

Duck Production and Management of Mithapukur Upazila, Rangpur



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Duck production and Management of Mithapukur Upazila, Rangpur



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Abstract

A Study was carried out to evaluate duck production and management practices in Mithapukur Upazila, Rangpur district. Data were collected from 27 different duck farm at different villages and remote area of Mithapukur upazila. There I found About 40% of the farmers have received primary education (Fig.2). About 37% farmers considered Agriculture is their main occupation (Table 2). Most (41%) of the duck house were made of Tin shed and Wood (Table 3). About 60% farmers rearing deshi ducks followed by 18% crossbred (Table 5). About 71% farmers reared their duck in Free range and 29% in semi intensive (Table 4). Duck plague (44%) and cholera (30%) were the common diseases threatening duck production (Table 7) and 60% farmers failed to vaccinate their birds against the major diseases (Table7). Average Duck number per household is 26.07 (Table 6). About 48% farmers feeding their duck is paddy and water (Table 8). The average (41%) duck weight is 1.5-1.6kg (Table 9). Approximately 48% of ducks lay 40-60 eggs per year (Table 9). The average cost of an adult Duck is 518.51 Tk. and average cost of a duckling is 35 Tk. (Table 9). Duck mortality ranged from 0% to 40%, with an average of 19.07% (Table 10). Mongoose and jackal were the main predators that also reason for decrease duck production. Most of the farmers understand that lack of finance, disease outbreak and predators attack, lack of veterinary service were the main challenges for duck production. These constraints and challenges of duck farming mentioned in this study can be addressed properly, the commercial and backyard duck farmers in the Mithapukur upazila could be economically more benefitted.

Key Words: Socio economic profile, Duck Production, Management Practices.

Chapter 1

Introduction

Bangladesh is an agricultural country. Poultry plays a significant role in the subsistence economy of the country and contribute 1.6% in GDP (SAEDF, 2008). Among the poultry species, duck ranks second (Ahmed 1986) just after chicken in producing poultry meat and eggs. According to a report of Food and Agricultural Organization (FAO, 2014), 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 are beyond the buying capacity of the poor people. Increased duck 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). About one-ninth of Bangladesh's total land area is low ground, which is ideal for duck farming. Recently, Pervin et al (2013) reported that the growth performance of desi ducklings could be improved by supplementation of improved diets under scavenging system. 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). The farmers regularly vaccinated their ducks against infectious diseases on the advice of the government veterinary institution. The possibility of duck rearing exists in Mithapukur, Rangpur. Because there are large areas of low-lying water reservoirs where water stands all year. These water reservoirs contain weeds, fish, snails, insects, and fallen grains, among other things, which are important feeds for ducks raised in free range and semi-intensive systems. Better feeding and management have the potential to significantly increase duck productivity.

In view of above, the current study was undertaken to meet up the following objectives:

1. To observe the demographic characters of the duck raisers.
2. To observe the productivity of the ducks in terms of body weight, mortality, egg producing number per year.
3. To observe the production and management system of duck.
4. To investigate the challenges of duck rearing systems.

Chapter 2

Materials and methods

Study area

The study area was Mithapukur upazila in Rangpur district to acquire recent data on duck rearing systems and duck farmer profiles.

Data collection Process:

A questionnaire was prepared to survey the existing duck farm and feeding status of 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 (attachment on the appendix section) on farmer's knowledge regarding of duck rearing during February to May 2022.

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

Management Practices of household duck Farming:

Husbandry Practices:

Collection of duckling or duck

For the farming of duck, collection of birds is very important. From various hatcheries, the farms owner collected the duckling. Almost all the ducks were collection duck hatchery or purchased from the market.

Housing:

The most important requirement for raising poultry birds is housing. The housing type was just given them a night shelter, it was made with earth, or mud, wood, tin, bamboo and others. The farmer here exclusively uses tin, wood, brick, and soil to build duck 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.



Fig 1: Duck farm

Floor & feeder space followed by the farmers are given below:

Floor space:

Floor space: For the best in brooding duckling should be given plenty of floor space. The floor space depends on the type of birds; age of birds, and management system. The following floor space can be recommended:

Age (in week)	Egg type duck	Meat type duck
0-4 weeks	0.5 sq.ft/bird	0.75-1.0 sq.ft/bird
5-8 weeks	1.0 sq.ft/duckling	1.5-2.0 sq.ft/bird
9 weeks and above	2.0-3.0 sq.ft /bird	3-4 sq.ft /bird

Noteworthy: In case of battery or cage rearing the floor space requirement would be half of the floor rearing requirement.

