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## Study on the socio-economic condition and productive performances of backyard chicken in some selected areas of Pabna district

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### Abstract

The study was carried out to investigate backyard chicken production systems in three areas (Bera, Santhia and Sujanagar Thana) of Pabna district. A total of 150 households were selected, from three thana, each having 5 villages and 10 households per village. Stratified random sampling technique was followed to collect data. The hatchability rate was 89, 88.5 and 85 percent in Sujanagar, Santhia and Bera, respectively. The percentage of egg production was 68% in Sujanagar, 72% in Santhia and 75% in Bera Thana. The differences in hatchability and egg production between the three areas were significant. Family wise and per bird total income was Tk. 2124.00 and Tk. 223.95, respectively which is higher than the net cost of Tk. 1324.23 and Tk. 138.70, respectively. The BCR (Benefit Cost Ratio) in family wise and per bird wise was 1.60 and 1.61 respectively. It indicates that if backyard chicken rearers invest Tk.1.0 then they can earn Tk.1.60. So, family wise profit was Tk. 0.60 & per bird basis was Tk. 0.61. The results indicate that backyard chicken rearing is profitable for the farmers in those areas. Vaccinations and balanced diets have a decisive effect on chicken rearing, providing quality products for human consumption and reducing nutritional deficiencies and poverty of the country.

**Keywords:** Backyard chicken, Egg production, Hatchability, Benefit cost ratio

### Introduction

Bangladesh is one of the most densely populated countries in the world living over 953 persons per sq km (Swan, 1999). In 2000, 52.5% of the urban and 44.3% of the rural people were surviving under the poverty line I (2122 Kcal/d/capita) and 25 % of the urban and 18.7% of the rural people under the poverty line II (1805 Kcal/d/capita), called the 'Hardcore Poverty'. Protein intake is recommended to be in range of 0.8 to 1.6 g per kg body weight for human (Anonymous, 1998). Due to the higher nutritional deficiencies, about half of the population is unable to develop their working ability either physically or mentally. They have been suffering from malnutrition which has a negative effect on immune system, and consequently many diseases. They can't contribute in the national development. We have to increase the animal protein production to make our people sound and healthy. However the people of our country is blessed with a variety of agricultural resources of which chicken rearing is considered to have potential both for poverty alleviation and food production, especially for the rural poor women as they contribute 25.06% & 19.75% (Huque and Steam, 1993) of total egg and meat production. It is roughly estimated that ten rural chicken can provide the same income as a women day laborer (Banergee and Sharma, 1998). In the small-scale chicken production system, production per bird may be low, but support the landless and distribution of benefits will be more equal and have great effect on human development. Chicken rearing is suitable for widespread implementation as it cost less, requires little skills, is highly productive and can be incorporated into the household works (Saleque and Mostafa, 1996).

Indigenous chicken are mostly available and are more resistant to diseases than improved breeds (Kamar et al 1977). Therefore cross breeding and selection of improved breed with desi may improved the productive performance. It may be noted that consumers have preference for colored birds and brown-shelled eggs, both of which are produced in the rural backyard chicken, thus there is a need to take up specific rural chicken production programs, to meet the requirements of the rural consumers while constituting a source of subsistence income as a subsidiary occupation by taking up colored chicken units ranging from 5 to 25 chicken per family. Such units require very little hand feeding and can give a fairly handsome return with bare minimum night shelter.

The district Pabna occupies an important place in Bangladesh in respect of backyard poultry practice, because of having available natural feed during harvesting season. The people of Pabna district traditionally practice cattle, sheep, and goat rearing and keep chicken as a supplementary income. Despite the large number of house holds having backyard chicken a few studies have been done in

Pabna district on backyard chicken. So, the present study was undertaken to evaluate the existing backyard rearing system with the objectives to pave the way for development of backyard chicken into sustainable income for the rural households.

## Materials and Methods

### Selection of the study area

The study was conducted during the period of October,2008 to February,2009. Availability of large number of chicken, good communication facilities, the study areas was selected in three places Bera, Santhia and Sujanagar thana of Pabna district of Bangladesh.

