farmers needed rice husk incubator in backward farming which may be due to their willingness to change their existing farming system into commercial duck farming.

Table10: Main constraints of successful duck production

Items needed	Commercial farmers (%)	Backyard farmers (%)
Broody hen	25% (3)	91.66% (22)
Rice husk incubator	75% (9)	25% (6)
Good breeds	100% (12)	75% (18)
Protection from predators	75% (9)	91.66% (22)

3.2.11 Main challenges for duck production

Table 11 shows the main challenges of duck production in both commercial and backyard farming. About 75% commercial farmers followed by 50% backyard farmers agreed lack of financial support as one of the main challenges of profitable duck production. Due to

financial problems, most of the commercial farmers did not rear the duck throughout the year. Around 50% of the both commercial and backward farmer reported that training plays vital role for duck production. Inadequate veterinary service, diseases and predation were also some significant challenges for duck production that need to be addressed by respective authorities. They stated that diseases of ducks are highly fatal and need emergency veterinary service for making the duck farming profitable.

Table 11: Challenges for duck production

Variables	Commercial Farmers (%)	Backyard Farmers (%)
Lack of finance	75%	50%
Poor marketing facilities	80%	75%
Lack of training facilities	50%	50%
Inadequate vet service	90%	75%
Diseases and predation	90%	90%

Chapter 4

Conclusion

It may be concluded that women, particularly the housewives, are mostly involved in rearing ducks of indigenous (deshi*)* type and the most housewives are literate people. The ducks are mostly semi- scavenging and mostly fed home-made feed in addition to what they are deriving from scavenging facilities. Most of the backyard farmers provided rice polish, boiled rice and broken rice as supplementary feed ingredients to ducks either singly or in combination. High price and scarcity of feed during dry season were the major constraints affecting duck production. Use of natural feed resources in an increasing manner may help in overcoming the feed problem. Regular vaccination and the use of cost-effective balanced diets can have a decisive effect on duck rearing. Therefore, there are great potentials for an improvement of deshi duck production in Shibpur upazila under Narsingdi district of Bangladesh by means of nutritional and management engineering.

Limitations

In reported area, backyard farmers did not maintain record books; therefore, some data were presumptive. Several farmers were not so cooperative. Due to corona pandemic, some farmers did not allow visit in their farm.

Recommendations

1) Introduce improved duck breeds in the rural areas

2) To get better production, training on duck farming should be provided to the farmers

3) Vaccination against common diseases of duck should be ensured.

4) Good quality of duckling, vaccine, medicine should be available in market.

5) Government should take proper steps to give financial and technical support of duck farmers.

6) Duck rearing in the rural areas could be a good source of income, employment generation, especially for the unemployed youth, rural women and the small-marginal farmers

Chapter 5

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APPENDIX

Questionnaire for duck production strategy

Owner's Details:

Name: …… Age:…..……Sex:…… Mobile No: ……

Address: …….....

Educational backgrounds of farmer:

None☐	Primary☐	Secondary☐	More☐

Occupation:…… Income(Family):……./year

History of duck:

Flocksize……Duck:……Drake:……

Age:

0-2months	2-9 months	>9 months

Species: /Hybrid(Indian Runner/Khaki Campbell /Zending)/Crossbred

Information on housing:

Rearing system: Free range/Intensive/Semi-intensive/Other……

Season: Rainy season/Summer/All over the year

Elements of house:straw & Bamboo//tin/ tin and wood/polyethylene /mud//others….

Location of duck house: ☐Next to the house ☐Near the scavenging area

Cleaning of shed: Daily/Weekly/Monthly/Other…….

Litter used: Yes/No. If Yes:……..

Ventilation facilities: Yes/No

Have any quarantine facilities: Yes /No

Do duck and chickens share same house or shelter? Yes/no

Feeding history:

Type of feeding: natural/artificial/both.

Name of ingredients: Rice/Rice polish/Snail/Broken rice/……..

Any commercial feed? Yes/No. If yes:…….

If scavenging, what type of feed?.....

Feed for duckling:…….

Feed for laying duck:……

Feed for meat duck:……

How much times offer the feed per day: 1 Time/2 Times/More

Presence of marshy land: Yes/no.

If yes, what type: haor / pond /river.

Disease management:

Any diseases occur in previous/current? Yes/No. If Yes……

Sign	Possible diagnosis	Time	Treatment	Mortality

Regular vaccination-Yes/no

If yes type of vaccine: …….

Regular deworming-Yes/no

If yes type of anthelmintics:…….

Information on laying of duck:

Age at 1st laying:….

Egg production/year:….

Others:

Own consumption of duck eggs(no)…… and duck meat(no)……..per year

How much profit did you make from selling ducks within the last year?.....tk

What are the main reasons for duck rearing? Cash income/Duck eggs/Duck meat /Home cleanliness/ Other…

If predator exists, what do you think are the main predators in your area?

Name of predators	**Ranking**
Mongoose	
Crow	
Jackal	
Wild Cat	
Dog	
Snake	
Others	

What do you think are the main ITEMS YOU NEED for your successful duck production?

Name of needs	Ranking
Broody hen	
Rice husk incubator	
Good breed	
To purchase eggs for hatching and duckling	

Duck sheds and crate	
Protection from predator	
Other (specify)…….	

What do you think are the main CHALLENGES for your duck production?

Name of challenges	Ranking
Lack of finance	
No training facilities on duck production	
Inadequate veterinary service	
Poor marketing facility	
Disease and predation	
Natural calamity	
Other (Specify) ……	

Biography

The author Md. Tanvir-Ul-Alam, son of Md. Abul Kalam and Rahima Akter passed his Secondary School Certificate (SSC) examination from Lakhpur Shimulia High School, Narsingdi in 2012 and Higher School Certificate (HSC) examination from Narsingdi Model college, Narsingdi in 2014. Thereafter he enrolled for Doctor of Veterinary Medicine (DVM) degree in Chattrogram Veterinary and Animal Sciences University (CVASU), Bangladesh and now is an intern student in this university.