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Article

Reproductive potentials, meat yield and egg quality characteristics of indigenous dwarf chicken of Bangladesh

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Abstract: The study was conducted to investigate reproductive potentialities, meat yield and egg quality characteristics of indigenous dwarf chicken (IDC) of Bangladesh under intensive management condition. The experiment was conducted at BAU Poultry farm for a period of 26 months from March 2013 to April 2015.A total of 499 eggs were incubated to examine hatching performance, 64 eggs were used to determine egg quality characteristics and 33 birds of 24 weeks age were slaughtered to investigate meat yield characteristics. The mean of hatching egg weight and IDC chick weight were 39.81g and 26.68g, respectively. Estimated chick weight was 67.19% of the egg weight. The average mature body weight and age at sexual maturity of IDC was 1093.20 g and 166.53 d, respectively. The average hen day egg production of IDC up to 32 and 75 weeks of age was 55.22 and 37.43%, respectively. The estimated fertility and hatchability of IDC eggs were 78.36 and 71.80%. Among the meat yield parameters considered, dressed weight, breast weight and thigh meat weight varied significantly ($P<0.05$) between the males from IDC and the chicken with normal size shank (CNS). IDC also differed significantly ($P<0.01$) from CNS in terms of neck length ($P<0.01$) and drumstick bone length. Egg quality parameters like egg weight, shape index, yolk diameter and egg breaking strength varied significantly ($P<0.05$) between IDC and CNS. In addition, eggs of IDC and CNS showed significant ($P<0.01$) variation in dry albumen weight and albumen dry matter percent. In conclusion, the findings of the present study provided with some basic information about the potentialities of IDC which could be utilized in future breeding program.

Keywords: dwarf chicken; reproductive traits; meat yield; egg quality; Bangladesh

1. Introduction

Indigenous chicken contributes to rural livelihood, woman empowerment, food security, and still remains main genetic resource of Bangladesh. Chicken is the cheapest and important source of animal protein in the form of eggs and meat throughout the world including Bangladesh (Simon, 2009).The national share of commercial strain of chickens and indigenous family poultry in terms of egg production is almost equal (50:50) and that of meat production is 60:40 (Bhuiyan, 2011). About 89 % of rural households keep indigenous chicken with an average flock size of 5.33 per holding under backyard scavenging system (Bhuiyan *et al.*, 2013).The preferences of indigenous chicken are for pigmentation, taste, leanness, firmness, flavor and suitability for special dishes and even consumers pay more money for the products from indigenous chicken (Islam and Nishibori, 2009). Although indigenous chickens have lower in productivity but they are well adapted to tropical hot-humid climatic condition and better scavenger (Islam *et al.*, 1981). There are 255.31 million chicken in commercial and subsistence production (DLS, 2014).The available indigenous chicken genetic resources of

Bangladesh may be classified as Full Feathered Deshi, Dwarf, Naked Neck, Hilly, Tiger and Cap Headed chicken. Indigenous Dwarf Chicken (IDC) is found very few in number along with indigenous chicken throughout the country. However, they are relatively more concentrated in some selected areas of Mymensingh, Tangail, Rangamati, Rangpur and Barisal districts of Bangladesh.

Cole (1969) first described autosomal dwarf (*adw*) chicken and its inheritance. Dwarfing suppressed adult weight and feed intake without affecting egg production and egg quality and increased heat tolerance (Horst *et al.*, 1996). Pandey (1996) speculated the potentialities of dwarf as a future commercial hen which could be a future vista for poultry breeding. Yeasmin and Howlider (1998) reported dwarf gene in Bangladeshi indigenous chickens were partially recessive autosomal in nature. Rashid *et al.*(2005) found higher drumstick meat, thigh meat, breast meat as well as dressing yield in crossbred dwarf genotype. Eggs of dwarf ones contained larger yolks than that of normal counterparts (Yeasmin and Howlider, 1998; Rashid, 2000).

The economic success of a laying flock exclusively depends on the total number of quality eggs produced. Approximately 7-8% of the total amount eggs are broken through transfer of the eggs from the producers to the consumers (Hamilton, 1982). Egg weight and egg index are determinant of egg resistance to cracking and considered very important traits when eggs are packed in cage, crate or container (Peters *et al.,* 2007).The external and internal egg quality traits affect the future generations and their performance (Islam *et al.,*2001) which is immense importance to poultry breeding industries. Embryonic development of hen's egg is specially dependent on traits like egg weight, yolk and albumen weights and genotype (Onagbesan *et al*., 2007).So far there are very limited research findings and lack of information on reproduction, egg quality and meat yield characteristics on autosomal dwarf chickens. In addition, the potentiality of *adw* gene was not sufficiently explored and exploited in improving economic traits of indigenous chicken of Bangladesh. Therefore, the present study was aimed for the reproductive potentialities, meat yield and egg quality characteristics of Bangladeshi IDC under intensive management condition.