Feeder space: Sufficient Feeder space should be given for optimum growth.

Age (in week)	Egg type duck	Meat type duck
0-4 weeks	0.5 linear inch/bird	1.0 linear inch/bird
5-8 weeks	1.0 linear inch/duckling	1.5- linear inch/bird
9 weeks and above	1.5-2.0 linear inch/bird	2.0—2.5 linear inch / bird

Litter materials:

Variation of bedding materials in duck house was observed. It was shown that most of the farmers used bedding materials and only few farmers did not use any bedding materials in duck house sand as bedding materials, followed by sand and ash, tree leaves.

Feeding:

Feeding and nutrition is very much essential for rapid growth and development to bring them into a productive level. Usually we know wet-mash feed and sufficient fresh cold water would should always keep nearby the feeders while feeding the ducklings and duck in order to avoid the risk of choking. Farmers in the study region use paddy and rice polish or a combination of paddy and rice polish with water as supplemental duck feed. Most of the period they use scavenge in the free range areas where they would collect watery plant, fish, insect, snails, oyster and others feed materials.

Common diseases and vaccines applied in the study area:

In the study area, diseases regularly impact all duck farms. The most prevalent of these disorders are Duck plague, duck cholera and botulism. In the current study region, some farmers vaccinated ad some are hardly used vaccine against the disease.

Data collection: The following data were collected during my study period from the selected farms: Demographic characteristics of the farmers: Under this criteria, we collected farmer's name, age, occupation, farm size, and location. Besides these, data on housing materials, duck breed, rearing systems, or purposes, farm sizes, productivity (e.g. body weight, egg production number), prices, types of diseases incidence, feed types, challenges/constraints, mortality and so on were collected in this study

Data analysis

Collected data like Socio-economic profile of duck farmers, Feeding system, Farm size, Housing system, Rearing system, Breeds of duck, Adult Body weight, Price of adult & Duckling, Disease prevalence and Vaccination Status were entered into Microsoft Excel 2016 for statistical analysis. The frequency, percentages, means were calculated to explain data scientifically.



Fig 2: Map of study area (Mithapukur Upazila)

Chapter 3

Result and Discussion

3.1 Socio-economic profile of duck farmers

3.1.1 Age of duck farmers

The duck farmers' ages varied from 25 to 60 years. The mean age of the duck farmers is shown in table 1. On the basis of age, Farmers were divided into three age groups namely: young <36 years, middle aged (36-50) years and old > 50 years. Duck farmers were 40.59 years old on average. The stratification agrees with Rahman (2009). He observed the average age of duck farmers was 43.52 years.

Table 1: Analysis age of duck farmer

Parameter	Farmers	Frequency(n)	Percentage(%)
Age	Young <35 years	8	29
	Middle:36-50 years	16	59
	Old >50 years	3	11

3.1.2 Education

Education level is a main hint for duck farming. In Mithapukur Upazilla, it was shown that 22% of farmers were illiterate, 40% had primary education, and the remaining 38% had schooling after primary education (Figure 2). Many people lost interest in furthering their education because of their family's financial situation. Many people in this category have only completed primary school and are unable to continue their education beyond that.

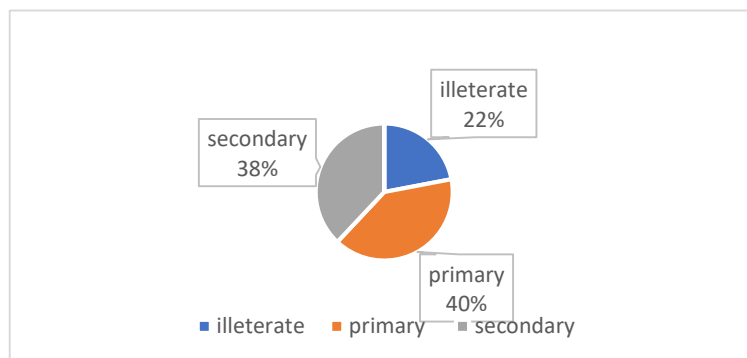


Fig 3: Educational qualification of the farmers

3.1.3 Occupation

Occupation is a method or methods through which a man makes money for his living. 30% of farmer's regard Duck farming to be their primary employment (Table 2) followed by Agriculture (37%). Agriculture occupation agrees with Alam et al. (2012), who indicated that 32% of farmers say that agriculture is their primary profession. Housewives have an important part in duck farming. 89.5% of the duck farmers were housewives (Pervin W,2013).

