DUCKLING PRODUCTIONS BY RICE HUSK INCUBATORS IN BANIACHANG UPAZILA OF HABIGANJ DISTRICT

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Abstract

The study aims to know the scenario of duckling production using rice husk incubator and socio-economic status of the farmers of Vatiapara village under Baniachang upazila of Habiganj District. A total of 140 number of households were interviewed among them 64.7% family had homestead land followed by 35.3% family had both homestead and cultivated land. All living houses were of tin made with 70% nuclear and 30% joint family. There about 9.1% illiterate and 39.4% people could sign only. The primary, secondary and higher secondary or upper educational levels were 25.7%, 18.2% and 7.6%, respectively. More than 76.5% family are engaged directly in duckling production whereas 23.5% family are involved in catching and cultivating fish. About 23.5% families were fully occupied in fisheries and 41.25% family in integrated agriculture as secondary occupation. On an average, their income was 10,676 Tk. Among the selected families 59% got training on duck rearing with hatchery management. Based on 70% hatchability, per family produced monthly more than 7000 number of ducklings from 10000 number of hatching eggs. The yearly turnover is calculated as to nine months hatching operation since the enterprise remained almost stop from the late November to mid-February. Hatching egg price was different due to seasonal variation and, on an average, it was 10.50 Tk. Overall 7088 number of ducklings were produced per household monthly, which valued about 177200 Tk. (25 Tk./duckling) and net profit was 66535 Tk./month. Thus, the community-based duckling production can be encouraged more among the families through providing an adequate technical knowledge, training and an improvement of marketing channel to increase socio-economic status of the farmers.

Keywords: Duckling production, Proper marketing, Rice husk incubator, Socio-economic profile

Introduction

In Bangladesh, more than half of the people those who are leading their livelihood based on agricultural and livestock farming. The poultry sector is an integral part of farming systems in Bangladesh and has created both direct and indirect employment opportunity, improved food security and enhanced supply of quality protein

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to people's meals, contributing country's economic growth and poverty alleviation in rural and urban areas of Bangladesh (Hamid *et al.,* 2016). Duck is one of the important livestock sub-sectors that generally being reared under scavenging system predominantly in the regions which are prone to seasonal inundation. The vast areas of haors, canals, bills, ponds and low-lying water reservoirs considered to be the breeding grounds for a number of biotic structures to support the duck rearing in Bangladesh (Rahman *et al*., 2009). It plays a significant role to provide subsidiary income and creates employment opportunity for landless, marginal and small farmers in the coastal and low-lying water reservoirs areas (Afrin *et al*., 2016; Begum *et al*., 2020). Additionally, it can contribute efficiently in increasing meat and egg production that are cheap source of good quality animal protein to the nation for the fulfillment of their nutritional requirement ducks are the only second to chicken. In the earlier study, it has been estimated that the consumption of duck meat and egg in Bangladesh is about 30% of total poultry consumption (Islam *et al*., 2003). According to the Department of Livestock Services (DLS, 2020) of Bangladesh, duck accounts for around 16% of the country's total poultry production while chicken hold the remaining 84%. Similarly, in other study, it has been reported that chicken population is dominant over other poultry species which almost 90%, followed by 8% duck and a small number of quails, pigeons and geese (Das *et al*., 2008). However, following the information of last five years duck population data of Bangladesh, it has been shown that the total duck population is steadily increasing from 52.240 million in 2016 to 59.72 million in 2020 (DLS, 2020). At the same time, duckling production through traditional rice husk incubator system is also one of the important promising sectors in the coastal and low-laying water reservoir areas throughout the country. It can contribute significant role to lead livelihood improvement, food security, create employment opportunity, woman empowerment as well as keeping a minor contribution to the national revenue. In spite of these potentialities, duckling production by traditional rice husk incubator system has remained a neglected business partly in low-laying water reservoirs areas even though no basic statistics are available. Lack of scientific knowledge, training and proper marketing channel are some of the major impediments for development of duckling production by the system of traditional rice-husk incubator. Therefore, a survey study was conducted to know the overall scenario of duckling production using traditional rice husk incubator and socio-economic status of the farmers at Vatiapara village of Baniachang Upazila of Habiganj District.

