



E-ISSN: 2320-7078

P-ISSN: 2349-6800

www.entomoljournal.com

JEZS 2021; 9(1): 1982-1984

© 2021 JEZS

Received: 19-11-2020

Accepted: 21-12-2020

C Lalhlimpuia

JRF, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram, India

N Shyamsana Singh

Associate Professor and Head, Department of Animal Breeding and Genetics, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram, India

P Mayengbam

Associate Professor, Department of Veterinary Physiology and Biochemistry, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram, India

TC Tolengkomba

Assistant Professor (SG), Department of Animal Genetics and Breeding, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram, India

Corresponding Author:**N Shyamsana Singh**

Associate Professor and Head, Department of Animal Breeding and Genetics, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram, India

Physical characteristics of Zoar: The indigenous chicken of Mizoram, India

C Lalhlimpuia, N Shyamsana Singh, P Mayengbam and TC Tolengkomba

Abstract

An investigation was conducted to evaluate the physical characteristics of the indigenous chicken 'Zoar' of Mizoram, India in its breeding tract (Aizawl and Mamit districts). The findings indicated that the mean body weight of cock and hen of the Zoar chicken were 2024 ± 40.2 and 1367.4 ± 19.2 g, respectively. The body measurement traits such as the body length, chest girth, shank length, breast angle and a wing span of cock and hen in this native chicken averaged as 51.97 ± 0.22 and 42.73 ± 0.28 cm, 32.56 ± 0.17 and 28.93 ± 0.17 cm, 10.86 ± 0.04 and 8.90 ± 0.05 cm, 55.67 ± 0.30 and $50.81 \pm 0.32^\circ$, and 77.96 ± 0.35 and 71.37 ± 0.25 cm, respectively. The mean values of the wattle length, comb width, comb height and beak length of Zoar cocks and hens were recorded as 3.12 ± 0.11 and 1.58 ± 0.07 cm, 6.15 ± 0.08 and 3.30 ± 0.13 cm, 3.54 ± 0.06 and 1.50 ± 0.08 cm, and 3.00 ± 0.02 and 2.74 ± 0.02 cm, respectively. Cocks showed significantly higher mean values than that of hens for all the traits studied. The findings suggested that the indigenous chicken 'Zoar' of Mizoram is a medium sized bird with a moderately developed single comb and wattle, and long beak, shank and a wing span.

Keywords: indigenous chicken, Zoar, Mizoram, body weight, chest girth

1. Introduction

The backyard system of poultry farming is age old farming practice for rural livelihood, income generation and also acts as a source of animal protein to the rural people. In such a system, region or area specific indigenous chicken plays an important role as they can thrive well under a scavenging system of rearing. Moreover, the meat of the indigenous chicken is preferred over that of commercial birds due to more taste, leanness and flavour. Their eggs and meat fetch more price than those of commercial hybrids. Although, they are poor in productivity, the presence of broodiness behaviour is an added advantage for self propagation in remote rural areas. Zoar, the indigenous chicken of Mizoram is one of the diverse indigenous chicken germplasm available in India. Rearing of a few Zoar birds in the backyard alongside 1-2 pigs is a deep-rooted practice and a custom of the Mizo individuals. They possess normal feathered morphology with multi-coloured plumage and featherless shank^[8]. This indigenous chicken is very well adapted in the hilly terrain of Mizoram under almost zero or little external input. It is still considered a non-descript type of chicken in the country due to lack of information on its physical characteristics. Thus, the present investigation was undertaken to evaluate the physical characteristics of Zoar chicken in its breeding tract.

2. Materials and Methods**2.1 Place of study**

The present investigation was carried out in two districts (Aizawl and Mamit) of Mizoram, which were purposively selected due to more concentration of the Zoar chicken.

2.2 Sampling methodology

From each district, 10 villages were purposively selected based on the availability of this chicken. Ten numbers of households who are rearing this indigenous chicken were considered from a village in the study. A total of 154 Zoar chickens (102 hens and 52 cocks) were evaluated for physical characteristics such as various body and head characteristics as per the standard descriptor^[4].

2.3 Statistical analysis

The frequencies of various physical characteristics were analyzed using the Chi square test to find out the significant difference between the birds of the two districts for any of the traits.

