

INTRODUCTION

Bangladesh is a small country with a large population about 160 million, situated between 88°10' and 92°41' East longitudes and between 20°34' and 26°38' North latitudes in south Asia with flat land area (147,570 sq.km). From the last decade, demand for poultry products has been increased rapidly in Bangladesh, and propelled by rising levels of income, population and urbanization. Experience shows that climate of Bangladesh is convenient to rear different poultry species. Poultry meat alone contributes 37% of the total meat production in Bangladesh (Begum et al., 2011). Deficiency of poultry meat and eggs are huge, as reported 78.91% and 65.38 % per person per year respectively (FAO/APHCA, 2008; Saleque, 2010; Das et al., 2014). Poultry production both at commercial farming as well as indigenous rural poultry keeping in Bangladesh is therefore the effective and efficient ways to bridge the gap in a faster rate than the production of any other animal protein sources. This indicates the urgency of rapid expansion of poultry enterprises both at commercial level as well as rural or in semi-urban areas of Bangladesh. It is evident that indigenous chicken produce about 75% of the eggs and 78% of poultry meat consumed domestically (Bhuiyan et al., 2005).

Poultry consumption in developing countries is projected to grow at 3.4% per annum to 2030, followed by beef at 2.2% and ovine meat at 2.1%, and in the world as a whole, poultry consumption is projected to grow at 2.5% per annum to 2030, with other meats growing at 1.7% or less (FAO, 2007). The environmental impact of poultry production is a continuing challenge and it is predicted that global consumption of poultry meat will increase between 2000 and 2030 at an average annual rate of 2.51% (Fiala, 2008). Besbes (2009) reported that the worldwide poultry sector consists of chickens (63%), ducks (11%), geese (9%), turkeys (5%), pigeons (3%) and guinea fowls (3%).

Traditional backyard poultry keeping has been practiced in Bangladesh since time immemorial. Poultry keeping is an integral part of the rural household that

provides family income for the small, marginal and landless poor. The farmers who cannot afford to rear cattle and goat can easily rear poultry. Since 3-4 decade of journey, the poultry industry in private sector has also got a good industrial shape having an investment of Tk. 15,000 crores with the annual turnover of Tk. 20,000 crores to Tk. 25,000 crores and employed almost six millions people directly or indirectly (Chowdhury, 2013). In the scale of production competition among various poultry species available in Bangladesh, the commercial chicken production has received attention duly by the investors, researcher and producers.

However, among the livestock sector, the poultry industry (specially, commercial broiler and layer) is affected highly by different fatal diseases like ND, IBD, AI. Thus, it is crying need to search the alternative protein source to meet up the increasing demand. In order to maximize food production and meet protein requirements in developing countries, variable options need to be explored and evaluated (Owen et al., 2008). In Bangladesh, the other species of poultry such as duck, quail, geese, pigeon, guinea fowl etc. were ignored and as the consequences their population is not increased as per expectation. Some of the species such as guinea fowl, quail, some breeds of pigeon, turkey etc. are not our native but had been incorporated into the local stocks for many years before and therefore the species, as like as our native birds, are well adapted to poor nutrition, harsh environment and management condition in rural areas of Bangladesh (Hussain et al., 1998; DLS, 1990; Khan, 1983). Thus, the significance of rearing specialized poultry species such as guinea fowl, geese, turkey, and pigeon etc. which have been incorporated to our native stocks should be considered with utmost concern as these birds are still being the suppliers of good quality but cheaper sources of animal protein to the rural family. In such a situation, it may be pertinent to focus on the rearing of alternative *gallinaceous* species. Thus, one of the best choices may be guinea fowl, as because of this species can thrive well under harsh nutritional and environmental conditions and also a good converter of scavenge able feedstuffs to high quality meat and eggs.

In fact, Guinea fowl is a not a newly introduced poultry species in Bangladesh. No specific history of guinea fowl importing in Bangladesh is found. Farmers are rearing guinea fowl as an ornamental bird with a limited extent without having prior experience. There is no organized hatchery or commercial companies selling guinea fowl chicks. Mainly interested farmers started guinea fowl farming by collecting chicks from other farmers. Its popularity is increasing gradually because of its glossy look and gamey flavor of meat with lower fat content. So, it may have high potential for production and marketing in Bangladesh.

Guinea fowl (*Numida meleagris*) has a high socio-economic importance in the rural society where it is mainly kept to supply meat and eggs for the income generation to rural poor farmers (Schwanz, 1987; Bonkougou, 2005). In many parts of the world, guinea fowls are raised mainly for their gamey flesh and eggs. The young guinea meat is tender and of especially fine flavor, resembling that of wild game bird. The meat is relatively lean and rich in essential fatty acids compared to chicken or duck meats. Many people also raise them for their unique ornamental values.

In comparison with its scavenging chicken counterpart, the guinea fowl's advantages are: low production cost, premium quality meat, greater capacity to scavenge for insects and grains, better ability to protect itself against predators and better resistance to common poultry parasites and diseases (Microlivestock, 1991). Good foraging ability, hardiness and minimal production input requirements of guinea fowl are usually lead reasonable profit to the farmers. Moreover, guinea fowl has a unique ability to free range and is tolerant to most common diseases of chicken (Bonds, 1997; Dieng *et al.*, 1999; Mandal *et al.*, 1999). This indicates that there is potential for smallholder farmers to improve guinea fowl production in order to increase household protein supply and increase family income. To author's concern, the statistics on guinea fowl population in Bangladesh is not available at the livestock department, institute, university data base or even in the internet search. No comprehensive research works have yet been conducted on the characterization of guinea fowl species available in Bangladesh, their production status and extension works. Taking all above facts in

consideration, the present study was therefore undertaken to investigate the present status and production system of guinea fowl and guinea fowl farmers, and the problems and prospects of guinea fowl farming production in Cumilla district in Bangladesh.

