CHAPTER-I

Introduction

The economy of Bangladesh is mainly based on agriculture and livestock. The continued rise in human population in the developing countries like Bangladesh necessitates the need to establish additional sources of animal protein like quail meat and egg **(Owen and Dike, 2013).** Bangladeshi people are not getting sufficient amount of protein where the minimum daily intake of 65 g recommended by the Food and Agricultural Organization to be the minimum requirement for the growth and development of the body **(FAO, 1999)**. Boosting the poultry industry with a short generation interval is an alternative means of alleviating the deficiency of animal protein in Bangladesh. Quail farming can be an emerging sector in the meat production of Bangladesh.

The common quail (*Coturnix coturnix*) is a small migratory Galliform species like chicken. Quail domestication is believed to have started in China when a particular subspecies that commonly migrates between Europe and Asia were raised as pets and singing birds. The domesticated Coturnix was brought to Japan from China across the Korean bridge. Several interbreeding subspecies are recognized, the more important being the European quail, *Coturnix coturnix coturnix*, and the Asiatic or Japanese quail, *Coturnix coturnix japonica* and *Colinus virginianus*. There are about 131 species of wild quail found all over the world **(Siddique and Mandal, 1996).** Only Bobwhite quail and Japanese quail have been domesticated for commercial purposes. Japanese quail has several breeds and varieties of which Pharaoh (wild type), British Range, English White, Manchurian Golden, Tuxedo are most popular Among these, Pharaoh is widely raised all over the world. It has two popular color strains, wild color and brown color **(Rahman, 1995).** In Bangladesh, only these two are commercially available. Besides, scientists developed many quail lines e.g. white eggshell line, meat line etc.

Although quail was introduced in Bangladesh in 1990, quail farming is still in very limited level due to lack of proper awareness among the mass. It has attained economic value as an commercially farmable species producing better meat with unique flavors, the low maintenance cost associated with its small body size (80-125g) coupled with its

short generation interval (3-4 generations per year), resistance to diseases have added interest among the farmers to start quail farming., Japanese quail also is the smallest avian species farmed for meat production **(Vali, 2008).** Now farmers with little investment are showing more and more interest in quail farming despite all the problems in marketing quail meat and eggs. Very few studies have been conducted on the quail farmers, but there is lack of information on the perception, socio-economic status, requirements, challenges and prospects of quail farming in Chittagong. But to popularize the quail meat among the people and to encourage the young farmers to rear quail, a thorough study is important. Considering these facts the present study was conducted with the following objectives:

a) To know the perception and socio-economic status of the Chittagong quail farmers.
b) To know the requirements, challenges and prospects of quail farming in Chittagong.

CHAPTER- II

Materials and Methods

2.1 Study area:

The study was carried out for the periods of 2 months from 1st March, 2018 to 30th April, 2018. The data were collected from fifteen (N=15) randomly selected quail farms in Hathazari and Rawzan upazilla under Chittagong district. Farm level epidemiological data were recorded using a structured questionnaire through face-to-face interview and by observation.