2. Materials and Methods

The experiment was carried out at Bangladesh Agricultural University (BAU) Poultry Farm, Mymensingh. Accordingly, dwarf chickens (48 females and 12 males) were collected from different upazilas of Rangamati, Mymensingh, Tangail and Rangpur districts based on their phenotypic features to develop a foundation stock. After collection they were quarantined and maintained at BAU poultry farm. The experiment was performed at BAU Poultry farm for a period of 26 months from March 2013 to April 2015.The hatching eggs were collected from the foundation stock and incubated. Birds of generation one (G_1) and two (G_2) has generated from the foundation stock (G_0) and maintained at BAU poultry farm.

2.1. Reproductive traits

Artificial insemination was practiced for all experimental birds. Insemination was done twice a week and collected semen of each cock was distributed to 6-9 hens. A total of 499 eggs; (241 from foundation stock, 102 from 1stgeneration and 156 from 2nd generation) were collected and hatched. The eggs were candled at 7th and 14th day of incubation and finally fertility, hatchability, dead-in-germ and dead-in-shell were recorded. Chicks were leg-banded after weighing the DOC. Eggs and birds were weighed individually using an electronic balance. During rearing egg weight, hen day egg production, age and weight at sexual maturity of birds were recorded.

2.2. Carcass traits measurements

A total of 33 birds (12 females and 9 males of IDC, 6 females and 6 males of the normal shanked chickens) were slaughtered at 24 weeks of age. The collected birds were fasted for 12h, and then slaughtered, weighed, eviscerated, dressed, dissected, and the meat stripped from carcass following the method of Jones (1984).

The recorded data of each bird were live weight, head, heart, gizzard, neck, breast meat, thigh meat, drumstick meat, skin, abdominal fat, wing meat, trimmed meat, dark meat (thigh meat + drumstick meat+ wing meat+ trimmed meat), total meat (breast meat + dark meat), and weight of thigh bone, drumstick bone, wing bone, and neck weight. An electronic balance was used to weigh chickens, the carcasses and the various cuts. Meat yield traits were converted into percentage of individual live weight prior to analyzing the data statistically.

2.3. Determination of egg quality characteristics

A total of 64 eggs (32 from IDC and 32 from CNS) were used to determine the egg quality characteristics. The egg quality characteristics recorded as egg shell weight, shell dry weight, shell (%), shell thickness and shell membrane thickness, Haugh unit, albumen dry matter (%), yolk color score, yolk index, fresh yolk and yolk dry matter (%). Egg weight was measured with the help of egg weighing balance. The length and width were measured by a slide calipers and their mean values were recorded. Eggs were carefully broken into two halves and the contents were gently poured on a flat horizontal glass, and the albumen and the yolk were carefully separated to measure their respective weight and height. The egg shell was also weighed after being dried under room temperature, however the membrane was removed carefully before measuring the egg shell thickness which was then measured as the average of three points (narrow end, middle and wide end).

2.4 Statistical analysis of experimental data

Mean along with standard error was estimated for reproductive traits. Student test (Independent sample t-test) was performed to the significant deviation between different parameters of meat yield and egg quality traits between IDC and CNS. Data analysis was performed using Statistical Package for Social Science (SPSS) software version 16.0 (2007).