MATERIALS AND METHODS

Study Area

The survey was carried out in Cumilla District of the Eastern region of Bangladesh. The District lies between latitudes 23°02' and 27°47' North and Longitudes 92°39' and 91°22' East. The tropic of Cancer crosses Cumilla town on the south side. It shares boundaries with Brahmanbaria and Narayanganj to the North, Munshiganj and Chandpur to the West, Noakhali and Feni to the South, and Tripura of India to the East. Cumilla has a tropical savannah climate. The climate of Cumilla is generally marked with monsoons, high temperature, considerable humidity and heavy rainfall. The hot season commences early in April and continues till July. The average annual temperature in Cumilla is 25.5⁰C. About 2,295 mm of precipitation falls annually. The major rivers are Gumti, Dakatia and Little Feni. The main vegetation is grassland.

Sampling Procedure

The population for this study was Guinea fowl farmers in Cumilla District. Purposive sampling was used in sampling 30 guinea fowl farmers from the district, since there was no sampling frame. There was no list of guinea fowl farmers in the hand of any government and non-government agencies because of lack of previous study. So keeping in view the objectives of the study, a list of 30 turkey farmers was prepared from all over Bangladesh via personal communication, Facebook, and other sources.

Data Collection

Open and closed ended questionnaire were used to obtain responses from farmers on availability and production status of guinea fowls, and the constraints they encounter in the process. Direct observation, interview and farm record analysis methods were applied during collecting data for the study. Primary data were collected from farmers were on farmers' personal information (age and education level), housing, feeding, breeding, management, disease, marketing, problems and prospects. Some

parameters like flock size, number of egg production, disease prevalence etc. were taken. The sources of secondary data were review of literature from official documents, Journals, libraries, research institutes, and internet etc., which used in relevant cases to collect and verify data. The researcher performed all the interviews to ensure consistency in data quality.

Data analysis

Data obtained was analyzed in Microsoft excel and StataIC 13. Qualitative data were converted into quantitative forms by means of suitable score whenever needed and the local units were converted into standard unit scales. Simple descriptive statistics such as frequency distributions, percentages, mean, and Standard Error of Mean (SEM) were applied to illustrate the results. All assessments were done at 5% level of significance.

RESULTS

Demography of Farmers

To understand demographic and socioeconomic context of existing guinea fowl farmers' data on age, education, sex and prior experience of other farming were collected. The average age of the respondent farmers was 30 ± 1.06 years, with a range of 17-49 years. 29 of 30 farmers (96.67%) are male. Duration of guinea fowl farming of the respondents was 9.47 ± 1.01 (mean \pm SEM) months. The study showed that 10, 26.67, 36.67, 23.33, 3.33% farmers obtained educational qualification No formal education, Primary, SSC, HSC, and Graduation or Higher education respectively (Figure 1).

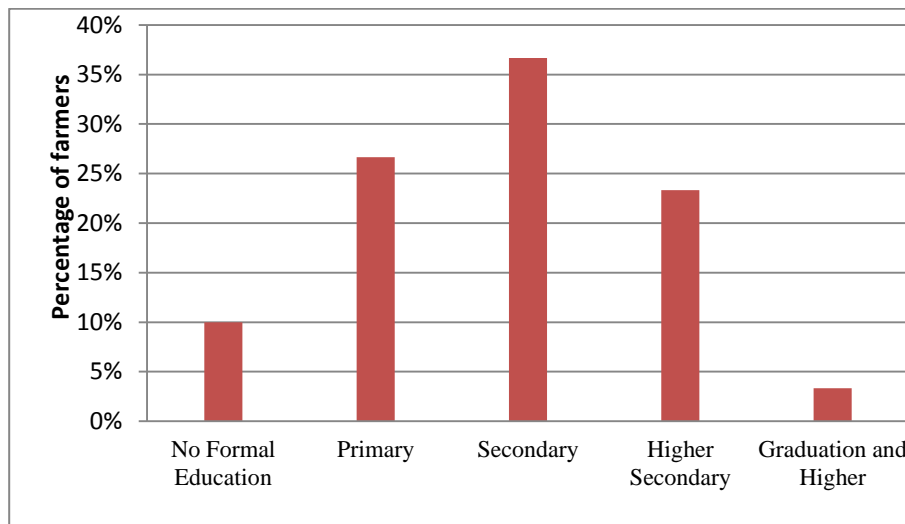


Figure 1: Education status of farmers

Purpose of Guinea Fowl Rearing

Guinea fowl rearing is a new 'farming' activity in Bangladesh. The study showed that 47.67, 30 and 23.33% respondent farmers were rearing guinea fowl for commercial, ornamental, and consumption purposes, respectively (Figure 2). Interesting findings were observed in this study that most of the farmers started rearing guinea fowl for ornamental purpose.