### Selection of sample and sampling technique

A total of 150 households were selected randomly from three thana of Pabna district having 50 households from each thana (10 household of each village of total 5 selected villages of each thana). Each household having at least 8 chicken reared under backyard condition. Stratified random sampling technique was followed to collect data.

### Methods of data collection

Data were collected through direct interview schedule and recorded in a questionnaire/interview schedule. The schedule was prepared maintaining relevance with the objectives of the study.

### Analytical Techniques

The data were put on the master sheet and were arranged in tabular form. Simple statistical measures (arithmetic mean, percentage etc.) were used in this study. Benefit-cost analysis was also done.

## Result and Discussion

### Literacy level of the farm owners

The literacy level of the studied area is categorized as five groups such as, illiterate, Class (I –V), Class (VI-VIII), Class (VIII – X) and SSC & above. Table-1 shows the literacy level of the farmers.

**Table 1. Literacy level of the farmers**

Literacy levels	Farmers					
	Sujanagar (n=50)	Percentage	Bera (n= 50)	Percentage	Santhia (n= 50)	Percentage
Illiterate	06	12	04	8	08	16
Class (I - V)	11	22	10	20	9	18
Class (VI - VIII)	15	30	15	30	17	34
Class (VIII - X)	10	20	11	22	10	20
SSC & above	08	16	10	20	6	12
Total	50	100	50	100	50	100

### Yearly income level of the farm owners

The yearly income is categorized into five groups i.e. Up to Tk.10000, Tk. 10000– 20000, Tk. 20000 – 30000, Tk. 30000– 40000 & above Tk. 40000. In table-2 it is evident that, the maximum farm owners had the income of above Tk.40,000 and minimum farmers had income of up to Tk 10000.

**Table 2. Yearly income level of the farm owners of the studied area**

Income levels	Farmers					
	Sujanagar (n=50)	Percentage	Bera (n= 50)	Percentage	Santhia (n= 50)	Percentage
Up to Tk 10,000	5	10	7	14	6	12
Tk.(10,000- 20,000)	6	12	7	14	9	18
Tk. (20000- 30,000)	9	18	8	16	7	14
Tk. (30000- 40,000)	12	24	13	26	12	30
Above Tk. 40,000	18	36	15	30	16	32
Total	50	100	50	100	50	100

**Land utilization pattern of the farm owners**

The land utilization patterns are categorized as cultivated land, homestead gardening, fallow land, pond and farm area. The estimated average land areas per farm family are 1.45 acre for Sujanagar and 1.35 acre for Bera and 1.37 acre for Santhia. It is evident (Table-3) that among three thana, maximum land are utilized under cultivation, and it was 45, 52 and 53 percentage for Sujanagar, Bera and Santhia thana respectively.

**Table 3. Average land utilization pattern of the farm owners**

Land holding sizes (In acre)	Farmers					
	Sujanagar (n=50)	Percentage	Bera (n= 50)	Percentage	Santhia (n= 50)	Percentage
Cultivable land area	0.65	45	0.70	52	0.72	53
Homestead land area	0.50	35	0.43	32	0.46	34
Fallow land area	0.05	3	-	-	0.02	1
Pond and farm area	0.25	17	0.22	16	0.17	12
Total	1.45	100	1.35	100	1.37	100

**Distribution of chicken rearer according to farm size**

Among the total of 150 chicken raisers, 80, 45, 15 and 10 were in 5-10,10-15,15-20 and >20 chicken raiser categories. The landless farmers had in general less than 10 chickens. Most of the marginal, small and medium farmers (40%) kept 10-20 chicken. It is also evident that chicken numbers increased with the increasing land size. And the family members are 2-3 and they rear 5-10 chicken per farm.

**Table 4. Distribution of chicken rearer according to farm size& family size**

Categories	Number of family members	Number of chicken rearer:	Farm size (Chicken)
Landless farmers	2-3	80	5-10
Small & marginal hold farmers	4-5	45	10-15
Medium hold farmers	6-7	15	15-20
Large hold farmers	>7	10	>20

**Traditional managerial practices followed by the owners of chicken**

**Housing:** Housing in modern poultry is an important input, accounting for a major component of the initial capital investment. 35% respondents informed that they housed their chicken in shed made of mud, straw and bamboo 65% respondents kept their chicken in house made of wood, bamboo and tin. For one chicken 2-3 sq.ft space is enough. A house of 24 sq.ft. is enough for 8 chicken. The house may be of 6x4x4 feet.

