*Original research paper

Productive performance of indigenous chicken (*Gallus domesticus* L.) in some selected areas of Rajshahi, Bangladesh

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Abstract

Productive performance of indigenous (*Deshi*) chicken *Gallus domesticus* L. in six Thanas *viz.* Boalia, Godagari, Motihar, Mohonpur, Poba and Rajpara, of Rajshahi District, Bangladesh, have been investigated. A total of 150 households (6 Thanas × 5 villages × 5 households per village) were selected, where the average flock size consisted of about 30 birds, comprising 12 chicks, 12 growers, 4 hens and 2 cocks. Performances of the chickens in terms of such vital parameters as weight of day-old chick (WDC), growth rate (GR), death rate (DR), fertility (FR), hatchability (HT), first laying age (FLA), average marketable size (AMS), average egg production (AEP), average chicken raised (ACR) and cost-benefit ratio (CBR) were analyzed. Results showed that HT and FR varied between 84±3.53 and 88±4.30, and 91±4.74 and 96±1.58, respectively. Significant correlations between FR *vs*. HT, AEP *vs.* ACR and FLA *vs.* HT were found to exist. Total income per household (BDT 10569) and total income per bird (BDT 384) was higher than the corresponding net rearing cost (BDT 2822 and BDT 104, respectively), yielding the CBR of 1.24 and 1.19, respectively. Thus the *Deshi* chicken rearing was found profitable for the farmers in the areas under study.

Keywords: *Deshi* chicken**,** fertility, hatchability average egg production, cost-benefit ratio

Introduction

Chicken is considered as one of the most important and widely distributed avian species among poultry birds. It is a very good source of animal protein for human consumption. Of the four wild chicken species available on the Indian sub-continent *viz.*, red jungle fowl (*Gallus gallus*), gray jungle fowl (*Gallus sonnerati*), Ceylon fowl (*Gallus lafayettii*) and green jungle fowl (*Gallus rarius*), indigenous chickens locally known as *Deshi* (*Gallus domesticus*) are reported to be derived from *Gallus gallus* (Beede 1931) whereas *Gallus bankiva* is believed to be the major contributor to the development of modern commercial breeds (Lush 1945). Among the native fowls there are some distinct categories such as hilly,

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naked neck, Aseel, Yasine, native dwarf and non-descriptive *Deshi*. Collection, evaluation and conservation of different genotypes are required due to future changes in the environment, management and food habits (Crawford 1984). The major production system for the indigenous chickens is scavenging in nature and among the indigenous chickens non-descriptive Aseel and naked neck are noteworthy for genetic resources while *Deshi* is more acceptable to rural people as an important source of meat and eggs (Barua and Howlider 1990) due to low nutritional demand and high disease resistance. This breed contributed about 19.75% and 25.06% of total meat and egg production and is being reared in Bangladesh since long like wild types that are not cultured in a confined area (Haque 1991). In small-scale farming, production per bird is low, but it supports the landless as it costs less, requires little skills, highly productive and is able to be incorporated into the household works (Huque 1992). A random mated and unselected indigenous chicken is a huge treasure of variable genotypes (Yeasmin and Howlider 1998) and the birds can survive under harsh nutritional and environmental conditions. Its productivity under scavenging is low but intensive rearing yields the highest production potentialities (Haque et al 1999).

