## CHAPTER-I

**INTRODUCTION**

Bangladesh is an agrobased riverine country in South East Asia. It is a developing country as well as densely populated country. Most of the people live under poverty line. People are completely depend on agriculture. Among agriculture livestock is playing a super role in the employment and poverty alleviation of the country by fulfilling the fundamental needs of the people (Das *et al*, 2008).Total livestock population of Bangladesh is 3749.90 lakh and poultry population is 3206.33 lakh. Contribution of livestock and poultry in Gross Domestic Product (GDP), (2014-16) is 1.66% and GDP growth in livestock is 3.21%, employment (directly) 20% and employment (indirectly) 50% (DLS, 2015-16, Anon. 2017a).

Poultry is playing an excellent role in field of employment, recreation, research and so on. Many people of the country are surviving themselves by rearing poultry. Among poultry species, duck is important and very popular in our country. Now the duck population in our country is about 522.40 lakh (DLS, 2015-16).The geographical condition especially river, canal, lake, swampy and ponds are favorable in duck rearing in Bangladesh. It is possible to rear duck by small investment and simple management in village condition (Ahmed, 1986). The main cost of duck rearing is feeding cost. A lot of canal, river, swamp, lake are scattered all over the country, without these most of the house have fallen water source which are very rich in natural feed. Natural water areas in different district of Bangladesh vary from 151 to 1231 hectare (Huque and Sultana, 2002). Duck meet their demand by scavenging insect, snail, slug, oyster and small fish from these water sources. 6 types of duck weed are available in Bangladesh (Grover *et al*, 2000; Samad, 2010). So, duck rearing is possible by very small amount of prepared feed. On the other hand, the disease resistant capacity is high and mortality rate is low in duck. Ducks are quite hardy, more easily brooded and are resistant to many avian diseases (Rahman *et al*, 2005). Ducks are suitable for integrated farming system such as duck cum fish farming, where droppings serve as feed to fish and some fishes can be used as duck feed. To make the high yielding breeds of duck available throughout the Bangladesh and to improve them, government has set up a number of duck breeding farm in our country which are situated in various parts of Bangladesh and providing day old duck of high yielding breeds to village people in cheap rate (Amber and Mia, 2002).

We have to increase the livestock as the country is blessed with a variety of agricultural resources of which scavenging duck rearing is considered to be potential both for poverty alleviation and food production, especially for the rural poor women as they contribute 25.06% and 19.75% to total egg and meat production (Saleque and Mostafa, 1996). 60% of the households kept ducks in Tangail where ducks lay about 110-125 eggs per year (Salam and Bulbul, 1983; Maijer, 1987; Huque and Hossain, 1991). 200-layer duck with or without rice husk hatchery may earn an annual profit of 922 (Huque and Sultana, 2002). It is an important source income for rural women.

We know that duck rearing is superior to deshi chicken rearing to some extent because duck provides more eggs than chicken. Not only that, duck is more resistant to disease than chickens (Huque *et al*, 1990) Moreover, duck can be reared in flood affected area where chicken rearing is not possible. Traditionally women and children are involved in rural duck keeping which is the most appropriate income generating activity for poor, landless and destitute women and youth. It is roughly estimated that ten rural ducks can provide the same income as a woman lay laborer (Ahmed *et al*, 1985). Duck rearing is suitable for wide spread implementation as it is of low cost, requires little skills, highly productive and can be incorporated into the household works (Saleque and Mostafa, 1996). If we enrich small farmers and landless laborer families through a more holistic and self relient approach not only in terms of improvement of income, employment and nutritional status but also in terms of fostering community development, gender empowerment and protection of environment envisaged on the larger canvass of “Rural Development”, using duck as a tool (Halder *et al*, 2007) So, this study is on the existing backyard duck rearing system with the objectives to pave the way for development backyard duck into sustainable income generation for rural household. Improvement programmers cannot chalk out due to lack of accurate data on production of backyard duck. This study was undertaken to provide data, which will help to overcome the lack of knowledge regarding production and utilization pattern of family ducks and the income generated in rural households through duck rearing.