3. Results and Discussion

3.1 Reproductive performance

The considered traits reproductive performance of IDC is presented in Table 1. The average age at sexual maturity of IDC was found 166.53 days. This finding is in agreement with the findings of Yeasmin *et al.* (2003) and Yousif and Eltayeb (2011). They reported age at sexual maturity in Bangladeshi and Sudanese IDC were 170.60 and 163.90 days respectively. Decuypere *et al.* (1991) reported a bit earlier sexual maturity in dwarfs (157 days). The average live weight at sexual maturity of IDC was found 1093.2 g. Yeasmin (2001) and Dakpogan *et al.* (2012) found live weight at sexual maturity of IDC of Bangladesh and Benin was 797.60 and 651.4g which were much lower than present study. Hartmann (1976) got 34% lower mature body weight in heterozygous dwarf broiler hens than that of normal. Amount and quality of feed offered, photo period, flock rearing system have influence on weight and age at sexual maturity. These attributes might be associated with the variation of the present study. The average hen day egg production of IDC up to 32 and 75 weeks of age was recorded 55.22 and 37.43% respectively. Year round egg production is within the range of the findings of Yeasmin and Howlider (1998) and Yeasmin *et al.* (2003) where they found hen day egg production of IDC were 33.50 and 43.26% respectively. Rate of lay of native dwarf chicken of Kenya, Benin and Sudan was 36, 33 and 39.32 % respectively reported by Njenga (2005), Dakpogan *et al.* (2012) and Yousif and Eltayeb (2011) respectively. The above mentioned findings coincide with the present study. The average hatching egg weight was found 39.81 g in the present study which have also been supported by the findings of Yeasmin and Howlider (1998) and Yeasmin *et al.* (2003) where they obtained egg weight of IDC were 39.12 and 37.10 g respectively. Njenga (2005) and Dakpogan *et al.* (2012) found egg weight of IDC were 38.1 and 39.1g respectively which are almost similar to the current study. The egg weight was higher in NSC (39.27±0.14) than IDC (38.55±0.10). Yeasmin and Howlider (1998) and Yeasmin *et al.* (2003) obtained egg weight of IDC were 39.12 and 37.10 g respectively and 39.99 and 37.76 g for NSC respectively which was agreed by the present findings. Njenga (2005) and Dakpogan *et al.* (2012) found egg weight of IDC of Kenya and Benin was 38.1 and 39.1g respectively and 42.5 and 41.6 g for normal chicken which are more or less similar to the current study.

3.2 Hatching performance

Hatching performance of IDC was presented in Table 2. The highest fertility (87.82%) was observed in G_2 of IDC where the lowest fertility (71.78%) was found in G_0. The highest hatchability (73.97%) was observed in G_1 where the lowest hatchability (70.07%) was found in G_2.Yeasmin (2001) and Yousif and Eltayeb (2011) reported the fertility and hatchability of Bangladeshi and Sudanese IDC was found 77.56 and 59.91%, 76.08 and 65.60% respectively where the fertility is much closer and the hatchability is much lower to the present findings. Njenga (2005) reported the fertility and hatchability of Kenyan IDC was found 65.4 and 77.6%. This study also reflected lower fertility and higher hatchability than the present study. Rashid *et al.* (2005) reported that fertility and hatchability of dwarf genotype (dwarf females × males of exotic breed) varied from 90.92 to 95.57 % and 67.19 to 72.14 % respectively. The fertility rate of this investigation is much higher than present study but hatchability percent is within the range of the present findings. Uddin *et al.* (2007) found fertility and hatchability of Redbro×dwarf and Naked Neck × dwarf was 74.25 and 81.0%, 78.00 and 83.75% respectively. These results also support the present investigation. Hatchability of eggs is influenced by genetic environmental factors like storage temperature and humidity, care of egg, quality of eggs, age and nutrition of layers and season etc. (Olsen and Hyne 1984). Fertility is influenced by genetic, physiological, social and environmental factors, male-female ratio, egg production rate, nutritional status, preferential mating, lighting, sperm quality and age of hen. One or more attributes might be associated for the deviation between present results and previous findings.

Average chick weights of IDC were 26.57, 26.61, 26.86 g over the generations of G_0, G_1 and G_2 respectively. Chick-hatched weights expressed as percentage of egg weight were 67.08, 67.08 and 67.32 % for G_0, G_1 and G_2 respectively. There is a positive relationship between egg weight and chick-hatched weight (g) in each generation. Yeasmin (2001) found chick weights of IDC were 27.51g which is very close to the present study. The results coincide with the findings of Strong and Japp (1977) who reported that the dwarf gene had no detectable effect on the weight of the day old chick. Rashid (2000) observed that day-old chick weight of RIR × dwarf and Fayoumi× dwarf genotypes was 26.60 and 26.22 g respectively. DOC weight has been reported to be 62 to 72% (Wilson, 1991) and 68.2% (Murad *et al*., 2001) of the egg weight which were more or less similar to the present results.

3.3. Embryonic dead loss

The estimated mean dead in germ (DIG) and dead in shell (DIS) percentage of IDC ranged between 10.37-14.1% and 7.84-12.18% respectively (Table 2). Rashid *et al*. (2005) reported that DIG and DIS were 15-18.43% and 12.13-14.68% respectively in crossbred dwarf genotypes which was higher than the present findings. In another study, Khatun *et al.* (2005) showed similar result for DIS (12.24±2.14) but quit lower percent was found for DIG (1.60±0.50). DIG and DIS may be less dependent on genotypes rather may be more influenced by management and environment.