However, poultry production is a promising sector for poverty reduction in Bangladesh. The role of poultry in poverty alleviation, food security and promotion of gender equality in developing countries is well documented (Gueye 2000a and b). Village poultry plays a key role in the home economy and its increased production has the potential to improve food security, assist in poverty alleviation and mitigate the adverse economic impacts of HIV/AIDS for rural people (Harun et al 2001). Village chickens are active in pest control; provide manure required for special festivals and essential for many traditional ceremonies (Alders et al 2003). In developing countries nearly all families at the village level, even poor and landless, are owners of poultry where production is feasible and low cost technology is needed to improve production considerably (Upton 2004). Major constraints are poultry diseases; especially the current outbreak of highly pathogenic avian influenza (HPAI or bird flu) in Asia, but small-scale poultry has the potential to make a substantial impact (Macka et al 2005). Though diseases are the prominent cause of mortality, predation and exposure to unfavourable environmental conditions are reported to be the major causes (Baarendse et al 2006; Aengwanich 2007; Henning et al 2007). Productive and reproductive performances of the native chickens are relatively very low but genetic improvements by selective breeding, along with adequate nutrition and proper management, appeared to be promising and quite possible (Das et al 2008; Niranjan et al 2008).

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Smallholder family poultry is affected by many technical factors including low bio-security, inadequate sources of inputs and services, especially sources of technical information as well as lack of genetically improved breeds (Sonaiya 2009). Crossbreds of indigenous naked neck with exotic can perform even better than that of exotic in respect of productive and reproductive traits (Islam and Nishibor 2009). The low productivity of indigenous is partly attributed to poor management practices, in particular the lack of proper healthcare, poor nutrition and housing (Kingori et al 2010b; Alamal et al 2010). Economic behaviour and attitude therefore should be considered in making any suggestion and recommendation for changing the existing level of small-scale farming (Islam et al 2010) as there is substantial technical, allocative and economic inefficiency in poultry production (Begum et al 2010). Conversely, domestic chickens represent the most practical avian model for immune responses to viral infection and knowledge of the immune inflection of susceptibility to virus in birds is important for understanding taxonomic differences in infection outcomes and performance (Fair et al 2011; Haunshi et al 2011).

Rajshahi District occupies an important place in Bangladesh in respect of indigenous chicken rearing because of available natural feed during harvesting seasons in particular. The present study on various productive performance of indigenous chicken is important to poultry growers and production system in view of adding valuable information to evaluate the existing indigenous rearing practices with the objectives to pave the way for improvement of this variety into sustainable income in favour of the poor rural households.

Materials and methods

Experimental design

Indigenous chicken householders of the urban, semi-urban and rural areas from six Thanas of the Rajshahi District were surveyed. Data were collected and recorded through direct interview schedules, which were prepared in accordance with the objectives of the study. Stratified random sampling technique was used to collect the experimental data.

Selection of the study area

A total of 150 households (6 Thanas × 5 villages × 5 households per village) were selected randomly from six Thanas of Rajshahi District *viz.*, Boalia, Godagari, Motihar, Mohonpur, Poba and Rajpara. The average flock size was about 30 birds, comprising 12 chicks, 12

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growers, 4 hens and 2 cocks. Availability of a large number of chickens and good communications facilitated data collection from the study area. Data were collected during July 2010 through June 2011.

Parameters studied

Data on such production parameters as weight of day-old chick (WDC in g), growth rate (GR in %), death rate (DR in %), fertility (FR in %), hatchability (HT in %), first laying age (FLA in wks), average egg production (AEP per month), average chicken raised (ACR per month), average marketable size (AMS in g) and cost-benefit ratio (CBR) in Bangladeshi Taka (BDT) were collected from the selected households. In addition, family- and bird-wise annual gross cost and their returns, and profitability of raising the indigenous chickens were also estimated in BDT.

Statistical analyses

Mean, standard error of the mean (SEM) and one-way analysis of variance (ANOVA) followed by the least significant differences (LSD) between the parameters were calculated using SPSS (version 11.5 for Windows) where the significant effects were started when $P<0.05$. The cost-benefit ratios (CBR) were computed following the methods of Nair and Ghadoliya (2000). In addition, co-efficient of correlation (r) values were calculated between relevant parameters.

Results and Discussion

Management practices adopted by the backyard farmers

Management practices including chicken shed and feed types, bio-security measures, outbreak of diseases, and problems and opinions of the concerned farmers for improving their productivity were studied to evaluate the present status of indigenous chicken farming in the study area.