Considering the above importance, the present study was undertaken to fulfill the following objectives:

* To know the socio-economic aspects of duck rearer and management system of duck in rural area in Banshkhali upazilla, Chittagong.
* To evaluate the production performance of household ducks and profitability of rearing duck.
* To identify basic problems of duck rearing by rural people and possible solution.

**CHAPTER II**

**MATERIALS AND METHOD**

**2.1. Study area and duration**

The study was carried out in Banskhali upazilla, Chittagong during the period of October to November, 2017.



Fig 1: Map of Bangladesh and location of study area in Chittagong

**2.2. Selection of duck rearer**

A total of 30 household selected randomly for data collection. Households having at least 3 duck reared under scavenging condition was included in the study.

**2.3. Data collection**

Data were collected through direct interview schedule by the researcher herself. The schedule was prepared containing relevant with the objectives of study.

**2.4. Data Analysis**

Obtained data was imported to Microsoft office excel-2007 and descriptive analysis was done by STATA.

**CHAPTER- III**

**RESULT AND DISCUSSION**

**3.1. Socio-economic aspects of the duck rearer**

**3.1.1**. **Literary level, age and occupation of the duck rearer**

The literary level of the duck rearer was categorized as four groups such as illiterate, primary, secondary and higher secondary. About 50% of farmer received primary education, 23.34% of the respondent had secondary level and 10% higher secondary. The highest no of households lies in the literacy group primary (50%) and the lowest in the literacy group higher secondary (10%). It was found that the majority (66.5%) of respondent belonged to middle age (above 35 years), young age (20-35years) was 22.5% and 10-20 year 11% (Table 1). This result was in close agreement with the observation of Rahman *et al*, 2005; Pervin *et al*, 2013. 86.67% of duck rearer were housewives followed by service holder 6.67%, businessmen and others 6.67% (Table 1).This indicates that rearing duck is mostly carried out by women which agree with the findings of Pervin *et al*, 2013.

**Table 1: Literacy level, age and occupation of duck rearer of the studied area**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Literacy level | Percentage (%) | Age group (years) | Percentage (%) | Occupation | Percentage (%) |
| Illiterate | 16.67% (5) | 10-20 | 11% | Housewife | 86.67% (26) |
| primary | 50% (15) | 20-35 | 22.5% | Service holder | 6.67% (2) |
| Secondary | 23.34% (7) | 35 on wards | 66.5% | Business and others | 6.67% (2) |
| Higher secondary | 10% (3) |  |  |  |  |
| Total | 100% |  | 100% |  | 100% |

**3.1.2. Yearly income level of duck rearer**

The yearly income level of the studied duck rearer was categorized as five groups such as up to TK.50000, TK 50000-70000, TK 70000-80000, TK 80000-100000 and above TK.100000 (Table 2). Maximum households lie in income group of TK (50000-70000) and minimum households lie in income group TK (70000-8000). This finding did not match with the findings of Islam *et al*, 2016 may be due to location of the study area, less production, unemployment etc.

**Table 2: Yearly income level of farmer**

|  |  |
| --- | --- |
| Income level | percentage |
| Up to TK. 50000 | 23.34% (7) |
| TK. (50000-70000) | 26.66% (8) |
| TK. (70000-80000) | 10.00% (3) |
| TK. (80000-100000) | 20.00% (6) |
| Above TK.100000 | 20.00% (6) |

**3.1.3. Land holding size of duck farmer**

Land holding size of the households were classified into four groups such as landless farmers (upto .02hectare), small and marginal farmers (0.2-1.00hectare), medium farmers (1.01-3.00) and large farmer (>3.00hectare) according to Department of Agricultural Extension, Govt. of People Republic of Bangladesh, 2017 (Anon. 2017b). In our study maximum (53.34%) farm owners were landless farmers group and minimum (3.33%) were in the group of large farmers (Table 3). This finding is almost similar with Khanum *et al*, 2005 who found 46% small and marginal farmers and 4% large farmer in Bangladesh.