**Feeding of chicken:** The differences in the types of feed and composition of mixed feed and the amount of feed supplied to chicken are shown in Fig-1 and it shows that most of the farmers of three thana used mixed feed, but only 7% of the farmers fed extra rice to their chicken. The rest either fed wheat, wheat + paddy or broken rice. The period of scavenging was throughout the year except in Santhia.

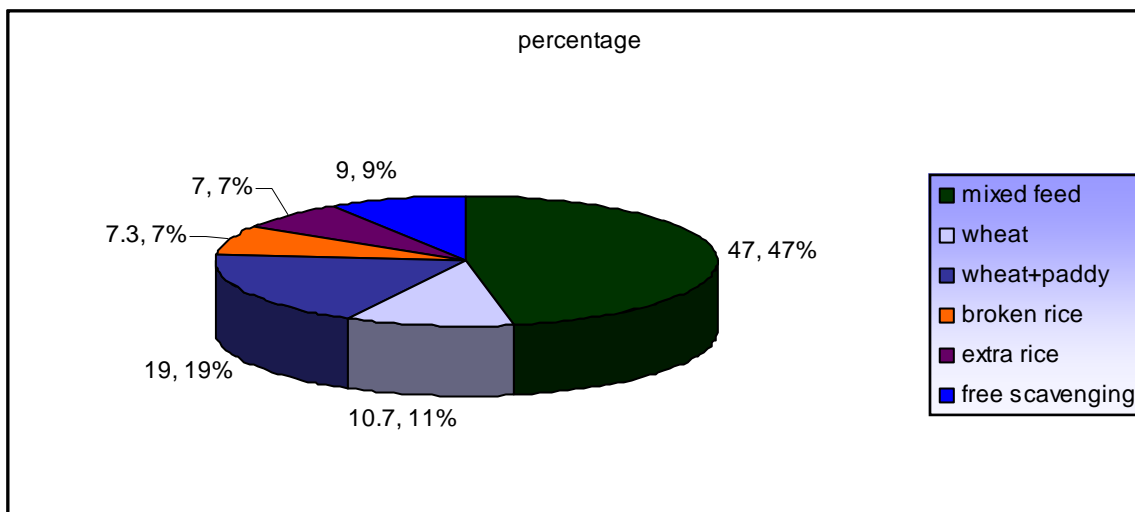


Fig. 1. Percentage of feed type that's provided to the backyard chicken

**Incubation of egg:** The backyard chicken rearer usually use broody hen for incubation to hatch out of their chicks. The number of eggs set for incubation varies from 10-15 per hen according to 80% of the respondents and rest respondents informed that 13-18 eggs are set for incubation per hen. Fig-2 shows that the highest hatchability percentage (89) in Sujanagar and lowest hatchability percentage (85) in Bera thana.