Chicken shed: The village people reared their chickens in shed made of mud, straw, bamboo, wood and tin, which measured about 6 ft × 4 ft × 4 ft. This is similar to an earlier finding where village chickens were not kept in specialized housing, rather they were often provided with simple structure to protect them from weather elements (Abubakar et al 2007). Two genotypes *viz*., naked neck and the normal feathered chickens were observed but the normal feathered ones were the predominant type. Farmers collected the chicks from their own

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villages or local bazaars and reared for dual purposes up to 72 weeks. They maintained regular disinfections and vaccination programmes and the gross production depended on the feeding, breeding, hatching and rearing. Poultry production was found to be controlled by the integrated function of breeders, hatchers, rearers, feed sellers and vaccinators (Saleque and Mustafa 1996).

Feed types: The poultry holders provided a mixture of concentrate feed composed of rice polish, wheat polish and broken rice to increase the growth, meat and egg yield of the chickens. The differences in feed types, composition of the mixed feed and the amount of feed supplied are shown in Figure 1, which reveal that most of the farmers used mixed feed but only 4% of them fed extra rice to their chickens. The rest fed either wheat alone, wheat in addition to paddy or broken rice alone. Free-range scavenging prevailed throughout the year for all chickens. Similar findings have been reported where farmers in rural areas offered a mixture of concentrated feed composed of rice polish and wheat polish mixed with water to increase performance and growth of their livestock (Saadullah and Hossain 2000).

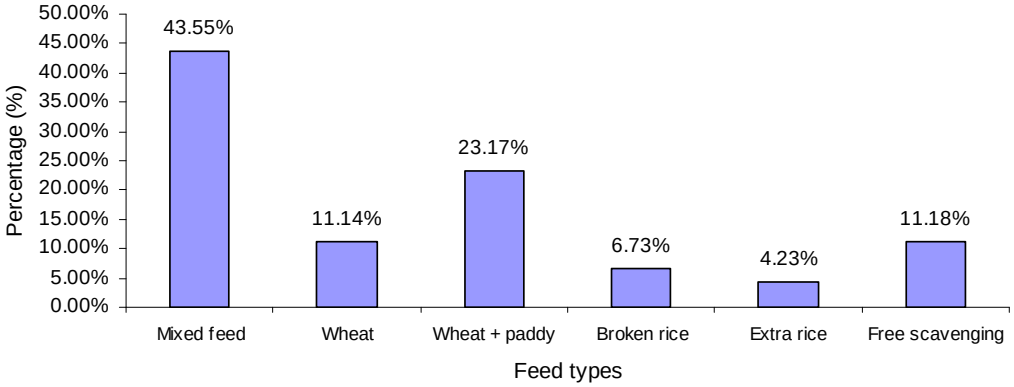

Figure 1. Feed types provided to the indigenous chickens in Rajshahi, Bangladesh

Bio-security measures: In spite of the commercial bio-security, farmers of the study areas practiced traditional measures that included the uses of ash and lime to control ectoparasites and floor disinfections, respectively. This is consistent with the recent reports, where poultry litter aged for six week supported increased *E. coli* densities (Wilkinson et al 2011) and housing system had adverse effect on eggshell contamination with specific groups of bacteria (Reu et al 2008). Factors that are responsible for low productivity included genotype, high cost of feeds (Ja'afar-Furo and Gabdo 2010) poor nutrition, diseases and management (Kingori et al 2010a). Developing and achieving adoption of bio-security measures therefore

would require a multidisciplinary and participatory approach working with producers, intermediaries and for backyard poultry communities (Bleich et al 2009).