**Table 3: Land holding size of duck farmers**

|  |  |  |
| --- | --- | --- |
| **Land (hectare)** | **No. of house hold (N=30)** | **Percentage** |
| Land less farmers(up to .02) | 16 | 53.34% |
| Small and marginal farmers (0.2-1.00) | 9 | 30.00% |
| Medium farmers (1.01-3.00) | 4 | 13.34% |
| Large farmers (>3.00) | 1 | 3.33% |
| Total | 30 | 100% |

**3.1.4. Average no of duck for different land holding farmers**

It was found that most of the rural household has poultry. There is variability in flock size between countries and also in location within the country. In Banskhali, each household has an average 8 ducks (Table 4). The duck number per household agrees with that of Rahman *et al*, 2005 and Islam *et al*, 2016.

**Table 4: Average duck per house**

|  |  |
| --- | --- |
| Land holding size | Average no of duck |
| Landless farmers | 8 |
| Small and marginal farmers | 9 |
| Medium farmers | 8 |
| Large farmers | 7 |

**3.2. Management of duck practiced in rural area**

**3.2.1. Housing**

Around 36.67% of the farmers made their duck house with tin and wood, 23.34% by bamboo and soil, 3.33% by brick and 16.67% by combinations of other materials (Table-6). 89% of the farmer used single or combination of materials (straw, ash, rice husk) as litter where the rest of the farmers kept ducks without using any litter. About 70% of the farmers reared duck with hen. Types of duck house and day shelters with materials used in present study area are similar to findings of Rahman *et al*, 2005; Halder *et al*, 2007. The litter used for duck house in this study represents country wide common practices.

**Table 5: Housing materials used for duck rearing**

|  |  |
| --- | --- |
| Construction material | percentage |
| Tin and wood | 36.67% (11) |
| Bamboo and soil | 23.34% (7) |
| Brick | 3.33% (1) |
| Tin and mud | 20% (6) |
| Others material | 16.67% (5) |

**3.2.2. Feeding and watering**

78% respondents fed their birds with mixture of boil rice and rice polish as it is available and cheap (Table 6). Most of the households fed their duckling with snail, duck weed, rice, khai etc. 88% respondents did not spend any money on supplementary feed. Frequency of feed offered to ducks varied from two to three times in a day. Most common places for ducks to scavange around house hold were observed to be pond, dogi (transitory fallow land), paddy field, nulla, ditch and scavenging feed such as snail, fish, duck weed, earthworm, crabs, water insects etc. It can be found that most (33%) of the household use rice polish mix with rice and water and small number of farmers use wheat bran (3.34%) as duck feed which is almost similar with the findings of Huque *et al,* 1993; Khanum *et al,* 2005 and Biswas *et al*, 2001. Pond sharing for scavenging ducks among the neighboring farmers was the common practice. Farmers supplied feed seemed not to be sufficiently balanced and so ducks largely rely on scavenging feed for other essential nutrients.

**Table 6: Different feed ingredients used by duck rearer**

|  |  |
| --- | --- |
| Feed ingredients | percentage |
| Rice polish | 33% |
| Rice | 30% |
| Paddy | 16.66% |
| Broken rice | 13.34% |
| Wheat bran | 3.34% |
| Miscellaneous | 3.60% |