Materials and Methods

This survey study was carried out for three days during the month of September since 2017 at Vatiapara village of Baniachang upazila under Habiganj District of Bangladesh, with a view to know the scenario of duckling production using traditional rice husk incubator with socio-economic status of the farmers. In the survey method of this study, a total of 140 of the 200 families were considered by simple random sampling technique, those who either directly or partially practiced in rice husk incubator for duckling production. Keeping in view the objective of the study, an interview schedule was developed with necessary correction and modification. Data were collected from the selected families by conducting direct interviews through personal visit. Before commencement of the interview, a brief introduction about the purpose of the study was

discussed to the respondents. Thereafter, the questions were asked in easy and understandable language with friendly manner. Also, some interviews were conducted at the market, road side mini tea stall, when the respondents spent their leisure time and as to the given time of some respondents. The primary information of the families was collected i.e. such socio-economic condition, availability of duck eggs, price of eggs, existing knowledge on hatchery management and marketing of ducklings as well as training on duck hatchery with management etc. Descriptive statistics such as percentage, frequency distribution and overall mean were performed to represent the data using Microsoft excel 2010.

Results and Discussion

Scio-economic characteristics of the survey households

The overall socio-economic status of the survey area families was presented in Table 1. It has been shown that about 64.7% of the total families have a small area of homestead land, which averaged 4.47 decimal/family; and remaining 35.3% family has cultivated land which average in per family was 192.17 decimal. Houses were made corrugated iron sheet with types of family were 70% nuclear and 30% joint. Size of the family members up to 4, 5 to 6 and more than 6 were 11.8%, 47.1% and 41.0%, respectively. Average member in each family in the survey area was 6.23 number which was comparatively a little higher as to the national average family size of 4.06 number (Bangladesh HIES, 2016). According to the educational qualification data of the survey area, there was found only about 9.1% illiterate and could sign only 39.4% among the considering of total number of population. In addition, we came to know from the information of interviewing data about 25.7%, 18.2% and 7.6% were received primary, secondary and higher secondary or upper education of the total population, respectively. However, the literacy rate in the survey area was very poor than the national context where the statistics of literacy rate is claimed to be 72.76% (https://Country-economy, 2016; BBS, 2016). Regarding to the professional information, it was found more than three-quarters (76.5%) of total family was mainly involved in collection of hatching eggs for rice husk incubator business of duckling production. Rest of the family which was 23.52%, those are leading their livelihood by catching and cultivating fish. From the Table 1, it also evident that 23.5% family in fisheries and 41.25% family in integrated agriculture (crop plus fisheries) had involved as their secondary occupation. As to the collected information of monthly income from the survey area families were 5.9% (up to Tk. 5,000), 58.9% (Tk. 6,000 to 10,000), 29.4% (Tk. 11,000 to15,000) and 5.9% (Tk. 16,000 to more), respectively. Average income of each family in per month was Tk.10, 676 only. According to the data of Bangladesh HEIS, (2016) reported that per household income in each month was 15,988 Tk. which had about 33.22% higher than that of per household income of survey area family. From the aforementioned comparative data of household income, which indicates that there didn't have enough opportunities to increase income of the farmers. As a result, a necessary step should be taken by the government to create employment opportunity for increasing their average income and improvement of their livelihood. It is evident from Table 1 that about 58.8% family took only training on duck rearing and hatchery management which may be implemented by

the government or non-government organizations, and rest of 41.2% family didn't get such kinds of opportunity to increase the technical knowledge. In this case also necessary steps should be taken by the government or non-government organizations (NGOs) to provide an adequate training among the farmers for development of technical knowledge on duck hatchery management.

