**CHAPTER-1**

**INTRODUCTION**

1.1 Background

Bangladesh is one of the least developed countries having large population and small land area. More than 31 percent of its people still live below poverty line. Bangladesh is overwhelmingly agricultural with more than half of total population.

Background rabbit are particularly well suited to small farmers, whether they own land or not. The advantages are closely related to the reproduction and feeling behavior of rabbits and the fact that the species is both profitable and easy to integrate:

\* As a small monogastric herbivore, the rabbit easily accommodates a fairly wide range of cellulose-rich foods.

\* It is adaptable to the family diet and food preservation techniques available on small rural and peri-urban farms.

\* It is highly productive in terms of offspring (kg/year dam) thanks to mating-induced ovulation, short gestation and lactation periods and great prolificacy.

\* It produces highly nutritious, low fat, low cholesterol meat.

\* It is easy to transport and market and the recurrent costs for maintaining animals beyond the optimum marketing age are low.

**1.2 Overview of the rabbit rearing**

Micro-livestock like rabbit can play a significant role for poverty alleviation among smallholder farming community in Bangladesh. They are found in different districts and almost all of them are mainly reared by the landless and marginal farmers in the rural areas and very few portions of their population are reared by the inhabitant of metropolitan cities. Now a days, many NGO’s and other Govt. organizations have taken initiative on rabbits farming as an income generating activity for the destitute women and school going children. Farmers rearing small scale rabbit opined that rabbits farming is obviously profitable enterprise but sometimes marketing problem of rabbit have occurred those who reside in the remote areas. Though the farmer in metropolitan cities or town did not face such type of problems. People resides in the metropolitan cities purchased rabbit for meat consumption as well as pet or game animal.

Rabbit could be reared in homestead with minimum cost by proper utilization of family labour and homestead feed sources with little or no extra inputs without hampering the other farming activities.

 Rabbit is an important micro-livestock (Vietmeyer, 1985) may be considered as a promising and potential alternative source of protein in this regard.

It has not been received due attention though it is a source of good quality meat. The meat of rabbit is a rich source of protein, energy, minerals and vitamins and low in fat, sodium and cholesterol. It is also reported that rabbit meat is delicious and higher in protein contents (Jones, 1990; Handa *et al*., 1995; Ali and Sukanta,1993; and Sandford, 1986). It reaches sexual maturity at the age of 4-5 months, litter size is about 2-7 and gestation period is about 1 month. A female rabbit reproduce 5-7 times in a year (Cheeke, 1986b; Hasanat *et al.,* 2006). Feed cost is negligible because it can directly convert forages into animal protein. Rabbit farming is a rewarding business with high probability of recouping original investment (Onebunne, 2013). It is a veritable way of alleviating animal protein deficiency in Nigeria (Ajala and Balogun, 2004). The rabbit has immense potentials and good attributes which include high growth rate, high efficiency in converting forage to meat, short gestation period, and high prolificacy, relatively low cost of production, high nutritional quality of rabbit meat which include low fat, sodium and cholesterol levels. It also has a high protein level of about 20.8% and its consumption is bereft of cultural and religious bias (Biobaku and Oguntona, 1997). The presence of caecal microbes enable the rabbit to digest large amounts of fibrous feed as most non-ruminant species cannot (Taiwo *et al*., 1999). Consequently, expansion in rabbit farming will not only generate jobs and income for farmers but will also create small-scale business for market mammies and restaurants (Onebunne, 2013). Rabbits need protection from adverse environmental conditions. Rabbits are very selective in their feeding behavior and in the wild will select specific plant parts. They generally select leaves rather than stems, young plant materials rather than old and green rather than dry materials, resulting in a diet that is higher in protein and digestible energy and lower in fiber than the total plant material available. Hence, small-scale rabbit projects are gaining international attention day by day as a means of alleviating poverty threat (FAO, 1996).

Moreover the climatic conditions, commercial factors, ecological environment, religious points of view, social practices and technological know-how support the rabbit production in Bangladesh (MIDAS, 1992).

**1.3 Objectives of the study:**

1. To identify the socio-economic status of the rabbit farmers.
2. To determine the profitability of the household rabbit.
3. To examine the impact of household rabbit rearing on livelihood improvement of rabbit farmers.

**CHAPTER-2**

**MATERIALS AND METHODS**

**2.1 Study area:**

 The Experiment was carried out at the Raoarchar, Mujhati and Luxikhola Village at Muktagachha upazila of Mymensingh district, Bangladesh with the help of local NGO “Jalal Nagor Development Project”.