**3.2.3. Seasonal Effect on Productive Performance of duck**

Natural matting is done for rural duck. Maintenance of standard 1:5 drake and duck ratio was reported by most farmers. Most of the farmers said that sexual maturity at deshi breed of ducks attained between 5.5-6.5 months and average egg production 65-77 egg/duck/year. It was also found that egg production reaches peak at rainy season (66.75%) and after crop harvesting season (26.25%), lowest (7%) at summer which agree with the findings of Hoque et al, 2001; Islam and Sarkar, 1994; Rahman *et al*, 2005. Most of the farmer opined that the cause of high egg production during rainy season and winter was respectively the availability of natural feed resource abundantly in water logged areas and post harvesting period of paddy that allowed good scavenging resulting in full crop of bird. Salam and Bulbul, 1983; Huque and Ukil*,* 1994 found that production of egg was 60-91/year/deshi duck which was similar with our findings. In a study Fouzdar *et al*, 1999 found that the production of egg was 89/year/duck in Haor area of Bangladesh. The average weight of egg was 58 to70 gm. It was observed that the total egg production per bird was higher in duck than chicken (Huque, 1991). It was found that most of the householder use natural procedure of hatching by using hen and brooding also by hen itself. Hatchability was around 70% reported by farmers.

The average body weight of adult duck ranged from 0.9kg to 1. 7kg.The weight of maximum duck was 1.3-1.7 kg (66.66%), 1.1-1.29 kg (23.34%) and .9-1 kg (10%). The result agree with the observation of Islam *et al,* 2006 who reported average weight of laying duck was 1.63 kg (66%). Sarker *et al,* 2001 found that 54% duck weight range from 1.6-1.8 kg. The observation is also similar to that of Hamid *et al*, 1988; Das and Huque, 2000; Rahman *et al,* 2005.

**Table 7: Average weight of duck and egg production**

|  |  |  |  |
| --- | --- | --- | --- |
| Weight of duck (kg) | Percentage | Egg production | Percentage |
| 0.9-1.00kg | 10% | Summer | 7% |
| 1.1-1.29kg | 23.34% | Rainy | 66.75% |
| 1.3-1.7kg | 66.66% | Winter | 26.25%  |

**3.2.3.1 Percentage of duck according to breed in rural condition**

Different type of duck are reared in Bangladesh such as deshi white, deshi black, deshi mix, zindin, Khaki Campbell, cross breed. In my study area, they mostly rear deshi duck and deshi mix was higher (65%) and deshi white was lower (11.5%). Alam *et al,* 2016 found that 52% deshi duck was reared by the farmer in our country and Rahman *et al,* 2005 reported that 82% deshi duck reared in Bangladesh. Our finding did not agree with other study may be due to absence of regional duck farm in Chittagong district, less coastal area, less suitable environment for rearing in my study area. Table-8 shows the percentage of duck reared according to breed and age group in Banskhali upazilla, Chittagong.

**Table 8: Percentage of ducks according to breed and age group**

|  |  |  |  |
| --- | --- | --- | --- |
| Breed | percentage | Group (Different stage of duck) | Percentage |
| Deshi White | 11.5% | Duckling | 11% |
| Deshi Black | 23.5% | Grower | 14.6% |
| Deshi Mix | 65% | Drake | 10.4% |
|  |  | Duck | 25.3% |
|  |  | Laying duck | 38.7% |

**3.2.4. Vaccination and Medication**

Duck are mainly susceptible to botulism, duck plague, duck viral hepatitis, duck cholera. Most of the households express that in the winter season duck are affected mostly and they used to slaughter duck when they are sick. Around 15% farmers treat the sick bird and vaccinate the bird by consulting with doctor of upazilla veterinary hospital or by quack. Duck plague and duck cholera was common and majority (82.17%) had no access to preventive measure due to unavailability of vaccine, lack of awareness, lack of knowledge. Similar constraints were also reported previously by other author (Serimasrah *et al,* 1996; Tu, 1995; Rithamber *et al,* 1986; Biswas *et al,* 2001; Aini 1993).

**3.3. Marketing of egg and duck**

Around 65% household’s farmers sold their egg to the local market, 5% to bepari, 22% in local shop and rest are consumed by the farmers. They sold their duck to the local market (70%) in hat day and local broiler shop (20%). The findings is almost similar to that of Huque and Sultana,2003 who reported that 85% egg and duck sold in local market. They mainly sold duck during Monosha Poja (hindu festival) because the demand of duck is high but they sold culled duck, duckling in the local market throughout the year. Farmers also consumed 3-4 duck /year.