Table 1. Reproductive performance of indigenous dwarf chicken.

Generation	Mean±SE				
	Age at sexual maturity (day)	**Weight at sexual maturity (g)**	**Hen day egg production (32 wks)**	**Hen day egg production (75wks)**	**Egg weight (g) (Mean±SE)**
G_1	168.06±1.31 (32)	1098.31±14.17 (32)	54.38±1.41 (32)	36.89±1.56 (27)	39.67±0.17 (102)
G2	164.79±1.28 (28)	1087.36±5.29 (28)	56.18±1.28 (28)	38.01±1.69 (25)	39.90±0.20 (156)
Overall mean	166.53±0.93 (60)	1093.20±10.27 (60)	55.22±0.96 (60)	37.43±1.14 (52)	39.81±0.14 (258)

SE- Standard error, G- Generation, values in the parentheses indicate the number of observation

Table 2. Hatching performance of indigenous dwarf chicken.

Generation	Fertility (%)	Hatchability on fertile egg (%)	DIG (%)	DIS (%)	DOC weight (g) (Mean±SE)	% of Chick weight
G_0	71.78 (173)	72.25 (125)	10.37 (25)	9.54 (23)	26.57±0.19 (125)	67.08 (125)
G_1	79.41 (81)	73.97 (54)	10.78 (11)	7.84 (8)	26.61±0.17 (54)	67.08 (54)
G2	87.82 (137)	70.07 (96)	14.10 (22)	12.18 (19)	26.86±0.14 (96)	67.32 (96)
Overall mean	78.36 (391)	71.80 (275)	11.62 (58)	10.02 (50)	26.68±0.09 (275)	67.19 (275)

*DIG- Dead in germ, DIS- Dead in shell, DOC- Day old chick, SE- Standard error, G- Generation, values in the parentheses indicate the number of observation

Table 3. Dressing parameters of indigenous dwarf chicken and their normal shanked counterparts.

Parameter (% in relation to body weight)	Mean±SE					
	IDM(n=9)	NSM(n=6)	Sig. level	IDF(n=12)	NSF(n=6)	Sig. level
Body weight (g)	1643.1±58.9	1829.5±23.9	NS	1076.7±10.4	1275.2±23.8	NS
Dressed weight	65.44^{b}±1.34	67.22^{a}±0.27	*	64.86±0.87	65.68±0.84	NS
Breast meat weight	9.16^{a}±0.36	8.57^{b}±0.9	*	10.16±0.19	10.48±0.25	NS
Thigh meat weight	9.16^{b}±0.64	9.35^{a}±0.15	*	7.70±0.27	8.64±0.36	NS
Thigh bone weight	1.57±0.12	1.60±0.07	NS	1.38^{b}±0.07	1.47^{a}±0.004	*
Thigh bone length (cm)	7.98±0.27	8.05±0.18	NS	6.26±0.15	6.75±0.23	NS
Drumstick meat weight	7.24±0.22	7.83±0.45	NS	4.91±0.24	6.48±0.12	NS
Drumstick bone weight	2.11±0.11	2.31±0.18	NS	1.84±0.15	1.94±0.10	NS
Drumstick bone length (cm)	10.70^{b}±0.45	13.23^{a}±0.21	**	8.15±0.31	10.02±0.45	NS
Wing meat weight	3.37^{b}±0.04	3.51^{a}±0.22	**	2.40^{b}±0.17	3.02^{a}±0.09	*
Wing bone weight	2.69^{b}±0.04	2.88^{a}±0.22	*	2.33±0.12	2.59±0.20	NS
Wing bone length (cm)	18.36±0.42	21.13±0.34	NS	14.69±0.41	16.86±0.56	NS
Skin weight	5.97±0.33	6.12±0.54	NS	6.43±0.07	6.78±0.05	NS
Head weight	4.42±0.31	5.26±0.76	NS	2.20±0.03	2.95±0.06	NS
Liver weight	1.57±0.08	1.54±0.03	NS	2.40^{a}±0.13	2.31^{b}±0.03	*
Heart weight	0.56±0.02	0.43±0.02	NS	0.41±0.03	0.32±0.02	NS
Neck weight	3.38±0.19	3.84±0.37	NS	2.84±0.18	2.88±0.33	NS
Neck length (cm)	13.92^{b}±0.13	14.58^{a}±0.64	**	12.46^{b}±0.12	12.99^{a}±0.65	**
Gizzard weight	1.67±0.08	1.72±0.09	NS	1.89±0.06	2.03±0.05	NS
Dark meat weight	19.77±0.71	20.70±0.73	NS	14.65±0.66	18.14±0.52	NS
Total meat weight	28.94±0.98	29.27±1.26	NS	24.34±0.91	29.01±0.69	NS