Table 2: Occupation of the participant's farmers

Occupation	Frequency(n)	Percentage (%)
Agriculture	10	37
Business	4	15
Service	5	18
Farming	8	30

3.2 Duck production strategy

3.2.1 Housing materials of ducks

Ducks wouldn't require fancy houses. So ducks do not have a housing issue. Throughout the year, ducks prefer to spend their days and nights outside. However, cover throughout the night is necessary to protect them from predators. The duck housing system in my study region is considerably different from other locations. The farmer here exclusively uses tin, wood, brick, and soil to build duck 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. 41% farmers made their duck house by Tin and Wood (Table 3). This finding differs from Rahman (2009). He found 65.5% farmers used wood and tin.



Fig 4: Duck Houses.

Table 3: Materials of duck house

Materials of house	Frequency(n=27)	Percentage (%)
Tin and wood	11	41
Tin and Brick	6	22
Tin and Soil	10	37

3.2.2 Rearing system of duck

The free range strategy is the most popular among farmers. It is the most prevalent strategy and is used by most farmers who are short on land. Ducks were kept inside the home at night and scavenged during the day under this technique. This strategy is ideal for rearing mature and developing ducks. In contrast, semi-intensive duck rearing takes place in a specific location during the day and returns to the farm in the evening. In my study area, 71% of the ducks are raised by farmers in free range (Table 4), which contradicts Amin (1999). He reported that 85% to 87% duck was being reared under scavenging system.

Table 4: Rearing system of duck

Rearing System	Frequency(n=27)	Percentage(%)
Free Range	19	71
Semi-Intensive	8	29

3.2.3 Breeds of duck

In Mithapukur Upazila, farmers reared Deshi, Khaki Campbell and Cross bred of ducks (Table 5). Figure shows that about 60% farmers reared only Deshi, followed by 22% farmers reared Khaki Campbell, 18% farmers reared only Cross. In this study, the proportion of farmers rearing deshi duck was smaller than in Rahman's (2009). He discovered that 82.25 percent of farmers raised deshi duck. The reduction in deshi duck may be due to the adoption of Khaki Campbell and Cross Breed. Halder et al (2007) observed that higher number of farmers (96.88%) were rearing deshi.

Table 5: Breeds of duck

Breeds of duck	Numbers	Percentage (%)
Deshi	16	60
Khaki Campbell	6	22
Cross	5	18

3.2.4 Farm size

Small flocks of 10-15 ducks were most often reared in these places. This finding was similar with an Indian research in which Halder et al (2007) discovered that the majority of flocks consisted of 6-10 ducks. But the present finding contradicted the finding of Islam et al (2002) who reported that 85.6% of the flocks comprised 20-50 ducks within an overall range of 20 to 200 birds in Assam, 200-360 ducks in Tamil Nadu, India (Gajendran et al 1992) and 1000-2000 ducklings in south Vietnam, (Nind and Tu 1998). The majority of individuals raised ducks in Mithapukur to meet their personal egg requirements. Farmers were divided into three groups based on the size of their duck flocks. It can be shown that around 40% of farmers were Higher. The duck number per household is higher (26.07) than of Rahman (2009). He reported number of duck per household was 10.41.

Table 6: Farm Size

Category(Flock Size)	Frequency(n=27)	Percentage(%)
Low(10-19)	7	26
Medium(20-29)	9	34
High(30+)	11	40

3.2.5 Disease and vaccination status of the duck

Duck Plague and Duck Cholera were found to be the most common illnesses in ducks. About 44% of farmers said that their ducks were infected with Duck Cholera (Table 7), 30% with Duck Plague, and the other 15% did not report any duck infections. This observation is consistent with Rahman (2009) and Baki et al (1986). Rahman (2009) discovered that Duck Plague and Duck Cholera were the most frequent infections among duck owners in Noakhali Sadar and Ramgati. According to Baki et al. (1986), duck plague and duck cholera are widespread epidemic illnesses in Bangladesh. Farmers were reported to be rather hesitant about immunization regimens. They used the vaccination, but not at the appropriate time. They said that the government office's stock of vaccination was insufficient. However, most farm owners with big flocks were aware of the need to vaccinate their ducks.