Outbreak of diseases: The chickens suffered from various diseases like Ranikhet, bacillary white diarrhea and fowl cholera. In addition, disturbances from wild animals provided negative impact on rearing that caused high mortality of the chicks. The mortality rate was the highest due to Ranikhet. The potential source of infection was reported to be the water (Sparks 2009), by which the pathogen is transmitted through the flock following initial infection. The farmers claimed that owing to these troubles their interests on indigenous rearing was declining day by day. The present pronouncement showed resemblance with the reports that Ranikhet, gumboro, coccidiosis, salmonellosis, fowl cholera, fowl pox and eimeriasis were the focal diseases prevailing in Bangladesh (Hossain et al 1996; Bell 2009).

Moreover, economic losses in terms of costs and gross returns due to these diseases, which are caused by exposure to extreme weather conditions (Hafez 2001) and incidence of predators (Alexander 2003; Henning et al 2007; Rahman et al 2007; Nwanta et al 2008). It has been therefore recommended that poultry disease and its control require effective co-operation and communication between the poultry producers, their veterinary surgeon, other professional scientists and experts (Lister 2010).

Problems and opinions of poultry farmers: The indigenous poultry farmers responded some trouble in raising poultry where they claimed for capital, institutional credit facilities, medicine and veterinary services as they were suffering from Newcastle, Salmonellosis, Gumboro and Coccidiosis diseases, which caused high mortality. Hafez (2001) found that Salmonellosis in poultry results severe economic losses, which were caused by high mortality during the first four weeks of age. Parkhurst and Mountney (2004) reported that chickens were most sensitive on their feeding and its body mechanism is so much rapid with faster circulation. Therefore, more attention should be given to smallholder producers together with interventions in housing (Wang et al 2009), sanitation, nutrition, immunological response (Niranjan et al 2008; Tactacan et al 2009) and disease control which would greatly increase output and have a positive impact on human health and nutrition and the smallholder producers would be the principal beneficiaries of these interventions in improvements to food security and nutritional status and in reduced production risk (Wilson 2010).

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Furthermore, the poultry farmers recommended some points in favour of the enhancement of poultry enterprises as the whole production of the farm depend on the breeders, hatchers and rearers. Saleque and Mustafa (1996) reported that poultry production is controlled by the integrated function of breeders, hatchers, rearers, feed sellers and vaccinators. The productions were disadvantaged owing to incompetent marketing system of poultry, poultry product and non-availability of high value feed. The supplementary feed was found essential for an enhanced output of the poultry. Conversely, the holder claimed that with appropriate inoculation curriculum, low price processed feed and subsidy on poultry feed is indispensable for the expansion of poultry venture in the study area.

Production performance of the indigenous chickens

Performance in productivity of indigenous chickens in the study area in terms of several important parameters is presented in Table 1. The results revealed that WDC was found the highest in Mohonpur and Rajpara and the lowest in Boalia; GR was found to be higher in Boalia and Mohonpur but lower in Godagari and Poba. In contrast, DR was found lower in all Thanas except Boalia, which had normal feathered chickens in large numbers. This finding is in well agreement with a previous report (Yakubu et al 2008), where higher mortality was recorded in the normal feathered genotype than that in the naked neck. A lower DR in upgraded *Deshi* chickens was observed earlier (Khondoker et al 1996). However, the farmers of the study area exclusively used broody hens. The number of eggs set for incubation varied from 10 to15 per hen. The FR and HT were found to be the higher in Boalia and Mohonpur and the lowest in Poba. The present results are comparable with Sumy et al (2010), who observed 85.0-89% HT for backyard chickens. The reduction in FR and HT might be due to the interaction of season, breed, flock age and flock disease-vaccination status, which also affected egg safety and quality (Holt et al 2011). The higher FLA was found in Godagari and Mohonpur, whereas the AEP was found to be higher in Mohonpur, Poba and Rajpara but the lowest in Boalia.

