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Short Communication

Productive and reproductive performances of hilly chicken at Naikhongchari hilly areas, Bangladesh

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Abstract: A total of 225 native Hilly chickens (152 females and 73 males) were reared in colony cages as large, medium and small body size groups for 10 months period to compare their production performances. The mean body weights of adult female and male birds were 2129, 1786 and 1457g; and 2436, 2834 and 2249 g respectively. The age of first egg were 158, 147 and 140 days and hen-day egg production were 44.56 ± 0.5, 46.15 ± 0.5 and 48.84 ± 0.7 percent (P<0.01) respectively. The average egg weight were 43.05 ± 0.1, 42.87 ± 0.1 and 41.79 ± 0.24 (P<0.01). The average per bird per day feed consumption was 105, 107 and 105g (P<0.01) and mortality was 6.2, 5.1 and 11.1 percent respectively. The average hatchability percentage performed by 14 broody hens reared on litter floor was 65.71 and the average hatching egg weight and chick weight was 45.9 and 31.7 g respectively. Broodiness character of hilly chicken rearing in cage system was rarely observed. It may be concluded that locally collected large size Hilly chicken has potentiality to be used as meat type chicken. It may be suggested that hilly chicken can be improved further through new collection of local hilly birds to undertake conservation and improvement programme.

Keywords: hilly chicken; egg production; conservation; improvement; Naikhongchari

1. Introduction

In Bangladesh, several types of indigenous chicken are found such as hilly, Naked Neck, Aseel, Yeasine, native dwarf, Frizzled plumage and common native birds of non-idiosyncratic typical type (Das *et al*., 2008). Hilly chicken are native birds found in hilly areas of the Chittagong region and reared for local consumption and its egg and meat has a unique taste, is regarded as a delicacy, and is popular among consumers. Indigenous chickens are characterized as dual purpose birds due to their ability to supply both meat and eggs for human consumption. Ganabadi *et al.* (2009) reported that indigenous chicken is always thought to be better in term of carcass composition than commercial broilers due to its low fat content. Local non-descript coloured chicken is a vital source of tasty meat and eggs and more acceptable to rural people (Barua and Howlider, 1990). The local people always try to find the indigenous (desi) cockerel for its tenderness and special taste (Ahmed and Ali, 2007). Native chicken of Bangladesh are categorized as Non-descriptive Desi (ND), Naked Neck (NN), hilly (H), Aseel (AS) and Jungle fowl (Bhuyan *et al*., 2005) in respect of the morphological variations, as well as production performances.Indigenous chickens are considered very valuable in the rural communities because they fulfill major functions and benefits in the livelihood of rural families. Faruque *et al*., (2013) reported that hilly chicken was superior to non-descriptive deshi and naked neck in terms of body weight gain. The heavier body size of the hilly chickens indicated that it can be used as slow growing meat type chicken in Bangladesh. The egg production of Desi hen could be increased upto 135 eggs/ year by proper selection programme (Khan,

1983). Singh and Singh (1989) reported that as a result of selection, egg production is expected to improve by 6.76 eggs with minimum decrease in age of first egg (1.46days) and marginal decline in egg weight (0.127g) per generation. Rahman *et al.,* (2012) observed 937g body weight of Hilly chicken with 2.89 feed conversion efficiency at 10 weeks of age.As the market price of hilly chicken are much higher than commercial table birds, so benefit-cost can be analyzed to find their economic potentiality. Indiscriminate random breeding among native chicken and unplanned crossing with exotic breed have been eroding the original characteristics of native chicken. So the local genetic resources have been going to be under threat gradually. Native chicken of Bangladesh are categorized as Non-descriptive Desi (ND), Naked Neck (NN), Hilly (H), Aseel (AS) and Jungle fowl (Bhuyan *et al*., 2005) in respect of the morphological variations, as well as production performances. Conservation and preservation of genetic resources as insurance against future needs has become a topic of mounting concern (Crowford, 1984). However, before going to conserve and improve the local genotypes, it is crucial to know their productive and reproductive characteristics under intensive management conditions. Though, the production characteristics of Hilly chicken are not well documented. Day by day the demand of native chicken meat is increasing but the production in not sufficient. Thus, the local germplasm of hilly chicken should be collected and conserved precisely for future use and selection for pure breeding is necessary for their development as a meat producing native bird. Bhuiyan *et al*., (2009) reported that native (deshi) chickens are genetically diluted in about 60% cases depending on phenotypic character.

Indiscriminate random breeding among native chicken and unplanned crossing with exotic breed have been eroding the original characteristics of native chicken. So, the local genetic resources have been going to be under threat gradually. Therefore, this study was undertaken with the objectives of the Productive and Reproductive Performances of hilly chicken and their conservation and improvement at hilly areas.