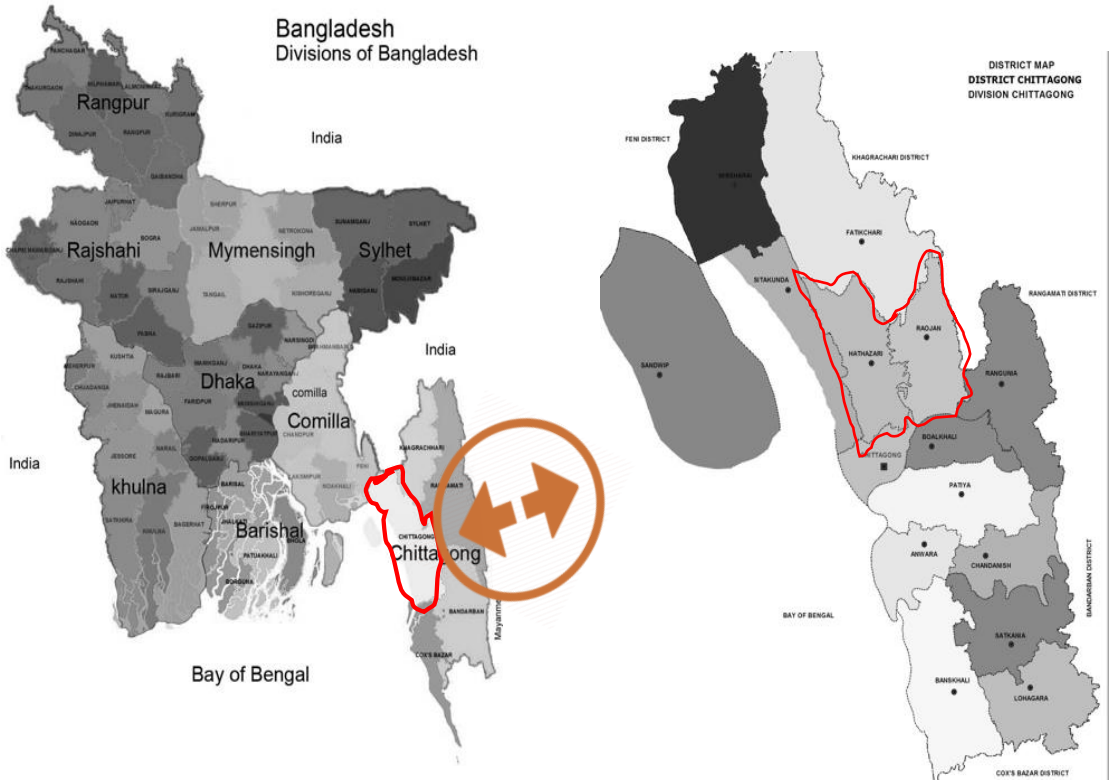

Fig 2.1: Geographical location of data collection site: Map of Bangladesh; Map of Chittagong district.

2.2 Data collection:

I visited the all farms and collected the data by own observation and interviewing the owner. Moreover, numerous data were collected by contacting owner over phone. Following data were collected during the study:

1. Family size,
2. Agricultural land size
3. Religion
4. Education
5. Marital status
6. Annual income
7. Experience as a quail farmer
8. Main constraints in quail production
9. Requirements for successful quail production
10. Challenges for quail production
11. Prospects of quail farming

2.3 Data Analysis:

Data related to the perception, socio-economic status of quail farmers, requirements, challenges and prospects quail farming according to the quail farmer were managed through Microsoft Excel 2013. Data were cleaned for errors and incompatibilities, sorted, coded and checked for fidelity in MS Excel 2013. As required, data were exported to STATA-IC-13 (StataCorp, 4905, Lakeway Drive, College Station, Texas 77845, USA) for executing statistical analysis.

CHAPTER-III

RESULTS

3.1. Descriptive statistics of the collected data (Table 3.1)

Among 15 farms, 53.3% of the farmers land size 1-3 acres while 33.3% had 4-5 acres and 13.4% had 6-8 acres. The result also indicates that 60% of the farmers had secondary school (SSC), 26.7% were school leavers (class 8) while 26.7% had higher secondary (HSC) education. 60% of the farmers had started farming in 2015-2018 while 40% farmers started in 2010-2014. 60% of the farmers last year profit was more than 1.5 lac and 73.3% farmers don't get any support from non-government organization (NGO) or government organization (GO). The major requirements reflected in this study were specific feed formulation (46.6%), lack of training (26.7%) and veterinary health care (26.7%). The major challenges shown in this study were poor marketing (53.3%), higher chick mortality (33.3%) and necessity of incubator to hatch eggs (13.4%). Table 3.1 also indicates that 80% of the quail farmers agreed with the scope expanding this as quail agro industry.

Table: 3.1: Frequency distribution (descriptive statistics) of different variables in the study area about quail farmers and farming:

Variable	*Categories*	*Frequency*	*(%)*	*95% CI*
Family Size	1-5	7	46.7	21.3-73.4
	6-10	8	53.3	27.6-78.7
Land size (acres)	1-3	8	53.3	27.6-78.7
	4-5	5	33.3	11.8-61.6
	6-8	2	13.4	1.7-40.5
Religion	Muslim	9	60	32.3-83.7
	Hindu	6	40	16.3-67.7
Education	Class 8	4	26.7	7.8-55.1
	SSC	9	60.0	32.3-83.7
	HSC	2	13.3	1.7-40.5
Marital Status	Married	12	80	51.9-95.7
	Unmarried	3	20	4.3-48.1
Starting year of farming	2010-2014	6	40	16.3-67.7
	2015-2018	9	60	32.3-83.7
Children go to school	Yes	12	80	51.9-95.7
	No	3	20	4.3-48.1
Approximate annual income (lac)	1-2.5	6	40.0	16.3-67.7
	2.6-3	3	20.0	4.3-48.1
	3.1-3.5	6	40.0	16.3-67.7
Support from NGO or GO	Yes	4	26.7	7.8-55.1
	No	11	73.3	44.9-92.2
Profit in last year (lac)	1-1.5	6	40.0	16.3-67.7
	1.6-2	9	60.0	32.3-83.7