Table 1. Socio-economic characteristics of the study area families (a total of 140 of the 200 families)

Parameter	Category	Frequency	%	Average
Land	Homestead land	129	64.7	4.47 dec.
	Cultivated land	71	35.3	192.17 dec.
Type of living house	Tin	200	100	-
	Shabby	0	0	0
Type of family	Nuclear	140	70	-
	Joint family	60	30	-
Number of family members	Up to 4	24	11.8	-
	5-6	94	47.1	-
	> 6	82	41	-
	Overall	200	100	6.23±2.07
Education (Excluding age below 15)	Illiterate	71	9.1	-
	Can sign only	306	39.4	-
	Primary	199	25.7	-
	Secondary	141	18.2	-
	Higher secondary and upper	59	7.6	-
Primary occupation	Hatching & selling duckling	153	76.5	-
	Fisheries	47	23.52	-
Secondary occupation	Fisheries	47	23.5	-
	Integrated Agriculture (Crop + Fisheries)	82	41.2	-
Income (monthly) in Tk.	Up to 5,000	12	5.9	-
	6,000 to 10,000	117	58.9	-
	11,000 to 15,000	59	29.4	-
	16,000 and more	12	5.9	-
	Overall	200	100	10676.00±3775
Training on duck hatchery	Yes	118	58.8	-
	No	82	41.2	-

Hatchability of duck eggs and price of duckling

It is also evident from Table 1 that around 80% (76.5%) family of the Vatiapara village was involved on duck hatchery and selling of duckling business occupation. In the study area, it had shown that most of the family could run hatchery operation just beside their bedding room and a very few numbers of family operated in adjacent place of bedding room. We also came to know by the interviewing data of respondents, they generally collected hatching eggs from the availability of nearby locations namely Markiloy, Azmeryganj and Lakhai upazills in Habiganj district, Nasirnagar upazila in Brahmanbaria district. In some cases, they also collected hatching eggs from a quite distance area which was part of the Kishorganj, Sylhet and Sunamganj district. It is evident from Table 2 that there minimum, maximum and overall number of hatching eggs capacity in the setter part per household were 7813, 12438 and 10125 number monthly, respectively. According to the respondent statements on egg hatchability, they obtained an average of about 70% hatchability from the total setting eggs. The hatchability percentage ranges from 50 to 75% in common ducks with an average 63%, following the data mentioned in earlier studies (Islam *et al*., 2002; Banerjee, 2013; Rahman *et al*., 2009; Makaremuzzaman *et al*., 2016), which was supported to the current data of survey area. Monthly day-old duckling productions per household as minimum, maximum and overall were 5469, 8706 and 7088 number, respectively. The selling prices of each day-old duckling as minimum, maximum and overall were 24, 26 and 25 Tk. respectively. Hatching operation with business is almost closed during winter period due to cold temperature and high humidity particularly from late November to mid-February. Above mentioned period, they pointed out that it is very difficult to maintain adequate temperature and humidity during hatchery operation in a traditional rice husk system.

Table 2. Collection of hatching eggs, production and selling price of ducklings in the study area of each family (Calculated based on140 families)

Parameter	Mean ± SD		
	Minimum	Maximum	Overall
Hatching egg set (No./month)	7813 ± 4593 (140)	12438 ± 6418 (140)	10125 ± 5972 (140)
Hatchability based on setting eggs (%)	70%	70%	70%
Duckling production (No./month))	5469±3215 (140)	8706±4493 (140)	7088±5338 (140)
Selling price of duckling (Tk)	24±0.00 (140)	26±0.00 (140)	25±1.02 (140)