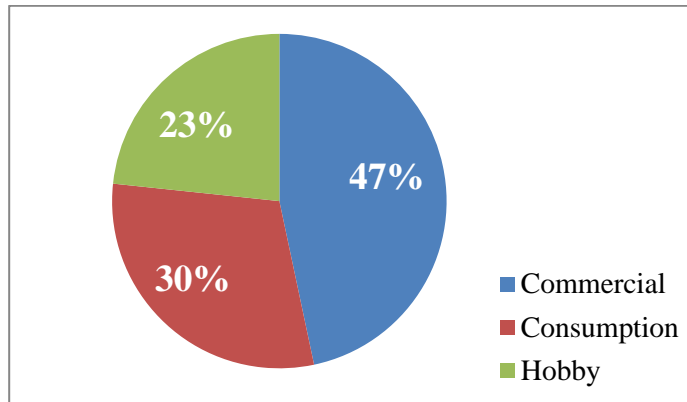


Figure 2: Objectives of guinea fowl rearing

Technical Support

The farmers seek technical support from different sources. The study showed that 23.33, 60.00, 16.67% farmers took technical support from Department of Livestock Services (DLS), other farmers, and internet respectively.

General Farming and Management Practices

Flock Structure

The results obtained from this study on flock structure are presented in Table 1. It showed that average flock size of guinea fowl was 4.93 ± 0.80 . Lowest flock contains only 2 birds, whereas highest farm has as many as 22 birds.

Table 1: Flock Structure

Number of Guinea fowl	No. of Farms	Percentage
1-5	21	70%
6-10	6	20%
11-15	2	6.67%
16-20	0	
21-25	1	3.33%

Associated Species

No farmer reared guinea fowl as their main poultry. Even the farmers rearing guinea fowl as ornamental birds had other poultry species like chicken, turkey, duck and pigeon. The study showed that 26.67, 26.67, 16.67, 10.00, 3.33, 13.33, 3.33% farmers rear turkey, chicken, pigeon, duck, combined turkey and chicken, combined turkey and pigeon, and combined turkey, chicken and pigeon respectively along with guinea fowl (Figure 3).

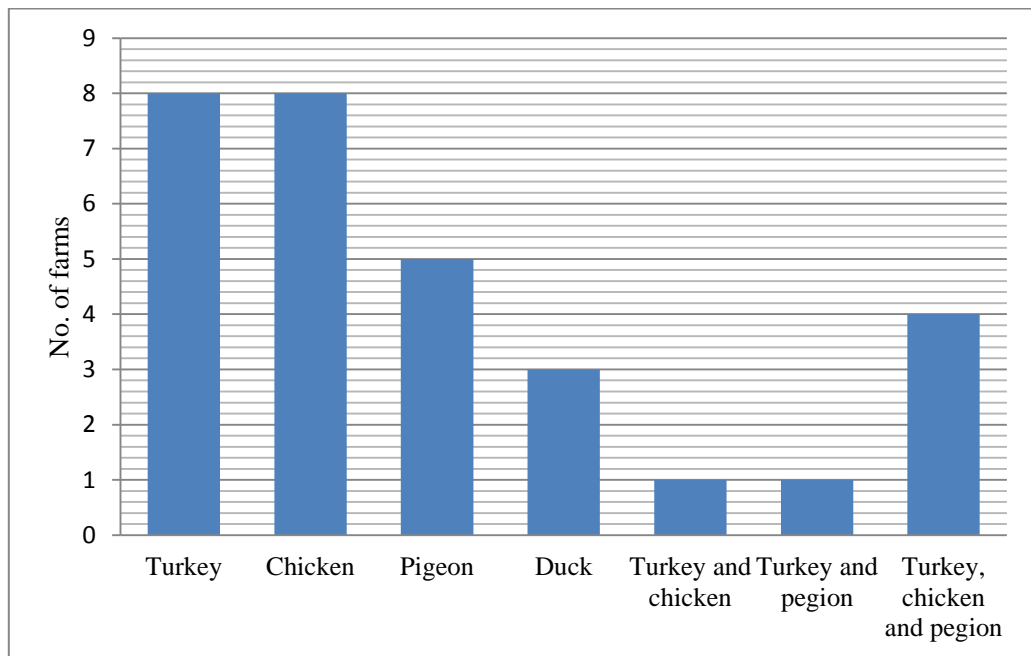


Figure 3: Presence of Other Species

Housing

Results on guinea fowl housing showed that 100% farmer rear guinea fowl semi-intensively. Birds scavenged at day time and rest at house at night. However, different types of house were used by farmers, where majority (63.33%) used cages (Figure 5, 6). Others included floor with mud (26.67%), floor with litter (3.33%) (Figure 4), and traditional hencoop (6.67%) (Figure 7).



Figure 4: Floor with Litter



Figure 5: Cage for Adult



Figure 6: Cage for Keet



Figure 7: Traditional Hencoop

Feeding

The study showed that out of 30 farmers, 10, 16 and 4 farmers (33.33, 53.33, 13.33%) farmers used commercial poultry feed (Figure 8), market available mixed feed (Figure 9) and homemade self-mixed grain, respectively for feeding their guinea fowl. None of the interviewed guinea fowl farmers had knowledge of feed requirement, calculated feed efficiency (FE) and wastage of feed found in many farms due to lack of using proper feeding methods. Feed were given on birds want, twice a day (morning and afternoon). 5 of total 30 farmers provided grass to the birds. Birds fed on insects, beetles, fleas, grasshoppers during scavenging.

28 of 30 farmers (93.33%) supplied tube well water to the birds, compared to 2 others (6.67%) who supplied pond water after filtering.



Figure 8: Commercial Poultry Feed



Figure 9: Market Available Mixed Feed

Health Status

The study showed that while 40% farmers had encountered diseases like ND, Pox, Coccidiosis, Salmonellosis (Figure 10), etc., 60% had not experienced any disease. However, some diseases were undiagnosed for farmers' reluctance to consult vet. Only 1 farmer amongst 12, who encountered disease, went for treatment. Others slaughtered or sacrificed their bird for consumption.