Requirements	Training	4	26.7	7.8-55.1
	Veterinary health care	4	26.7	7.8-55.1
	Specific feed formulation	7	46.6	21.3-73.4
Challenges	Poor marketing	8	53.3	27.6-78.2
	Higher chick mortality	5	33.3	11.8-61.6
	Necessity of incubator	2	13.4	1.7-40.5
Scopes for expanding	Yes	9	60.0	32.3-83.7
	No	6	40.0	16.3-67.7

CHAPTER- IV

Discussions

4.1 Perception and socio-economic status of quail farmers in Chittagong:

The perception and socioeconomic status of the farmers are as described in this sub-section. The major characteristics considered in this study were land size, education, marital status, education, farming starting year, profit last year and support from non-government organization or government organization. The study indicates that 53.3% of the farmers land size 1-3 acres while 33.3% had 4-5 acres and 13.4% had 6-8 acres (Table 3.1).

Education as a measure of human development index is a basic requirement of the welfare of households. It is a reflection of quality of labor and may also be responsible for the risk taken ability of the farmers by the adoption of quail production which is still new in the study area. The result also indicates that 60% of the farmers had secondary school (SSC) education which determines their exposure and level of adoption of innovation. It was shown that 26.7% were school leavers (class 8) while 26.7% had higher secondary (HSC) education. Farming experience correlates with the acquisition of good skills in the adoption of innovation in the field of poultry production. 60% of the farmers had started farming in 2015-2018 while 40% farmers started in 2010-2014. 60% of the farmer last year profit was more than 1.5 lac and 73.3% farmers don't get any support from NGO or GO.

4.2 Requirements of quail farming in Chittagong:

a. **Specific feed formulation:**

   Quail is very sensitive to different protein level than other poultry species. If the protein contents in the supplied feed is lower than they reduce their egg production without showing any symptom. Quail birds are very sensitive to high salt level in the feeds. The optimum level of this mineral should be kept at 7% and in no case, be more than 7% **(Nance 1965).** Since the farmers use commercial chicken broiler or layer feed for feeding quail, certainly it does not

match the exact nutrient requirements. So, specific feed formulation in quail farming is main requirement.

b. Lack of training:

Most of the farm owners are illiterate and they have lack of knowledge about farm management, as a result the quail do not grow at optimum rate. Lack of proper knowledge of feeding, space requirement, lighting etc. plays a negative role in getting expected profit in the end.

c. Veterinary health care:

Most of the farmers mentioned that they do not get adequate veterinary health care. As result they face a lot mortality of chicks as well as adult birds. So they need health care for profitable farming.

4.3 Challenges of quail farming in Chittagong:

a. Poor marketing :

The fact is quail species with good taste, nutritious eggs is unknown to a large number of people **(Balarabe and Charles, 2015).** The market range of quail is very limited comparing to chicken. Chicken products can be marketed all over the Bangladesh but in case of quail it is very much limited. Quail egg has some popularity in the several regions, but meat is not yet popularized in the Bangladesh. So, because of narrower market range, farmers are not interested about the quail farming **(Siddiquiet al. 1996).**

b. **Higher chick mortality**:

The chicks are very small in size ranging from 810g, and the mortality is very high. In extreme condition the chick mortality will be 100%. For their small body size more, heat is needed in the brooding condition which is another problem in farmer level. Absence of adequate temperature and exposure to high speed cool winds leads to clustering of young ones, which results in high mortality. It was reported that **(Shanaway, 1952).**

c. **Necessity of incubator to hatch the eggs:**
   Quails do not hatch their own eggs easily. And those who plan for producing chick at their own farm for more profit are compelled to buy incubator. Incubators are costly and farmers finds it difficult.