Table 7: Disease and vaccination status of duck

Parameters	Categories	Frequency(n)	Percentage (%)
Disease	Duck plague	12	44
	Duck Cholera	8	30
	Other Disease	3	11
	No Disease	4	15
Vaccination status	Non vaccinated	16	60
	Vaccinated	11	40
Name of the vaccine	Duck plague	11	100
	Duck Cholera	1	9

3.2.6 Types of Feed and Feeding System

Farmers in the study region use paddy and rice polish or a combination of paddy and rice polish with water as duck feed (Table 8). They used to give Boiled Rice meal when they were younger. Ducks scavenge their food from water and wet terrain in a free range scavenging strategy. However, during the dry season, they require more nourishment. In free range System Duck collect frog, earth worm, fish & snail from water. In my study area 22% farmers use rice and rice polish that didn't agree with Rahman (2009), He did not find any farmer to use rice in the supplemented diet.

Table: 8: Types of feed

Feed Ingredient	Frequency(n=27)	Percentage(%)
Rice and Rice Polish	6	22
Paddy and Rice Polish	8	30
Paddy and Water	13	48

3.2.7 Productivity of Duck

The study was documented age at adult body weight, egg production, adult price & duckling price. Weight of adult duck ranged from 1.45 to 1.8 kg with an average of 1.612 kg (Table 9). About 66% the farmers stated the weight of adult duck was 1.5 to 1.6kg (Table 9). The obtained result is lower with Islam et al. (2003) and Sarker (2005). They stated that an adult indigenous duck weighs 1.5 to 1.8kg. The finding is lower to that of Hamid et al (1988). They reported that Khaki Campbell and Deshi duck had body weights of 1748g and 1731g at sexual maturity, respectively. This mature duck weight observation was higher than Das and Hoq's (2000). Jinding's body weight at sexual maturity was reported to be 1.51kg. The cost of duckling varied from Tk. 30 to Tk. 40 with an average of Tk. 35 (Table 09). Table shows that about 66% farmers purchased duckling by Tk. 30-35 and 34% farmers purchased duckling by Tk. 36-40. The price of adult duck varied from Tk. 500 to Tk. 600 with an average of Tk. 518.51 (Table 09). Table shown that about 62% farmers stated the price of adult duck was Tk. 500.

Table No.09: Productivity of Duck

Adult Weight	Frequency	Percentage	Egg Production/year	Frequency	Percentage
1.4kg-1.5kg	7	26	40-60	13	48
1.5kg-1.6kg	11	41	60-85	6	22
1.6kg-1.8kg	9	33	85+	8	30
Duckling Price	Frequency	Percentage	Adult price	Frequency	Percentage
30-35 Tk	18	66	500 Tk	17	62
36-40 Tk	9	34	550-600 Tk	10	38

3.2.8 Mortality rate of Duck

Mortality of duck ranged 0-40% with an average of 19.07%. Farmers were categorized into three groups; namely low (<15%), medium (16-25%) and high (>25%) (Table 10). Table shows that 51% farmers reported that their duck mortality was <15%. The mortality rate in this observation (19.07%) is lower than that of Huque and Hussain (1994) and Khanum et al. (2005). Huque and Husain (1994) reported that the mortality of Khaki Campbell and Deshi duck were 58% and 72% respectively. Khanum et al. (2005) reported that the mortality of duck in Netrokona was 27.1%. The mortality was higher than that of Islam et al. (2003) and Sarker (2005). They reported that the mortality of indigenous growing duck was 6-9%.

Table No.10: Mortality of Duck

Mortality Rate	Frequency	Percentage
Low(<15%)	14	51
Medium(16-25%)	6	23
High(>25%)	7	26

3.2.9 Collection of duckling or duck

For the farming of duck, collection of birds is very important. From various hatcheries, the farms owner collected the duckling. Almost all the ducks were purchased from the Local Market.