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 Fig 2.1: Map of the study and the neighboring areas

**2.2 Population size:**

 30 household was involved in this experiment. The breed of rabbit was New Zealand white.

**2.3 Occupation:**

 Most of the people were farmer and housewife and most of the people are illiterate. Their family members are 4-5 and maximum family has one earning person.

**2.4 Training:**

 They were receiving the training for rearing with the help of local NGO “Jalal Nagor Development Project” and this NGO was given rabbit in the rural poor man and women for improving their socio-economic condition.

**2.5 Rearing purpose:**

 Selling of rabbit is the main rearing purpose. They sell young rabbit 150-200tk/pair and adult rabbit per pair 300-400tk.

**2.6 Preparation of questionnaire:** The questions of the study schedule included the following information:

a) General information of the owner such as, family composition, literacy level, occupational status etc. b) Information on socio-economic profiles, litter size, rabbit price and frequency of disease and treatment.

**2.7 Methods of data collection:**

Data were collected by personal interview with the individual owners and Jalal Nagor Development Project. Data collection the objectives of the study were clearly explained to the respondents and question was asked systematically.

**2.8 Analytical techniques:**

 All the collected data were processed and analyzed in accordance with the objectives of the study. Descriptive statistics such as frequency distribution, percentages and bar charts were used to analyzing data on socio-economic status and wherever necessary. Benefit-Cost Analysis also estimated to find out the profitability of the farm owner.

 **Problem faced during the period of data collection:**

1. Most of the household rabbit farmers are conservative and not well educated. So they did not give accurate information.

2. Most of the respondents had not interest about such type of study. So it was difficult to make them clear about the purpose of the research.

**CHAPTER-3**

**RESULTS AND DISCUSSIONS**

The overall data found from this study was constructed and the results found is discussed in this chapter

**3.1 Gender distribution of the household Rabbit Farmer:**

In table 3.1 and graph 3.1, the distribution of gender in the study area showed that majority of the respondents were 60% female while 40% were male.

Contradictorily, Adedeji O. A.*et al. (*2015) found that majority of the respondents were male (80%) while 20% were female.

Table 3.1: Gender distribution of the respondents:

|  |  |  |  |
| --- | --- | --- | --- |
| Gender | Number | Percent(%) |  |
| Male | 12 | 40 |
| Female | 18 | 60 |
| Total | 30 | 100 |

 Fig. 3.1: Gender distribution of the respondents

**3.2** **Age distribution of the household Rabbit Farmer:**

It was reflected in Table 3.2 that farmer between 25-35 years of age were 40% and between 35-45 years of age were 30% of the total sampled household rabbit farmers while farmers aged less than 25 years constituted 20% and 10% farmers age were 46 years and above. Table 3.2 revealed that rabbit keeper were mostly in middle aged group.

Table 3.2: Age distribution of the household rabbit farmers

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
|  Age groups |  Number |  Percent(%) |
| Less than 25years |  6 |  20 |
| 25-35 years |  12 |  40 |
| 35-45 Years |  9 |  30 |
| Above 45 years  |  3 |  10 |
| Total |  30 |  100 |

 |  |

 Fig 3.2: Age distribution of the household rabbit farmer

**3.3** **Educational level of the household Rabbit Farmers:**

Eduction plays a vital role in farming activities. To examine the educational level of the rabbit farmers. They were classified into five categories such as illiterate, primary, secondary, higher secondary and graduate. Table 3.3 displays the educational level of the respondents and reverals that 50% illiterate, 40% primary,10% secondary of the total respondents and there were no higher secondary and graduate rabbit farmers. The majority of the respondents (86%) were educated to the tertiary level. 14% had secondary education. This implies that it is mainly the educated people who were involved in the rearing of rabbits as a hobby rather than business (Adedeji O. A.*et al.,* 2015).

Table 3.3: Educational level of the household rabbit farmers:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
| Educational level |  Number | Percent(%) |
| Illiterate |  15 |  50 |
| Primary |  12 |  40 |
| Secondary |  3 |  10 |
| Higher secondary |  0 |  0 |
| Gratuate |  0 |  0 |
| Total |  30 |  100 |

 |  |

 Fig 3.3: Educational level of the household rabbit farmer

**3.4** **Distribution of the respondents according to the training receivers:**

It was expressed in table 3.4 where it showed that majority of the respondents were received the training (90% ) while 10% were not received the training.