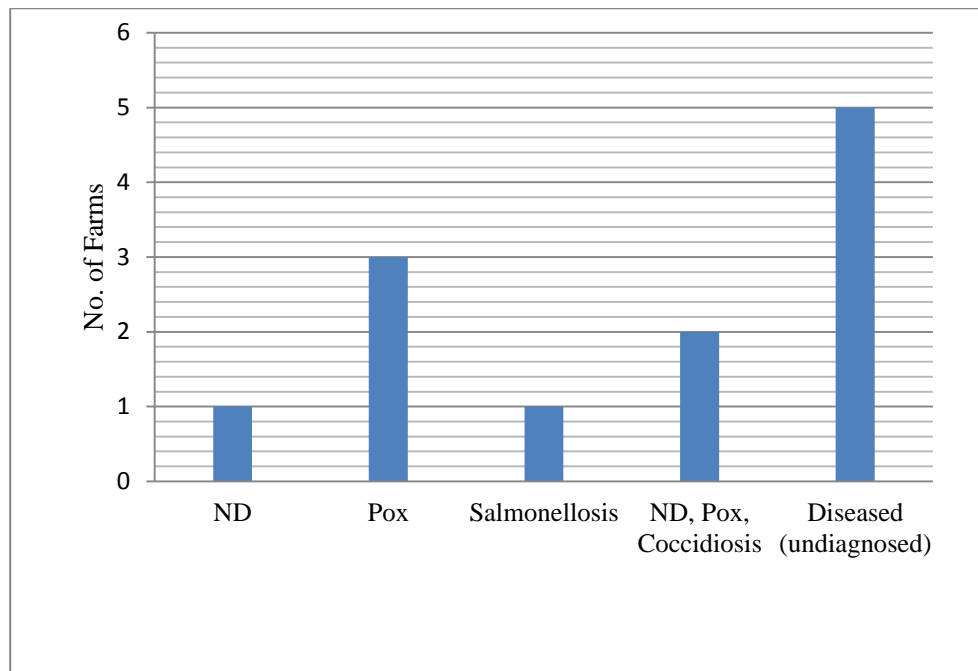


Figure 10: Diseases occurred

Only 2 of 30 farmers (6.67%) vaccinated their birds against ND, IBD and Fowl Pox vaccine. Others (93.33%) were either unaware or unconscious about vaccination; hence, most of the birds were never vaccinated. As the vaccination was done during study period, vaccination efficacy couldn't be judged. None of the farmers followed deworming schedule.

Death cause in adult and keets varied in some extent. Major death causes in both adult and keet included predation, management fault, theft, diseases etc. (Table 2).

Table 2: Death Cause

Rank in Adult (percentage)	Cause of Death	Rank in Keet (percentage)
3rd (15.69%)	Disease	3 rd (13.21%)
1st (52.94%)	Predation	2 nd (32.08%)
2nd (17.65%)	Management	1 st (41.50%)
4th (11.76%)	Theft	4 th (11.32%)
5th (1.96%)	Unknown	5 th (1.89%)

Egg Production Status

The Study showed that 15 of 30 farms were in egg production level. 11 out of 15 farmers (73.33%) collected between 31 to 40 eggs/bird/ breeding seasons, while the remaining farms collected between 21 to 30 eggs/bird during the same period (Figure 11). The farms included in the study had average 3.2±0.11 clutches per year; in where average clutch size per bird were 11±0.45.

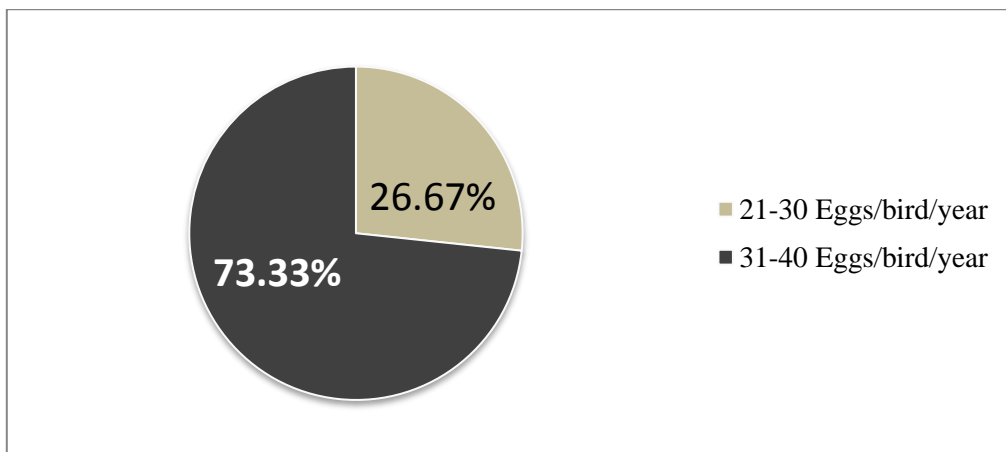


Figure 11: Egg Production Status

Collection of Hatchable Egg

26 farmers among the 30 farmers studied collected hatchable eggs for further production. Among them, Most (54.17%) of the farmers obtained hatchable eggs from their own flocks, while 25% and 20.83% collected eggs from other farmers and both own flock and other farmers respectively (Figure 12). All the farmers interviewed stated that the birds lay on the field, and the eggs were collected on a daily basis. Some of these eggs are lost to predators during the laying period. Majority (53.33%) of the farmers stored their eggs in containers (plastic and metal containers, woven basket, clay pots), 26.67% stored in egg crates while the remaining 20% kept theirs in a basket containing rice husk. All the farmers indicated they usually stored their eggs for less than one week, and then set for incubation.