4.4 Prospects of quail farming in Chittagong:

Table 3.1 indicates that 80% of the quail farmers agreed with the scope expanding this as quail agro industry. Chittagong the geographical location, environmental condition is very good where quail farming is suitable for successful program **(Paul and Sarker, 1992).** Quail farming is five times better than chicken and turkey rearing. Many people are interested to rear quail on commercial basis due to lower initial investment and risk rather than commercial broiler farming **(Islam et al., 2014).** The demand of commercial quail production is increasing day by day in the country **(Islam et al., 2014).**

a. Quails are smaller sized bird, so they can be raised within small place. Mature male and female are approximately 140 and 200 g. Quail farming has enormous potentiality and could be an alternative to chicken farming particularly in providing gainful employment, supplementary income and as a valuable source of meat and egg **(Rahman et al., 2016).**

b. Quail are less susceptible to common diseases and comparatively more resistant to infectious diseases than chickens, like salmonellosis, coccidiosis, infectious coryza, enteric diarrhea, and pneumonia etc. **(Rahman et al., 2016).** So, no vaccination is given to quails.

CHAPTER- IV

Recommendations

Quail production is a profitable venture in Chittagong; though the performance is still not at its best. Hence, government, should support the farmers by establishing standard feed mill to make the feed readily available to the farmers at reduced cost and improve farmers' efficiencies. Finally, there is the need to enlighten the general public about the nutritional, medicinal and economic value of this very important bird to increase consumption and usage of the products thereby creating ready market for the products and increasing production.

CHAPTER- V

Limitations

There were some limitations in my study. The study period was limited and study area restricted to a particular district, for this reason the findings may not reflect the whole country. Some of the farmers were not cooperative to give information.

CHAPTER- VI

Conclusion

Recognizing the enormous potentiality of quail as an alternative to chickens in providing gainful employment, supplementary income and as a valuable source of meat and egg, quail farming should be encouraged and promoted in Chittagong as well as Bangladesh. Considering the perception, socio-economic status of quail farmers and requirements, challenges and prospects of quail farming as found in this study, quail farming can easily be a good means to alleviate poverty problem in some extent. However, the govt. should adopt the strategies to make quail farming economically and commercially viable in near future.

CHAPTER- VII

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Appendix-1

Questionnaire

Qualitative Survey on Quail Farmers in Chittagong.

Study area: _____ (Chittagong)

Name of the informant:

Mobile no:

1. Tell me about you and your family
   - How big is your family?

Notes:

- What is your agricultural land size?

Notes:

- What is your religion?

Notes:

- How many years of education do you have?

Notes:

- Are you married?

Notes:

- Do your children go to school?

Notes:

- What is your approximate annual family income?

Notes:

2. Tell me about your experience as a quail farmer

- Which year you start quail rearing?
  Ans:
- Did you receive any support from any NGO or GO for quail rearing?

Ans: a)yes b)no

- How much profit did you make from selling quails within the last year?
  Ans:

3. What do you think are the main REQUIREMENTS for successful quail production?

Name of requirements	Ranking (1^{st} / 2^{nd}/ 3^{rd} /4^{th} /5^{th})
quail rearing training	
Veterinary health care	
Specific quail feed formulation	
Microcredit	
Other(specify)	

4. What do you think are the main challenges for your quail production?

Name of challenges	Ranking (1^{st} / 2^{nd}/ 3^{rd} /4^{th} /5^{th})
High chick mortality	
Poor marketing	
Disease and predation	
Other(specify)	

5. Do you think whether there is scope for expanding this as quail agro industry?
   Ans: a) yes b) no

Appendix-2

Litter rearing of quail

Cage rearing of quail

Image of incubator & egg setting.

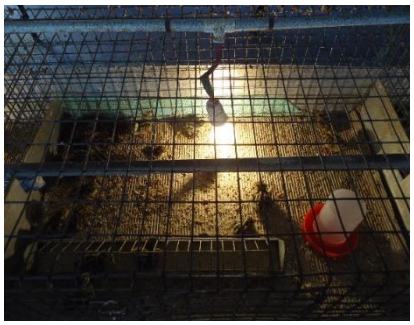

Image of day old chick & brooding of chicks

Quail farmers training program

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Author

September, 2018

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No. of publication	No
Research interest	Genomic development of livestock