IDM= Indigenous Dwarf Male, IDF= Indigenous Dwarf Female, NSM= Normal Shanked Male, NSF= Normal Shanked Female, SE= Standard Error, Row wise different superscript denote significant level at *P<0.05, **P<0.01

Table 4. Egg quality characteristics of dwarf and normal shanked chicken.

Parameter	Mean± SE		
	IDC (n=32)	CNS (n=32)	Significance level
Egg weight (g)	38.55^{b}±0.10	39.27^{a}±0.14	*
Egg length (mm)	46.65±0.16	47.93±0.15	NS
Egg width (mm)	35.07±0.11	35.52±0.11	NS
Shape Index	75.21^{a}±0.21	74.13^{b}±0.34	*
Albumen diameter (mm)	71.64±0.58	72.50±0.33	NS
Albumen height (mm)	5.25±0.04	5.15±0.05	NS
Albumen index	7.34±0.06	7.10±0.08	NS
Yolk diameter (mm)	37.59^{b}±0.24	38.44^{a}±0.46	*
Yolk height (mm)	15.02±0.17	13.92±0.16	NS
Yolk index	40.02±0.55	36.40±0.67	NS
Yolk color score	7.03±0.13	7.13±0.13	NS
Haugh unit	79.59±0.28	78.54±0.33	NS
Fresh yolk weight (g)	13.16±0.10	12.32±0.09	NS
Dry yolk weight (g)	6.85±0.04	6.32±0.04	NS
Yolk dry matter (%)	52.10±0.21	51.33±0.28	NS
Fresh albumen weight (g)	17.13±0.11	18.39±0.14	NS
Dry albumen weight (g)	2.34^{b}±0.02	2.44^{a}±0.03	**
Albumen dry matter (%)	13.70^{a}±0.13	13.31^{b}±0.23	**
Shell thickness (mm)	0.34±0.005	0.33±0.015	NS
Shell membrane thickness (mm)	0.032±0.00	0.023±0.00	NS
Shell weight (g)	3.61±0.03	3.62±0.02	NS
Shell (%)	9.37±0.08	9.22±0.08	NS
Egg breaking strength	1437.4^{b}±3.57	1462.0^{a}±4.81	*

IDC= Indigenous Dwarf chicken, CNS= Chicken with normal size shank, SE= Standard Error, Row wise different superscript denote significant level at *P<0.05, **P<0.01

3.4. Muscular and skeletal differences in indigenous dwarf and normal shanked chicken

Meat yield characteristics of indigenous dwarf male (IDM) and female (IDF), and normal shanked male (NSM) and female (NSF) were presented in Table 3. Among the meat yield parameters considered, dressed weight, breast weight and thigh meat weight varied significantly (P<0.05) between IDM and NSM. However, non-significant result was found for these three parameters between IDF and NSF. Wing meat weight was also differed significantly between dwarf and normal shanked males (P<0.01) and their females (P<0.05). Significant result (P<0.05) was found for liver weight in between IDF and NSF but non-significant result was observed for this parameter in male lines. In addition, several skeletal parameters like thigh bone and wing bone weight differed significantly (P<0.05) between dwarf chicken and their normal counterparts where highly significant result was found for neck length (P<0.01) and drumstick bone length (P<0.01) between dwarf versus normal shanked chicken. Statistically non-significant value was observed for the traits like percentage of dark meat (thigh, drumstick and wing meat), total meat (dark and breast meat), drumstick meat, drumstick bone, skin, head, neck, gizzard weight, and thigh bone and wing bone length between dwarf and normal shanked counterparts despite IDM and IDF had lower value compared to normal shanked chicken.