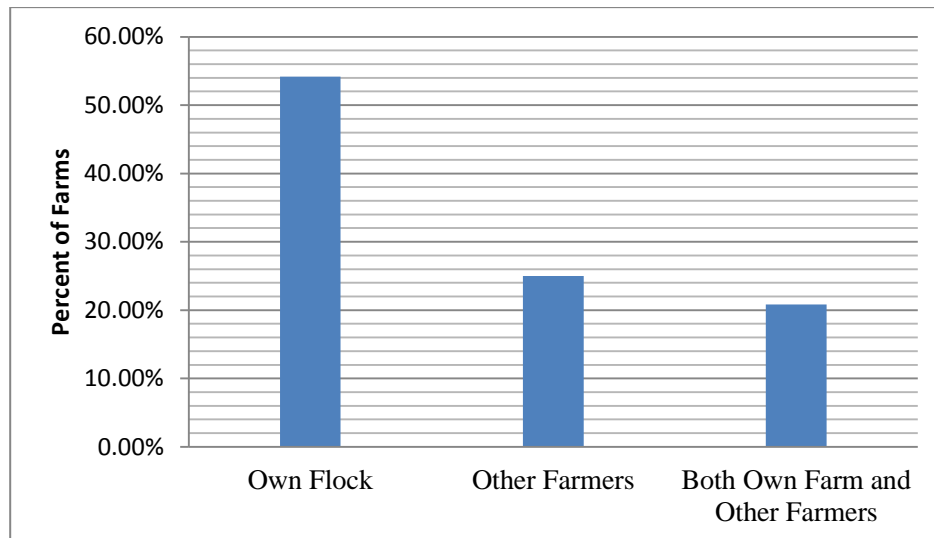


Figure 12: Hatchable Egg Source

Incubation of Egg

Among the 26 farmers who produced keets, majority (92.31%) used indigenous brooder hen for hatching eggs. Others (7.69%) used incubator. All incubator users used incubator mainly for turkey egg hatching. Incubation period varied from 26-30 days among farmers with an average 28.4 ± 0.04 days. However, owners complained a low hatchability rate.

Body Weight Gain

This study showed that adult male guinea fowl had average bodyweight as 1.48 ± 0.01 kg. However, adult female guinea fowl had relatively higher bodyweight as 1.60 ± 0.10 kg. Table 3a and 3b show weight gain percentage of male and female after 6 months

Table 3a: Body weight in male (6 month)

Bodyweight (kg)	Frequency	Percentage
1.4	12	40.00%
1.5	11	36.67%
1.6	7	23.33%

Table 3b: Body weight in female (6 month)

Bodyweight (kg)	Frequency	Percentage
1.5	8	26.67%
1.6	13	43.33%
1.7	9	30.00%

Marketing

Results showed that, 17 of 30 farmers sold birds last year (Figure 13). Farmers sold average 7.71 ± 1.99 live birds per year, among which 8, 4 and 5 farmers (7.06, 23.53, and 29.41%) sold adult birds, keets and both adult birds and keets respectively.

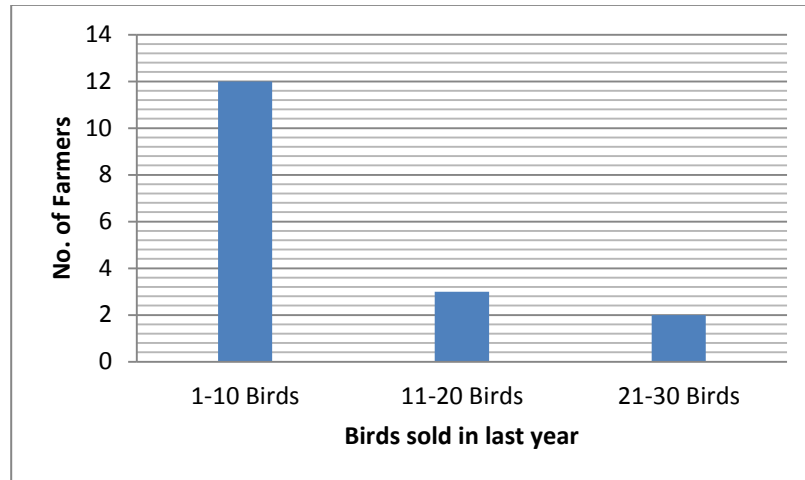


Figure 13: Birds sold in last year

Also, 13 of 30 farmers sold eggs last year (Figure 14). They sold average 29.92 ± 4.99 eggs per year.