The ACR was found higher in Boalia and Poba while lower in Godagari and Mohonpur. The lower ACR might be due to higher FLA as found in the study areas. On the contrary, the lower AEP could be due to the effects of broodiness (Jiang et al 2010) and rearing methods (Faruque et al 2010) as reported previously by Wang et al (2009), where lower laying rate was observed for outdoor layers. Furthermore, AMS was found to be the highest in Boalia and the lowest in Motihar. Variations in WDC and AMS in the present study could be owing

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to the strong effect of the chicken variety as reported previously (Aernia et al 2005). It has therefore been recommended earlier that proper housing design, provision of quality and adequate feeds and proper timing of the laying period are the prerequisites for better performance (Yakubu et al 2007). The present findings on the productive performance of the indigenous chickens nicely corroborate to the earlier results in that this breed showed relatively low economic values such as 35-40 eggs and 1-1.5 kg meat per bird per year (Das et al 2008). Consequently, genetic improvements by selective breeding along with adequate nutrition and proper management should be emphasized.

Table 1. Production performance of the indigenous chickens in Rajshahi, Bangladesh

Parameters*	Boalia	Godagari	Motihar	Mohonpur	Poba	Rajpara	SEM	Probabilities
WDC	32.5^{c}	35.0^{b}	33.0^{b}	38.0^{a}	33.3^{b}	37.0^{a}	0.57	0.009
GR	4.77^{a}	2.94^{c}	3.07^{b}	4.63^{a}	2.70^{c}	3.15^{b}	0.18	0.000
DR	0.29^{a}	0.18^{c}	0.25^{b}	0.19^{c}	0.25^{b}	0.20^{c}	0.01	0.117
FR	95.0^{a}	93.0^{b}	94.0^{b}	96.0^{a}	91.0^{c}	94.0^{b}	0.64	0.316
HT	87.0^{a}	84.0^{b}	86.0^{b}	88.0^{a}	84.0^{b}	85.0^{b}	0.71	0.522
FLA	20.0^{c}	24.0^{a}	19.0^{c}	23.0^{a}	22.0^{b}	22.0^{b}	0.38	0.000
AEP	2.92^{c}	3.17^{b}	3.04^{b}	3.83^{a}	3.75^{a}	3.50^{a}	0.08	0.000
ACR	2.08^{a}	1.85^{c}	2.12^{b}	1.50^{c}	2.92^{a}	2.06^{b}	0.09	0.000
AMS	750^{a}	600^{b}	550^{c}	600^{b}	625^{b}	700^{a}	16.8	0.001

**Values are Mean*±SEM; *WDC=Weight of day-old chick (g); GR=Growth rate (%); DR=Death rate (%); FR=Fertility (%); HT=Hatchability (%); FLA=First laying age (wk); AEP=Average egg production (mon); ACR=Average chicken raised (mon); AMS=Average marketable size (g); Values (N=25 for each) with different superscripts for a parameter in the same row differ significantly (P<0.05) by LSD.*

Profitability of rearing indigenous chickens

Family-wise and bird-wise annual gross cost and their returns for rearing indigenous chickens are presented in Table 2 and Table 3, respectively while profitability of indigenous chicken rearing in terms of production cost, their returns and CBR are shown in Table 4. The results showed average annual expenditures and financial earnings from indigenous chicken rearing in the study area. Most of the farmers reared their own chickens, as family labour was the prime source of employment for the purpose of backyard poultry management. The farmers faced no problems in procuring or selling chickens in their villages or nearby markets. The selling price per egg was BDT 4.5-5.0 in the study area, to some extent majority of selling was done within the village itself. However, the figures indicate that the average costs for DOC, litter, feed, medication, housing and equipment was 40.8±3.49, 2.31±0.24, 58.2±7.70, 2.39±0.37, 0.35±0.06 and 0.34±0.06, respectively. Conversely, returns from the sell of eggs, spent hen and manure were 211±22.5, 165±4.12 and 8.03±1.32, respectively. Family-wise and per bird total income was BDT 10569±1967 and BDT

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384±9.31, respectively which was higher than the corresponding family-wise and per bird net costs (BDT 2822±183 and BDT 104±1.50, respectively). Finally, CBR was estimated to be 1.24 and 1.19 for family-wise and per bird, respectively, indicating that farmers had to spend BDT 1.0 for earning BDT 1.24. In other words, family-wise profit for rearing indigenous chickens was BDT 0.24 and profit per bird was BDT 0.19.