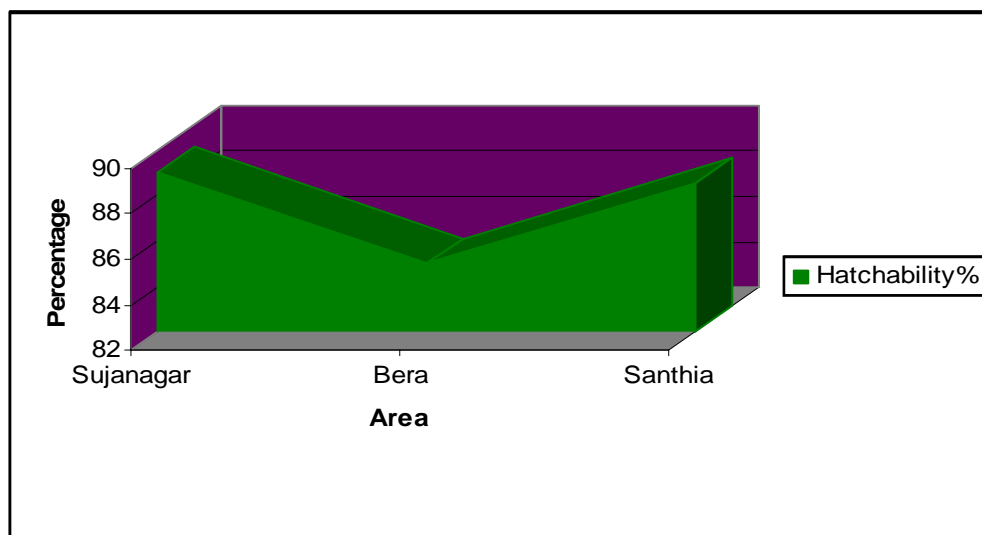


Fig. 2. Average hatchability of different area

**Procurement and sale:** Most of the farmers rear their own chicks. Ninety percentages of the respondents found that there was no problem in procuring or selling chicken in the village. As far as the sales go, 85% indicated that the selling was done within the village itself and 15 % sold to others. The selling price in the village per egg of chicken was Tk. 4-4.5.

**Biosecurity:** Biosecurity attributed by the house hold poultry rearer using chemical agents is negligible in the rural condition. Ninety five of the rural people did not maintain commercial biosecurity and the rest 5% maintained to some extent. But almost 100% of the chicken rearer maintained traditional measures and biosecurity. In that case women used ash as disinfectant to control ectoparasites and for floor disinfection. Some of them are use lime to maintain biosecurity.

### Economic Analysis

**Family wise and per bird annual cost and return:** The tables show average annual expenditures and economic returns of rearing chicken in the three regions .The family labour was the chief source of labour employed in chicken rearing and the labour was mostly used for the purpose of chicken management. The labour hours actually spent were collected and converted into man-days based on the ratio of existing wage rates in the study area. It was found from the data that the average costs for chicks, feed, Medication and vaccination, housing and labor were Tk.13.71, Tk.79.54, Tk.2.6, Tk.13.1 and Tk.41.30, respectively.

**Table 5. Family wise and per bird annual gross cost**

Item	Family wise annual cost (TK.)		Total Cost	Per bird annual cost (TK.)		Total Cost
	Gross cost	Depreciation cost (10%)		Gross cost	Depreciation cost (10%)	
Day old chick cost	143.00	-	143.00	13.71	-	13.71
Feed cost	832.00	-	832.00	79.54	-	79.54
Labor cost	317.00	-	317.00	41.30	-	41.30
Medication cost	17.60	-	17.60	2.60	-	2.60
Total gross cost	1309.60	-	1309.60	137.15	-	137.15
Housing cost	121.59	12.15	12.15	13.1	1.31	1.31
Equipment cost	24.80	2.48	2.48	2.4	.24	0.24
Total Net cost	1309.60	14.63	1324.23	137.15	1.55	138.70

Family wise and per bird gross return is shown in the Table 6. Family wise and per bird total income is Tk. 2124 and Tk. 223.95, respectively which is higher than family wise and per bird net cost Tk. 1324.23 and Tk. 138.70, respectively.

**Table 6. Family wise and per bird annual gross return**

Items	Family wise (Tk.)	Per bird (Tk.)
Selling eggs	1444	148.7
Selling chicken	720	75.25
Total income	2124	223.95
Gross cost over gross return	814.4	86.8
Net cost over annual return	799.77	85.25
BCR	1.60	1.61

The result of BCR (Benefit Cost Ratio) was 1.60 in family wise and per bird wise was 1.61 which is greater than 1. 61. It indicates that if backyard chicken rearers invest Tk.1.0 then they can earn Tk.1.60. So, family wise profit was Tk. 0.60 & per bird basis was Tk. 0.61. It could be concluded that three thana of pabna district would have helped to diversify and improve the income of the farmers.

## Conclusion

From the result of the study it can be concluded that scavenging chicken production in the three regions is profitable as BCR (Benefit Cost Ratio) was 1.60 and 1.61 on family wise and per bird basis respectively. The study indicates that there are great potentials for an improvement of chicken production in rural areas of Bangladesh. The village chicken production systems of Pabna into economically viable enterprises would require better understanding of the socio-economic aspects of the production system.

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