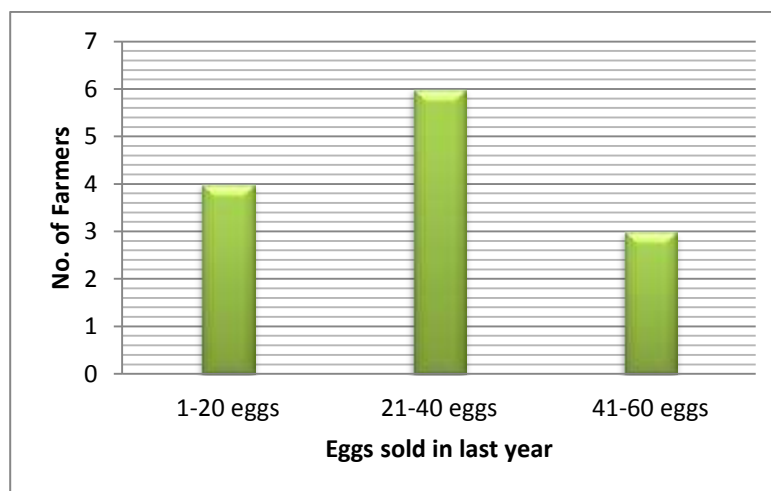


Figure 14: Eggs sold in last year

Selling price of egg, a one month old keet and a pair of adult male/female guinea fowl in the study is shown in figure 15a, 15b and 15c respectively. Eggs, keets and pair of adult birds were sold at the rate of BDT 67.86 ± 1.01 , 611.43 ± 30.66 and 1942.86 ± 57.14 , respectively. Majority pricing of the adult birds were done using visual observation (70.59%), whereas others did it upon age. Framers sold bird in need of money (62.50%), increased flock size (18.75%) and disease (18.75%). Birds and eggs were sold directly to other farmers and consumers. However, Farmers did not keep record for which purpose the customers purchased guinea fowl. Usually, customers who intended to farming, purchased guinea fowl in pair i.e. one male and one female. All the farmers expressed their dissatisfaction over market price.

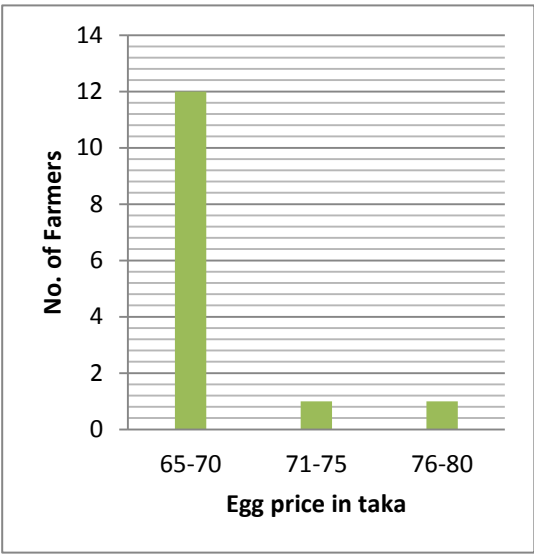


Figure 15a: Price of keets sold by the farmers

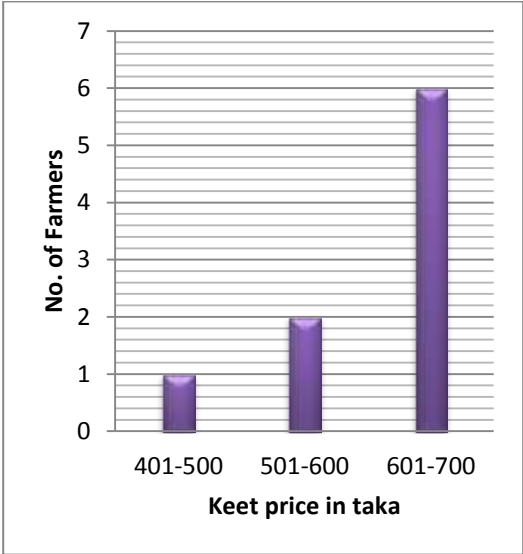


Figure 15b: Price of eggs sold by the farmers

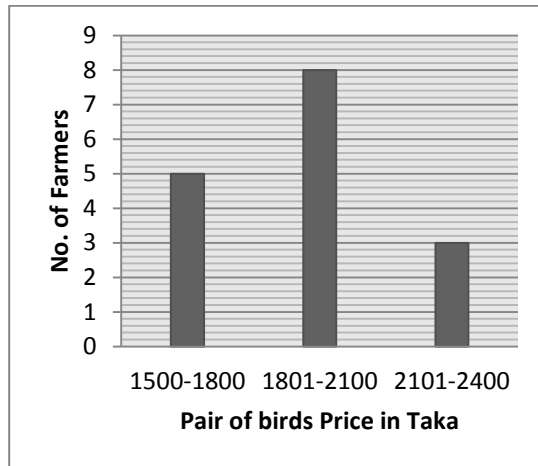


Figure 15c: Price of pair of adult birds sold by the farmers

Farmers' Perception on Problems of Guinea Fowl Farming

Interviewed farmer complained different constraint like lack of nutrient requirement guidelines, disease, keet and adult mortality, predation, egg loss, low hatchability, etc. (Table 4).

Table 4: Constraints faced by farmers

Constraints	Rank (Percentage)
Limited Market	1 st (13.75%)
Loss of Egg for laying outside	2 nd (11.88%)
Low Hatchability	3 rd (11.25%)
Theft	4 th (10.63%)
Predation	5 th (10.00%)
Lack of Proper Nutrition	6 th (8.75%)
Lack of Credit and High Cost of Input	7 th (9.38%)
Lack of Management Knowledge	8 th (7.5%)
Keet Mortality	9 th (6.88%)
Adult Mortality	10 th (6.25%)
Lack of Technical Support	11 th (3.73%)

Farmers’ Perception on Prospects of Guinea Fowl Farming

According to 30.00, 33.33, 13.33 and 23.13% farmers’ opinion main advantages of guinea fowl rearing over other poultry species were low disease, high market price, low feeding cost and low mortality, respectively (Figure 16).