Table 2. Family-wise and bird-wise gross annual costs for rearing indigenous chickens in Rajshahi, Bangladesh

Particulars	**Family-wise** annual cost (BDT)		Total costs (BDT)	**Bird-wise** annual cost (BDT)		**Total costs** (BDT)
	Gross cost (BDT)	Depreciation cost (10%)		Gross cost	Depreciation cost (10%)	
DOC cost*	1147±671	-	1147±671	40.8±3.49	-	40.8±3.49
Litter cost	64.2±36.3	-	64.2±36.3	2.31±0.24	-	2.31±0.24
Feed cost	1527±703	-	1527±703	58.2±7.70	-	58.2±7.70
Medication cost	64.4±33.2	-	64.4±33.2	2.39±0.37	-	2.39±0.37
Total gross cost	2803±361	-	2803±361	103±2.95	-	103±2.95
Housing cost	91.6±40.1	9.16±4.01	9.16±4.01	3.55±0.56	0.35±0.06	0.35±0.06
Equipment cost	97.5±61.6	9.75±6.16	9.75±6.16	3.36±0.60	0.34±0.06	0.34±0.06
Total net cost	2803±361	18.9±5.08	2822±183	103±2.95	0.69±0.06	104±1.50

**DOC= Day-old chick; Total net cost is the sum of total gross cost and 10% depreciation of housing and equi cost.*

Table 3. Family-wise and bird-wise gross annual returns for indigenous chickens in Rajshahi, Bangladesh

Particulars	**Family-wise return (BDT)**	**Bird-wise return (BDT)**
Sale of eggs	5797±3230	211±22.5
Sale of spent hen	4539±2499	165±4.12
Sale of manure	233±172	8.03±1.32
Total income	10569±1967	384±9.31
Gross cost over gross return*	7776±1606	281±6.36
Net cost over annual return	7747±1601	280±4.86

** Gross cost over gross return is the deduction of total gross cost from total income while Net cost over annual return is the deduction of total cost from total income.*

Table 4. Cost-benefit ratios showing profitability of rearing indigenous chickens in Rajshahi, Bangladesh

Particulars	**Family-wise** (BDT)	**Bird-wise** (BDT)
A. Total cost of maintenance	2822±183	104±1.50
B. Returns from other products*	233±172	8.03±1.32
C. Net cost of maintenance (A-B)	2589±10.8	96.4±0.18
D. Returns from egg	5797±3230	211±22.5
E. Net returns (profit) (D-C)	3207	115
F. Cost-benefit ratios (E÷C)	1.24	1.19

** Other products include manure and excreta*

The present findings lend support to a previous report by Sumy et al (2010), where family-wise and bird-wise total income was BDT 2124.00 and BDT 223.95, respectively, which was higher than the net cost of BDT 1324.23 and BDT 138.70 respectively, giving family-wise and bird-wise CBR values of 1.60 and 1.61, respectively. Gross earnings of BDT 3310 from a flock of 18 chickens with an average of 3.9 layers suggested that improved management

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practices not only increased egg production but also contributed to higher household income, up to 23964 BDT per year (Sarkar and Golam 2009). In another study, gradual income scheme from poultry eggs resulted in a net gain of US$64-70 annually (1US$=80BDT) while quick return scheme from poultry meat produced a net income of US$96 for village women (Khan 2008). Total maintenance cost per RIR layer on average was BDT 429.88 and net return BDT 101.47 (Nair and Ghadoliya 2000) whereas the total maintenance cost per layer for small farms was found to be BDT 620.00 (Begum 2000). Differences in total maintenance cost with respect to the present study might be due to a longer period of rearing (*i.e.* 78 wks), which increased the production cost. Also improper management practices by the farmers in small production units might have contributed to the increased total maintenance cost. Conversely, CBR values of the present study are quite analogous with the previous findings (Bhuiyan 1999 and Nair and Ghadoliya 2000), where the values were 1.10 and 1.39, respectively.