Table 3.4: Distribution of the respondents according to the training receiver:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
| Training | Number | Percent(%) |
| Received the training | 27 | 90 |
| Not Received the training | 3 | 10 |
| Total | 30 | 100 |

 |  |

 Fig 3.4: Distribution of the training receiver

**3.5 Occupational status of the Household Rabbit Farmer:**

The result in table 3.5, Showed that the majority of the respondents were 60% housewife, 30% agriculture and 10% van puller. The result of the current study disagreed with other where most of the respondents were civil servants with 76%, farming accounts for 18% while artisans were 6% (Adedeji O. A.*et al.,* 2015).

Table 3.5: Distribution of the Farmer according to the occupation:

|  |  |  |
| --- | --- | --- |
| Occupational status | Number | Percent(%) |
| Agriculture | 9 | 30 |
| Housewife | 18 | 60 |
| Van puller | 3 | 10 |
| Total | 30 | 100 |

**3.6** **Distribution of Respondents According to Years of Experience:**

It was showed in table 3.6. The result showed that 10% of the respondents had less than 1 year experience, 20% had 1-2 years and 20% had 3-4 years respectively, 20% had 4-5 years while 30% had 5-6 years experience in rabbit farming. The average year of experience was estimated to be 5-6 years. This indicated that the respondents have been in the business of rabbit production for a considerable number of years. Other researchers showed that 22% of the respondents had between 1 -5 years experience, 34% had 6-10 years and 11 -15 years respectively, 6% had 16-20 years while 4% had above 20 years experience in rabbit farming. The mean year of experience was estimated to be 10 years. This indicated that the respondents had been in the business of rabbit production for a considerable number of years (Adedeji O. A.*et al.,* 2015).

Table 3.6: Distribution of Respondents According to Years of Experience:

|  |  |  |
| --- | --- | --- |
|  Years of Experience | Number | Percent(%) |
| Less than 1 year | 3 | 10 |
| 1-2 years | 6 | 20 |
| 3-4 years | 6 | 20 |
| 4-5 Years | 6 | 20 |
| 5-6 years | 9 | 30 |
| Total | 30 | 100 |

Moreover, Men (80%) were more involved in rabbit production, mostly the educated (86%) gainfully employed civil servants who took it as secondary, or as a hobby to practice their skill as agriculturist (78%) for domestic consumption, and not necessarily for commercial purpose, showing that none of the respondents was interested in investing in the production at commercial level this is in agreement with Colins and Lebas (1996); Lukefahr (2007); Oseni *et al.,* (2008), despite the number of years of experience - average 10 years.

**3.7 Profitability analysis:**

The focus of this point is to estimate the costs, returns and profitability of household farming. The relevant costs and returns of the present study are discussed below:

**3.7.1 Total Costs:**

The cost item were classified into two categories, i.e. (i) Fixed costs and (ii) Variable costs. The total cost of each family is adding up of all particular costs incurred by the family. For the present study the amount of total cost was 2000tk/year.

**(i)Fixed cost**

**Housing cost:**

Housing cost is the most important for household rabbit production. Rabbits need protection from adverse environmental conditions. This includes protection from predators. While ample sunlight and ventilation are important, extremes of both may limit production. The rabbits were reared in intensive system (bamboo made cage rearing) at farmers own arrangement. Each breeding doe unit requires a cage floor area of less than 1 m2, while each young unit requires from 0.05 to 0.10 m2. Regardless of the construction material used, the hutch should be kept clean and comfortable under the direct control of the farmer. . For the present study the amount of housing cost is 200tk.

**(ii)Variable cost**

 **Feed cost:**

They were fed to grass, mandar leaves, cauliflower leaves, vegetable parts and concentrate feed (wheat bran). Per Kg Wheat bran cost: 30-32tk. 50gm/animal/day concentrate and 100-200gm/animal/day roughage they were supplied. They were supplying the water from the tube well. They were not buying the roughage for feeding rabbit. They collected grasses from the nearest field. The amount of feeding cost was 1000tk/year.

**Veterinary expenses**

Diseases: 1.Mite infestation 2.Diarrhoea 3.Hair fall

They are treated by Ivermectin injection and vitamin. Maximum time they suffer malnutrition and supply vitamin. Total medicine costs were calculated by taking current market prices. Onifade *et al.,* (1999) finding that many of the respondents are ignorant of rabbit’s unique potential such as, the nutritional and the medicinal values, ready source of income and the ease and low cost of production.