3.2.10 Floor and Feeding Space:

There is no designated floor or feeding area. In the housing system, mixed species (Chicken and Duck) are reared together. Space has one feeder for 6/7 ducks. There is less space for duck

3.2.11 Litter Materials:

Someone made litter out of dust, ash, and sand. The majority of them change the litter materials once or twice a month.

3.2.12 Constraints of successful duck production

Many farmers reared duck for consumption the duck meat and eggs. There is less interest to them making it into commercial farm. Because they have no proper knowledge about duck farming. Various type disease and predator attack help to decrease duck production. Lack of rice husk incubator is also reason. Financial problem is another reason.

3.2.13 Main challenges for duck production

Financial challenge is main problem in Commercial Duck farming. In commercial farming faces less investment due to crisis. In pandemic period many commercial farmer faces loss because they don't get proper help in this period. Lack of veterinary service and lack of good medicine in this area also another problem. There is no good marketing management in this area. The supply of ducklings is insufficient. There is no formal training for duck rearing. There is no organized egg marketing system. People argue with farmers when ducks visit their fields. There is insufficient vaccine available. Duck plague and duck cholera cause high mortality. Ducks in confinement suffer from overcrowding. There are numerous predator and thief issues. There is insufficient financial support. The availability of feed is inadequate. For syndicates, the price of eggs sometimes falls. The majority of farmers are unable to maintain proper management and duck rearing.

Chapter 4

Conclusion

The study area is ideal for duck rearing due to its geographical location, which includes many rivers, beals, and wet low land, all of which are required for duck production. As a result, some people in this area make a living by raising ducks. I discovered some problems with duck rearing in Mithapukur, but there is a promising future for duck rearing. We show various aspects of duck rearing in Rangpur's Mithapukur Upazila. I discovered various duck breeds there. Farmers choose Khaki Campbell to maximize egg production. Farmers also raised ducks of various breeds. Farms have an average duck population of 26.07. Most farmers raised ducks on a small scale to feed their families. The majority of farmers raised ducks in a free-range scavenging system. Ducks gather their food in the form of snails, small fish, earthworms, and weeds. During the dry season, farmers provided paddy and rice polish to their ducks. The wet mash feeding system is the most popular there. Some feeds are fed into the dry mash system. Farmers provided wet paddy or paddy in water for ducks to eat. Feeding costs are lower during the scavenging season and higher during the dry season. The study area's floor space is not properly maintained. The farmer keeps a large number of ducks in a small shed. Overcrowding is a common issue there, and it reduces egg production. The same scenario can be found in the feeder and waterer space. The government should provide some benefits to farmers and try to solve their problems. As a result, duck rearing has become more popular in this area, and people can easily change their fate by duck rearing.

Limitations

Backyard farmers in the reported area did not keep record books, so some data were speculative. A few farmers were less than cooperative.

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

Farm No: -----;

Date: -----

Data from the Local Duck Farm of Mithapukur Upazila, Rangpur District 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

6. Type/breed of Duck: _____

7. Price of adult and Day old duck _____

8. Adult body weight duck and market price: _____

9. Egg Production /year and market price: _____

10. Supplied feed to birds/day _____

11. Vaccine given or not, if so, give details: _____

12. Any vitamin supplement supplied the Duck----- 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 Duck 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 Duck_____
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 Duck_____sq. ft.
33. Type of housing _____open/close/others?
34. Selling system of Duck_____live/dressed/processed?
35. Number of tools used for the rearing of Duck _____
- 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 Duck egg or meat:
- 37: Incubation of egg or gestation period by broody Duck or incubator? number of Duckling hatched or litter size by broody Duck per year-----

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(Signature of the Surveyor/researcher/Reporter)

Biography

The author Md. Tajbiur-Abir, son of Md. Monjurul Islam and Most. Sultana Begum passed his Secondary School Certificate (SSC) examination from Buzhruk Sontoshpur Adarsha High School, Rangpur in 2012 and Higher School Certificate (HSC) examination from Police Lines School & college, Rangpur in 2014. Thereafter he enrolled for Doctor of Veterinary Medicine (DVM) degree in Chattogram Veterinary and Animal Sciences University (CVASU), Bangladesh and Now He is an Intern Student in this University.