Seasonal variation of hatching egg and duckling price

In the Table 3, according to the information of interviewing data, we have shown that the overall price of each hatching egg during late winter (February - March) was 11.5 Tk. followed by rainy season (June -August) was 9.5 Tk. Regarding to the the variation of hatching egg price, respondents of the survey area stated that during the period of late

winter the demand of hatching eggs were comparatively higher than that of other seasonal period. However, in this regard, they have highlighted a probable reason, both temperature and humidity are easily suitable for smooth hatchery operation using traditional rice-husk incubator. In addition, they also mentioned another possible reason for the lower production of duck eggs in the summer season, which is usually caused by the shortfall of natural feed and dried out of hoar. Resulting that, the hatching eggs price increased for the higher demand in duckling producers. It is evident from the Table 3, we have shown that the price of egg and duckling both was higher during late winter period as that of rainy season, which may be associated due to the cause of higher demand of hatching eggs and ducklings by the farmers. The overall duckling price between late winter and rainy season was 26 and 24 Tk. respectively, which indicated that duckling price was may be fluctuated for the variation of season.

Table 3. Seasonal variation of hatching eggs and day-old duckling price in Taka

Parameter	Mean ± SD (N=140)					
	Late winter (February- March)			Rainy season (June- August)		
	Min.	Max	Overall	Min.	Max.	Overall
Hatching egg (Tk.)	11.0±0.0	12.0±0.0	11.5±0.51	9.0±0.0	10.0±0.0	9.5±0.51
Day old duckling (Tk.)	-	-	26.0±0.0	-	-	24.0±0.0

Profitability of duckling producers using rice husk incubator

In the Table 4, we have presented as the variable cost such hatching eggs with involved transport, rice husk and miscellaneous items (hidden labor cost, carrying cost and other related cost) for the calculation of net profit margin, however, did not consider some fixed cost like bamboo dhole for setter, bed for hatcher, cloth and cotton lap etc.

Table 4. Profitability from traditional rice husk incubator hatchery in each family

Variable Cost	Cost per unit	Cost per thousand	Monthly
Hatching egg with transport (Tk.)	10.5	10500	106312.00
Rice husk (Tk.)	0.30	300.00	3037.00
Miscellaneous (Tk.)	0.13	130.00	1316.00
Total cost (Tk.)	10.93	10930	110666.00
Income from ducklings (Tk.)	25.00	7088.00	177200.00
Net profit (Tk)			66534.00

I USD= 85 BDT

According to the respondent information of interviewing data, we observed that majority of the farmers in the study area commonly used rice husk as a fuel material in the round soil container which locally called 'dhoop' as the replacement of kerosene oil in hurricane for maintaining temperature in the setter part of traditional rice husk incubator. As to the evident from Table 4, monthly a total cost of 106312 number hatchings eggs in per household was 110666 Tk. and total income from ducklings was 177200 Tk. according to the average day-old duckling price of 25 Tk. The net income in each family was found 66534 Tk. per month after subtraction all types of variable costs (hatching eggs, rice husk, hidden labor cost, carrying cost and other related cost), which indicated that duckling production in traditional rice husk system is profitable business in the study area. Whatever, it was the only main source of income of each household in the study area for improving their livelihood and, thus this system needs to be encouraged more among the farmers through providing an adequate training and technical support. In addition, some necessary steps should be taken by the government or non-government organizations to create a backward and forward linkage for selling ducklings. In order that they can get a fair price through marketing of ducklings and can improve their livelihood with creating a sustainable income.

Conclusion

Thus, from the findings of the study area, it is recommended that traditional rice husk incubator system for duckling production can be encouraged more among the farmers particularly haor and low-lying water reservoirs areas through providing an adequate technical knowledge, proper training on duckling production and hatchery management as a more profitable enterprise. Additionally, some necessary steps should be taken by the government or non-government organizations to create a proper marketing channel for selling ducklings as if they can get easily a fair price through marketing of ducklings and improve their socio-economic status with creating a sustainable income.

Conflicts of Interest

The authors declare no conflicts of interest regarding publication of this paper.

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