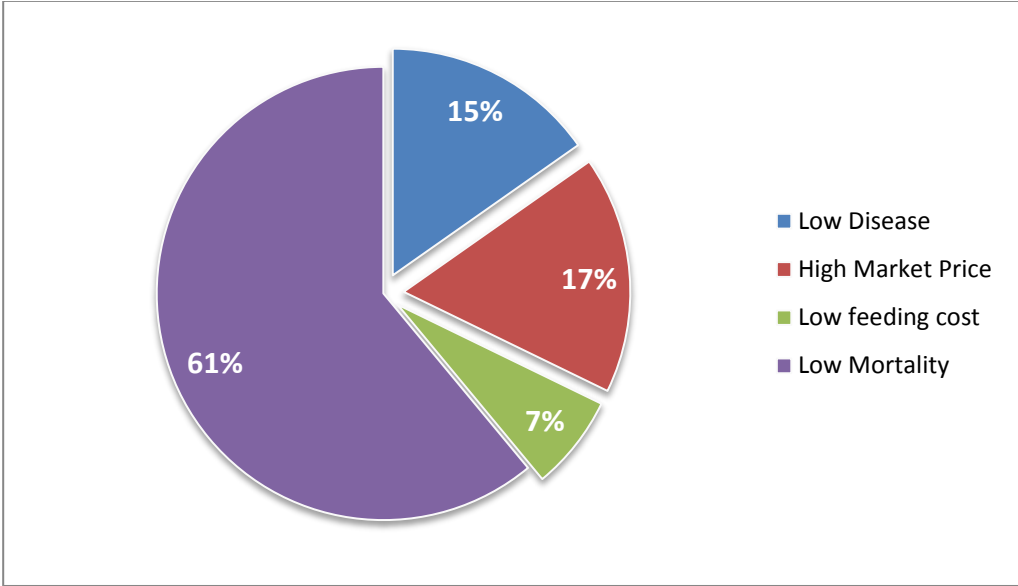


Figure 16: Prospects of guinea fowl farming

DISCUSSIONS

Guinea fowl farming is a new farming enterprise in Bangladesh, though it was an old practice. Comparatively young population get involved with this farming and ownership of farming mostly belonged to male farmers. The present results on gender difference in the ownership of guinea fowl agrees with the report of Abdul-Rahman et al. (2013) who observed a higher numbers of male than female among guinea fowl farmers in Tolon district, Ghana. Analysis of education data revealed that 90% farmer respondents received formal education ranges from Primary to graduation or higher study. The results indicate that participation of women in guinea fowl farming is lower and guinea fowl farmers are educated and most of them have prior experience. So, there is big possibility to flourish guinea fowl farming by these farmers in near future.

The present study showed that although most of the farmers were rearing guinea fowl for hatching egg and meat purposes, a large percent of farmers were raising guinea fowl only for ornamental purpose. But there is a big opportunity to increase production for meat purposes because of its increasing demand to consumers of Bangladesh. Moreki (2009) reported that along with economic purpose different varieties of guinea fowl are grown for pleasure and for competition at shows and exhibitions by hobbyists and fanciers in all over Africa. Most of the farmers were dependent on other farmers than government livestock offices for having technical support. The interviewed livestock officers informed that as guinea fowl is not a traditional poultry species to this area, scarce of researches lead to lack of adequate awareness, knowledge and skill on it. It was evident that none of the farmers received any kind of training on guinea fowl rearing. Average flock size of guinea fowl was small because of newness of the enterprise. It was observed that no farmers were raising guinea fowl as their main poultry, rather reared along with other species like chicken, duck, turkey, pigeon etc. in semi-intensive system.

Most of the farmers reared guinea fowl in cages. Some farmers used floors with litter materials as rice husk or wood shavings. Most of the farmers fed homemade, market available mixed grain and commercial broiler and layer feed for feeding guinea fowl. In case of homemade feed, they used a mixture of maize, wheat, broken rice, paddy, cowpea, linseed and vegetables like cabbage, water spinach (*Ipomoea aquatic*), malabar spinach (*Basella alba*) and grass. They allowed the guinea fowl for scavenging. Farmers were not aware about feed efficiency. But the importance of feed efficiency is high due to the high cost of feed, which represents approximately 70% of the total cost of a guinea fowl production system (Wood and Willems, 2014). Most of the farmers supplied concentrate feed in the morning and evening. Supply of *ad libitum* water was not practiced in all the farms. It was observed that they did not follow nutrient requirement rules for guinea fowl; even most of the farmers did not know it. But keets have high protein requirements for their first seven week (Robbins, 1983). Although some farmers were rearing guinea fowl as breeder, they did not know about breeder ration requirement. It was difficult to estimate the dietary pattern of the birds because of the inconsistent feeding practices. This agrees with the report of Dahouda et al (2007) on Benin traditional poultry production studies. The inconsistent feeding system could be a major contributor to undernutrition and malnutrition, leading to unhealthy keets, and consequently, their early deaths. All the farmers provide water to the birds; they were reported to drink a lot of water because of the high temperature.