**Table 9: Price of egg and duck**

|  |  |  |  |
| --- | --- | --- | --- |
| TK./Egg | TK./Duckling | TK./Duck | TK./Drake |
| 6.5o-8.50 | 28-35 | 200-300 | 220-300 |

**3.4. Problem faced by the farmer**

The following problems are identified in general from the response of the studied duck rearer under the study:

1. Lack of availability of feed.
2. Lack of financial support that can provide inspiration to the farmers to become conscious about duck rearing.
3. Lack of available medicinal support such as vaccination, treatment of diseased bird etc.
4. Lack of improved breed among the indigenous duck that can provide better production.
5. Lack of consciousness about duck rearing.
6. Duck viral hepatitis, duck plague cause severe losses.
7. Ducks are almost incapable of depending themselves and hence losses from predator (jackal, fox etc) are high in rural condition.
8. Ducks tend to be poor mothers and do not incubate their egg.
9. Lack of government support.
10. Disorganized marketing system in Bangladesh and price fluctuation.
11. Superstition about duck meat and egg leads to less demand of duck eggs and

**3.5. Recommendation**

Duck rearing would have been the first choice of our village people if proper supervision were given. In order to initiate the villagers to rear duck, the following steps should be taken:

* Supply of improved indigenous ducks to the villagers.
* Developing awareness among the farmers about vaccination, disease control, management.
* Provision of financial support to the duck farmers.
* Conduction of stable market for duck meat and eggs.
* Price stabilization should be ensured.
* Ensure available vaccine for viral diseases of duck.
* Provision of available veterinary service to the duck.

**LIMITATION**

This study concluded the results generated from a small sample size which could misinterpret the findings. Information recorded was relied on farmer’s response so this could have introduced information bias as farmers did not give correct information. In the study, there is variation in season, study period, flock size, age, and location of farm and study area

**CHAPTER-IV**

**CONCLUSION**

It may be concluded that women, particularly the housewives are mostly involved in rearing ducks of indigenous (deshi) type and most housewives are literate people. They follow free range scavenging system. The ducks are mostly fed homemade feed in addition to what they are deriving from scavenging facilities. Most of the farmers provided rice polish, boiled rice, broken rice or supplementary feed ingredients to ducks either single or in combination. High price and scarcity of feed during dry season are major constraint affecting duck production. Use of natural feed resources in an increasing manner may help in overcoming the feed problem. Regular vaccination and use of cost-effective balanced diets can have a decisive effect on duck rearing. Therefore, there are great potential for an improvement of native duck production in rural area of Bangladesh.

**CHAPTER-V**

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**ACKNOWLEDGEMENT**

The author is thankful to Almighty ALLAH who empowers the author to complete this report successfully. The author wishes to express her deep sense of gratitude and thanks to DR. Tahmina Bilkis, Associate Professor, Department of Genetics and Animal Breeding, CVASU for her skillful supervision and guidance to make this report. The author is also grateful to all of her teachers for their constant inspiration, cordial co-operation and valuable suggestion throughout the tenure of her whole campus life.

Finally the author express thanks and warmest sense of gratitude to her parents.

The author

November, 2017

**BIOGRAPHY**

Myself Shaheda Banu, the author of this production report, born in Chittagong, 1993. From my childhood, I want to be a veterinarian and my dream become true after admitting in CVASU. Now I am intern DR. and have passed four years of academic career in Faculty of Veterinary Medicine and attended internship program in Bangladesh, India, USA. I want to be a good Veterinarian and do something better for human and animal. This production report to know the socio-economic aspect and production strategies of backyard duck in Banskhali upazilla, Chittagong is the first step to fulfill my dream. I strongly assure that I have done all the works furnished here in this report and I hold entire responsibility of the information given here which are collected from different books, journal and websites.