Market prices of the indigenous chickens and their month-wise fluctuations revealed that price were not same in different markets throughout the year. The present findings are very much similar to an earlier study (Jahan et al 2003), where intermediaries and retailers were found to make higher profits compared to the growers. For this reason, sustainable growth of poultry industry demands formulation and implementation of a national poultry development policy with poultry production and its marketing system (Raha 2009). The farmers urged that for the development of indigenous chicken farming, low-cost feed, proper breeding facilities and improvement of indigenous breeds by crossing with exotic breeds are essential. In additions, the smallholder farmers in the study area also expressed their need for capital and institutional credit facilities for changing from small-scale to large-scale production.

Associations between various productive parameters

Co-efficient of correlation (r) values shown in Table 5 demonstrate that associations between GR *vs.* DR and FLA *vs.* FR of indigenous chickens were negative and insignificant ($P>0.05$) in all cases, while FR *vs.* HT had significant association only in Godagari, Poba ($P<0.05$) and Motihar ($P<0.01$). This might be due to the scavenging habit, which makes the indigenous chicken environmentally more adapted. The WDC *vs.* AMS showed negative correlation for all the cases except Mohonpur ($P<0.01$). Similar to the present results, correlations between body weight and morphometric traits (*e.g.* WDC) were positive and highly significant in three genetic groups of chickens *viz.* normal, frizzle and naked-neck (Yakubu et al 2009).

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AEP *vs.* ACR exhibited highly significant correlations in Boalia, Godagari and Rajpara (P<0.001) but insignificant one in Motihar. Highly significant association was also found for FLA *vs.* HT in Rajpara (P<0.001) while others showed negative and insignificant associations. This is similar to a recent finding in which the storage period was found to have no significant effect on the hatchability in partridges *Alectoris graeca* (Caglayan et al 2009). The present results, however, will be of much use in implementing successful and intensive breeding programmes for upgrading indigenous chicken.

Table 5. Correlations between various productive parameters of indigenous chickens in Rajshahi, Bangladesh

Thanas	GR *vs.* DR	FR *vs.* HT	WDC *vs.* AMS	AEP *vs.* ACR	FLA *vs.* FR	FLA *vs.* HT
Boalia	0.44ns	-0.99	-0.02ns	0.96***	-0.52ns	0.64ns
Godagari	-0.73*	0.72*	-0.27ns	0.99***	0.04ns	-0.44ns
Motihar	-0.81ns	0.89**	-0.05ns	0.24ns	-0.10ns	0.21ns
Mohonpur	-0.55ns	0.51ns	0.86**	0.83**	0.18ns	0.27ns
Poba	-0.13ns	0.76*	0.01ns	0.77*	0.00	0.04ns
Rajpara	-0.52ns	-0.35ns	0.58ns	0.83**	-0.17ns	0.96***

*ns = not significant; * = P<0.05; ** = P<0.01 and *** = P<0.001 (N=25 for each); GR=Growth rate; DR=Death rate; FR=Fertility; HT=Hatchability; WDC=Weight of day-old chick; AMS=Average marketable size; AEP=Average egg production per month; ACR=Average chicken raised per month; FLA=First laying age*

Conclusions

Indigenous chicken production on free-range scavenging system in six Thanas of Rajshahi District was found profitable, since family-wise and bird-wise CBR values were estimated to be 1.24 and 1.19, respectively. An alteration in the village chicken production systems in Rajshahi towards efficiently feasible enterprises would therefore require better understanding of the socio-economic aspects of the production system. The study indicated that there are great potentials for the development of indigenous chicken production in the rural areas of Bangladesh.

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