Results indicate that prevalence of guinea fowl disease was comparatively low. Most of the farmers had not used vaccines as preventive measure. Few farmers used vaccines mainly for ND, Fowl pox and IBD. As guinea fowls are not completely domesticated, they are like indigenous chicken which are hardy and have high level of immunity against disease. Another reason of low disease prevalence might be that lower concentration of guinea fowl farming in Bangladesh. Reason of low use of vaccine was lack of knowledge. But the keet stage was found to be the most vulnerable stage for disease attack. During in depth discussion on the issue it was found that most of the farmers did not follow deworming schedule for guinea fowl. Some experienced

respiratory infection which might be due to *Mycoplasma*, but remain undiagnosed for farmer's reluctance to go to vet. Few farmers used ethno veterinary drugs such as the aloe vera, turmeric etc. to treat sick bird. There were divergent views on their efficacy in controlling and treating diseases and most of the knowledge on ethno-veterinary medicines was passed on orally to future generations.

Farmers rely on the current stock for breeding. Eggs were mainly collected from the farmer's own flock. There were problems in egg collection as hens tended to lay eggs in the bushes instead of designated cages, thereby exposing some eggs to predation, which was a reason why the productivity of the birds was much lower (20-70) than that reported by other workers. Nwagu and Alawa (1995) reported between 50 -170 eggs per hen per breeding season in Ghana. Moreki (2010) found average 100 eggs per bird per year in Botswana. For guinea fowls extensively or semi-intensively raised, predation becomes a major factor determining the productivity of the birds, as some eggs may never be spotted. The birds studied by Nwagu and Alawa (1995) were intensively raised, and were fed adequately; while those used in the present study were raised using the semi-intensive system, and acted as scavengers with woefully inadequate supplementation. This huge difference in performance of these birds is, therefore, expected. Cages available in market were actually prepared for rearing pigeon. Most of the cages were 2787 cm² which were used for 3-4 guinea fowls. Nahason et al., (2006) showed that 1 bird/cage (1394cm²) system was better for superior laying performances. Compared to that, the space provided by interviewed farmer in this case was very dense. This also could affect the egg production performance of guinea fowl in this study. Most of the farmers kept guinea fowl in addition to chicken in order to increase surrogate hens for incubation, as they are more adaptable than guinea hens. Guinea hens are too wild to be set anywhere except in nest where they have become broody (Apiiga 2007). Average incubation period in the study was 28.4±0.04 days, which was supported by Khairun Nesa et al. (2016) who had found 28 days incubation period in most of their subjects in BAU, Bangladesh.

Results in the study showed that average weight of adult male (1.48 ± 0.01 kg) and female (1.60 ± 0.10 kg) were close to previous reports of Mundra et al. (1993) and Saina et al. (2003).

The study revealed that price of adult guinea fowl and keets were higher in Bangladesh in comparison to international market. After inflation calculation, it was found that the price of adult bird and eggs are respectively 3 and 9 times higher than Madzimore's (2011) report. The main reasons are that guinea fowl subsector is still at the beginning stage in Bangladesh and in most cases they were sold for ornamental purposes while some buyer bought also for farming as well as consumption purposes. Farmers bought egg for hatching purpose, so that they could raise guinea fowl after incubating egg. Keets were sold without identifying their sex at the age from day old to 4-5 weeks of age. Selection and price of guinea fowl depends on visual observation and age. However, there is absence of structured market for guinea fowl in Bangladesh. Therefore, farmers had no access to market information.

Farmers complained about different types of constraints. As all interviewed farmer reared guinea fowl semi-intensively, scavenging birds fell prone to theft, predation and loss of egg. Common predators found in the study area were dog, cat, and fox and occasionally snake. Guinea fowl's tendency to lay egg in bush and hide the egg was the main cause of egg loss. Entry capital needed to be high in guinea fowl farming as the egg, keet and adult bird price is higher which caused problems for willing youths. Hatchability of guinea fowl might be affected by the thickness of egg shell, improper storage of eggs, improper turning in incubator etc. (Khairun Nesa et al. 2016). Improper management, predation, diseases and weather played role in keet mortality. Farmers lack of knowledge of brooding, brooding temperature and nutrition and high density housing caused deterioration of keet death. Keets were not provided with high protein diet which was mandatory in growing stage. Less broody nature and carelessness of hens made keets vulnerable to predators. Adults were also vulnerable to predators.

However, adults were lesser vulnerable to management faults and diseases than keets for their higher adaptation.

Moreover, interviewed farmers also spoken up about scopes. According to them high market price of end products were attracting others to guinea fowl farming. Guinea fowl scavenge insects and also grass. Therefore, Total requirement of supplied feed were lesser compared to other poultry species. None of the farmers experienced any disease outbreak. Mortality rate was also lower than other poultry species.

Problems encountered during the study

Travelling to remote village was a big problem. Scientific terms were non-understandable to farmers. So, paraphrasing was needed, and it took time. Some farmers had hesitation to give information regarding egg production, prices and profitability. Sometimes farmers were unavailable on the scheduled time because of family and social obligations and other personal business.

Limitations of the study

There was limitation of transport to meet those farmers who were living in remote areas. As guinea fowl farming was not established widely, farmers didn't keep organized records. Farmers needed to recall their memories. For this reason, in some cases value judgment was applied to have necessary data.

CONCLUSIONS

Guinea fowl production is still at primitive stage in Bangladesh which is characterized by poor housing, feeding, breeding and healthcare practices as well as inadequate availability of scientific information, technical services, credit facilities, training and marketing opportunities. Guinea fowl rearing has the potential to contribute to economic empowerment by creating employment and alleviating poverty in the rural areas, where majority of the people reside, and poverty levels are high. The potential for growth of the industry is also huge, given the youthful nature of the farmers involved. Thus, to improve the guinea fowl production, vigorous public extension service, training for farmers, opening of different avenues for research on guinea fowl and identifying marketing strategies, are immediately needed in Bangladesh.

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