Kgwatalala *et al.* (2013) found lower percentage of dressed weight in local dwarf chicken than normal shanked chicken of both sexes. They recorded 62.92 and 62.09% for dwarf male and female as well as 65.0 and 64.38% for normal male and female chickens of Botswana. Higher dressing yield of normal shanked chicken of this study was supported by Kgwatalala *et al.* (2013), Howlider and Afrin (2013), and Rashid *et al.* (2005). Howlider and Afrin (2013) found that dressing yield of Redbro×dwarf and Naked neck × dwarf cross were 65.29 and 65.92% and their female counterpart were 61.19 and 64.65% respectively which coincides with the present study. But Rashid *et al.* (2005) observed that dressing yield of White Leghorn × dwarf males and females were 71.85 and 58.95% which is quite higher than present findings. Percentage of breast meat weight was found higher in female than males of both genotypes is supported by the findings of Howlider and Afrin (2013), and Rashid *et al.* (2005) in Naked neck× dwarf and White Leghorn× dwarf crossbred respectively. According to pre-slaughter weight Kgwatalala *et al.* (2013) found breast, thigh and wing meat weights were lower in dwarf chickens than normal chicken but males had higher values than female of both genotypes which consistence with the present study. However, higher breast meat percent in females found in the current study is supported by Grey and Richardson (1988) who got 3.5% higher breast meat in females than in males. Females of both genotypes showed higher percentage of liver weight than male counterparts which is similar to the findings of Rashid *et al.* (2005) in dwarf and normal White Leghorn crossbred chickens. Drumstick bone lengths were lower in dwarf genotypes of Leghorn crossbred than normal shank counterparts and male showed higher values than female counterparts was observed by Rashid *et al*. (2005) which are in agreement with the present findings.

3.5. Egg quality characteristics

Egg quality characteristics of Dwarf and normal shanked chicken are presented in Table 4. Shape index, yolk diameter and egg breaking strength varied significantly (P<0.05) between IDC and CNS. On the other hand highly significant (P<0.01) result was found for dry albumen weight and albumen dry matter parameters between IDC and CNS. Other egg quality characteristics showed little differences between dwarf and normal shanked hens (Table 4) although all of them were found non-significant.

Table 4 showed that shape index was higher in IDC (75.21±0.21) than CNS (74.13±0.34). Yeasmin and Howlider (1998), Zhang *et al*. (2005) and Dakpogan *et al*. (2012) found shape index for IDC of Bangladesh, brown-egg dwarf layer in China and native dwarf chicken of Benin were 75.87, 74.0 and 75.51 respectively which coincides with the present findings. Njenga (2005) reported shape index for Kenyan native dwarf chicken was 80 which is higher than the present study. The autosomal dwarfism increased egg shape indices irrespective of breed agree with Rashid (2000) who also found increased shape indices for autosomal dwarfism in RIR, White Leghorn and Fayoumi.

Eggshell breaking strength was higher in CNS (1462±4.8) than IDC (1437.4±3.6) which is almost similar to the findings of Yeasmin and Howlider (1998) where they found the calculated values were 1480 and 1450 for CNS and IDC respectively. Triyuwanta and Nys (1990) reported that in dwarf hens shell quality was less affected by elevated temperature and feed restriction which disagree with the present investigation. However, Khoo and Beh (1977) did not found any significant difference in shell breaking strength attributable to dwarf gene. Yolk diameter was found 37.59±0.24 and 38.44±0.46 mm for IDC and CNS respectively. Uddin *et al.* (2007) reported that yolk diameter was 43.8 and 48.1 mm for Redbro× Dwarf and Naked neck × Dwarf crossbred which was higher than the present study. Dry albumen weight and albumen dry matter percent was recorded 2.34±0.02 and 13.70±0.13 g, 2.44±0.03 and 13.31±0.23g for IDC and CNS respectively which is closer to the findings of Yeasmin (2001) who reported that dry albumen weight were 2.3±0.09 and 2.8±0.09g and albumen dry matter percent were 13.43±0.38 and 14.24±0.38 g for IDC and CNS respectively. Introgression of autosomal dwarf gene tended to increase albumen dry matter percentage in general which partially aggress with Khoo and Beh (1977) who got superior albumen quality in dwarf hens than in normal. The variation may be attributed to the genetic makeup of birds, feed composition utilized and the atmosphere conditions prevailing in the study areas.

4. Conclusions

The present investigation revealed better productive and reproductive performance of dwarf chicken compared to available indigenous chicken. Some meat yield and egg quality parameter also found better in dwarf chicken. The genetic potentials of dwarf chicken of Bangladesh has established through this study. However, this study gives some basic information about indigenous dwarf chicken which could be utilized to develop mini layer suitable for semi-scavenging system of Bangladesh.

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Conflict of Interest

None to declare

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