**3.7.2 Return**

The return items include the value of rabbit sell. Rabbit reaches sexual maturity at the age of 4-5 months, litter size is about 2-7 and gestation period is about 1 month. A female rabbit reproduce 5-7 times in a year. They were selling the rabbit after two month interval. They sold 150-250tk/rabbit. The amount of return was 6000tk/year.

**3.7.3 Gross return**

Gross return is calculated by average price of per rabbit multiplied by numbers of rabbit sold in a year. The average value of gross return was 6000tk/year.

Table 3.7: Cost and Return of the Household rabbit rearing:

|  |  |  |  |
| --- | --- | --- | --- |
| **Particular** | **Unit** | **Unit price** |  **Total amount(tk)** |
| **1. Cost item** |
| i)Variable cost |
| a)Rabbit purchasing cost | Per rabbit | 250 |  500 |
| b)Feed cost | gm | 100 |  1000 |
| c)Veterinary expenses | Tk. |  |  300 |
| ii)Fixed cost |
| a)Housing cost | Tk. |  |  200 |
| A)Total cost | Tk. |  |  2000 |
| **2. Return** |  |
| a)Rabbit sell | Per rabbit | 200 |  6000 |
| B)Total return | Tk. |  |  6000 |
| **3. Net return(B-A)** | Tk. |  |  4000 |

**3.7.4 Net return**

Net return was the amount obtained by deducting all the costs from the gross return. The average value of net return was 4000tk/year.

**3.7.5 Benefit cost ratio**

Benefit cost ratio implies return per taka invested. It represents the financial feasibility of any farm. In the present study, the value of BCR was 3. So, the household rabbit rearing is profitable and financially efficient.

Table 3.8: Average gross return, total costs and net return of per farm family:

|  |  |
| --- | --- |
| Items | Total value(tk.) |
| A. Gross return | 6000 |
| B. Gross cost | 2000 |
| C. Net return | 4000 |
| D. Benefit cost ratio(A/B) | 3 |

 Fig 3.8: Gross return, total costs and net return of per farm family

This study however did not agree with Niamir-Fuller (1994) and (Onifade *et al*., 1999) observations that women typically are more involved in animals that are kept close to the homestead, such as poultry, calves, rabbits and other small livestock, and for sick animals, but agreed that women rarely have major herding and management responsibilities for large stock, especially with the male gender and the literacy level (Onifade *et al*., 1999) of the respondents observed in this study.

Despite the increasing awareness of the value of rabbit meat in Nigeria, the study did not show any indication that rabbit meat is imported into the country even with the low level of production, the advantage the rabbit farmers can take for large stock production and create enough market to meet the need of the people. However it agreed with (Onifade *et al.,* 1999)finding that many of the respondents are ignorant of rabbit’s unique potential such as, the nutritional and the medicinal values, ready source of income and the ease and low cost of production.

**Risk factors**:

Season: In rainy season, skin infection are found and hair fall also occur.

Age: Young rabbit is more susceptible than adult rabbit for mite infestation.

Feeding: They are much more sensitive to slight changes in the feed than other livestock. Sometimes they will refuse to accept a new diet and will starve rather than accept the new feed for several days

Housing: Rabbit house should be cleaned every 3-4 times because rabbit urine is dangerous for rabbit.

**CHAPTER-4**

 **CONCLUSION AND RECOMMENDATIONS**

The socio-economic characteristic of rabbit production with respect to awareness and acceptability in relation to its unique potentials and good attributes, which include high growth rate, high efficiency in converting forage to meat, short gestation period, and high prolificacy, relatively low cost of production, the high nutritional quality of the meat. Taking advantage of these attributes for its production will increase the protein intake per head, reduce nutritional diseases, create employment and revenue or income in livestock industry, and commercialization. The role of the Government in creating awareness in form of education and extension services is equally important to create market for the meat, and availability of short term loans for commercial production, will motivate people into rabbit farming.

From the present findings, it may be concluded that the performance of rabbit under intensive
management in rural condition was good. Location had a significant effect on feed cost of rabbit rearing. Therefore, rabbit production could be not only an important micro-livestock component to produce for meeting up extra demand of protein of the country but also an important tool for income generation and poverty reduction in the rural farmers.

**CHAPTER-5**

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**SOCIO-ECONOMIC STATUS AND PROFITABILITY ANALYSIS OF RABBIT PRODUCTION AT MUKTAGACHHA, MYMENSINGH**