2. Materials and Methods

The experiment was conducted in open sided poultry house at Nikhongchari regional station Research farm of BLRI for 10 months period. A total of 225 rare Hilly chicken (73 male and 152 female) were selected by body size as large, medium and small groups and placed in colony cages as 5 birds (4 females and 1 male) in a cage. Sufficient number of feeders and drinkers were placed in the poultry house. A standard diet containing 17.0% CP and 2760 Kcal ME/kg was offered adlibitum and there was a continuous supply of fresh drinking water. A vaccination schedule was followed against Ranikhet and Fowl Pox diseases. Birds were de-wormed on a regular interval. Necessary hygienic measure was taken to ensure bio-security. Natural hatching was performed by mother hen reared on litter (rise husk) floor and conventional bamboo basket was used as hatching nest. Data on egg production, egg weight, fertility, hatchability, feed consumption, body weight and mortality were recorded regularly.

The statistical analysis was done using ‘SPSS’ 2011 statistical programme to compute analysis of variance (ANOVA) for randomized complete block design (RCBD). Differences among the treatment means were determined by Duncan’s Multiple Range Test (DMRT) (Duncan, 1955).

3. Results and Discussion

The average body weights of native Hilly chicken are shown in Table 1. The body weight of large size hen was significantly ($P<0.01$) higher than that of medium size followed by small size.

The body weight of large size hen groups was close to the findings of Rahman *et al*., (2011) of 2180 g and much higher than that of foundation and second generation stock of Hilly chicken of 1377 and 1714g reported by Faruque *et al*., (2013). The body weight of medium size hen was slightly higher than that of second generation bird and the small size was slightly higher than the birds of foundation stock. The average body weight of the breeding cock placed in medium size group was found highest followed by large and small size ($P<0.01$). However, the body size of the cock placed in large size hen group was highest at beginning of the trial.

The birds of small body size group started egg production earlier than medium size followed by large size. The age of first egg of large size bird was close to the finding of Faruque *et al*., (2013) of 158.27 d in second generation bird. However, the birds of medium and small size groups started egg production much earlier than both foundation stock (166 d) and second generation (158.27 d) of hilly chicken reported by Faruque *et al*., (2013).

Table 1. Performance of Hilly chicken reared for 10 months at Naikhongchari BLRI regional station.

Parameters	Large size bird	Medium size bird	Small size bird	Level of significance
	Mean ± SE	Mean ± SE	Mean ± SE	
Body weight of adult hen (g).	2129.0 ±94.6	1786.8±33.3	1457.6±31.5	**
Body weight of adult cock (g).	2436.0 ±85.4	2834.2±122.7	2249.13±176.2	**
Egg production (H.D) %	44.56±0.5	46.15±0.5	48.84±0.7	**
Egg weight (g)	43.05±0.1	42.87±0.1	41.79±0.2	**
Age at 1st egg (d)	158	147	140	
Feed consumption (g/bird/d)	105.3±0.3	107.0±0.3	105.1±0.4	**
Mortality (%)	6.2	5.1	11.10	

** Significantly different at (P<0.01)

The average egg production was found highest in small size bird (Table 1), intermediate in medium size and lowest in large size bird (P<0.01). The egg production of the birds of all body size groups were lower than the second generation of Hilly chicken found 58.33 egg from 24-40 weeks reported by Faruque *et al*. (2013).
The average egg weight of large body size group was higher than the medium and small body size group (Table 1).
The birds of medium body size consumed more feed than large and small groups (P<0.01). The higher feed consumption in medium size bird might be contributed to higher egg production as compared with large size bird. Mortality was found highest in small size birds followed by large and medium size groups.
Hatching performances are summarized in Table 2. The average hatchability percentage performed by 14 broody hen was 65.71 (Table 2) and was lower than the findings of Faruque *et al*. (2011) of 68.63% by machine hatching.

Table 2. Hatching performance of Hilly chicken as hatched by 14 broody hen.

Egg set (no.s)	Egg weight (g) Mean ± SD	Hatchability (%) Mean ± SD	Chick weight (g) Mean ± SD
140	45.9±2.6	65.71±17.4	31.7±2

The average hatching egg weight and day-old-chicks weight was slightly higher than the findings of Faruque *et al*., (2011) of 43.2 and 29.4 g.

4. Conclusions

From the results of this study, it may be concluded that locally collected large size hilly chicken has potentiality to be used as dual purpose (meat and egg) birds. It may be suggested that hilly chicken can be improved further through new collection of local hilly birds to undertake conservation and improvement programme.

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