3. Results and discussion

3.1 Body characteristics

In the present study, the body weight of cock and hen of indigenous chicken of Mizoram averaged as 2024 ± 40.2 and 1367.4 ± 19.2 g, respectively (Table 1). The present findings are in agreement with that of the indigenous chicken of Manipur, India [10]. They reported that the adult male and female weighed 2126.7 ± 286.8 and 1333.3 ± 135.9 g, respectively. Similar findings were also noticed in Punjab brown birds of Punjab state, where the average male and female body weight were found to be 2.10 ± 0.11 and 1.70 ± 0.04 kg, respectively [13]. Ghagas male and female birds also weighed 2.2 ± 0.25 and 1.4 ± 0.81 kg, respectively [11]. However, the present results were more than that of Tellicherry fowl (1.62 ± 0.16 kg for male and 1.24 ± 0.10 kg for female) [12] and Bursa (1.11 ± 0.06 kg for male and 0.98 ± 0.06 kg for female) [14], but lower than that in Danki chicken (3.1 ± 0.09 kg for male and 2.2 ± 0.06 kg for female) and in Kalasthi chicken (2.5 ± 0.03 kg for male and 1.9 ± 0.10 kg for female) [11].

The average body length of Zoar cocks and hens was measured as 51.97 ± 0.22 and 42.73 ± 0.28 cm, respectively. The respective mean values of chest girth were recorded as 32.56 ± 0.17 cm and 28.93 ± 0.17 cm. The results were comparable with the values observed in the indigenous chicken of Manipur [10], who noticed the mean values of these two traits as 50.73 ± 6.84 and 45.98 ± 4.67 cm, and 31.51 ± 4.25 and 28.53 ± 2.90 cm in cocks and hens, respectively. However, lower estimates of body length of male and female as 46.23 ± 0.64 and 39.46 ± 0.18 cm, respectively were reported in the indigenous dwarf chicken of Bangladesh [5]. In non-descript desi hilly birds, a lower estimate of 43.64 cm for body length was observed [3].

The shank length of the Zoar cocks and hens averaged as 10.86 ± 0.04 and 8.90 ± 0.05 cm, respectively (Table 1). The findings were in close agreement with that of Mizoram local chicken reared under an intensive system [6]. They recorded it as 94.81 mm at 40th week age. Similar findings had also been reported in non-descript desi as 10.3 cm for Hilly birds [3]. On the contrary, lower estimates than the present results were observed for the local chicken of Assam [8] and Kadaknath chicken [2, 7].

In the present study, the average breast angle of adult indigenous chicken of Mizoram was recorded as $52.45 \pm 0.30^\circ$ (Table 1). Cocks had a significantly ($P \leq 0.05$) higher breast angle of $55.67 \pm 0.30^\circ$ than in hens ($50.81 \pm 0.32^\circ$). The result was comparable with that in the local chicken of Manipur [10], who also reported the average breast angle as

$53.32 \pm 4.32^\circ$. In Assam local chicken, slightly higher estimate of $55.21 \pm 6.92^\circ$ than the present result estimate was reported [8]. However, in Kadaknath and Aseel chicken, a much higher mean value of 70.45° had been recorded [2].

The overall average wing span of indigenous chicken of Mizoram was measured as 73.60 ± 0.32 cm (Table 1). Cocks showed significantly higher wing span of 77.96 ± 0.35 cm than in hens (71.37 ± 0.25 cm). In local chicken of Manipur, lower values of 61.33 ± 8.27 and 55.99 ± 5.69 cm in males and females, respectively were reported [10]. The results of the present study suggested that the indigenous chicken of Mizoram has a well-developed wing span, which might have been evolved during evolution to help them to fly for short distances from their predators during the free range system.

3.2 Head characteristics

In the present study, the average wattle length of indigenous chicken of Mizoram was estimated as 2.11 ± 0.09 cm (Table 1). Cocks had significantly higher wattle length of 3.12 ± 0.11 cm than in hens (1.58 ± 0.07 cm). Similar to the present finding, the mean wattle length of male and female indigenous chicken of Ethiopia as 3.15 ± 0.08 and 0.81 ± 0.06 cm, respectively had also been reported [1]. Smaller size wattle had been reported in indigenous chicken of Manipur, India [10], who measured it as 2.40 ± 0.32 and 0.64 ± 0.06 cm in adult males and females, respectively with an overall mean value of 1.27 ± 0.10 cm.

In Zoar chicken of Mizoram, the average comb width and height were 4.25 ± 0.17 and 2.17 ± 0.10 cm, respectively (Table 1). Cocks showed significantly ($P \leq 0.05$) higher comb width and height of 6.15 ± 0.08 and 3.54 ± 0.06 cm, respectively than in hens (3.30 ± 0.13 cm for width and 1.50 ± 0.08 cm for height). The present findings are comparable to indigenous chicken of Ethiopia [1]. They reported the male comb width and height as 5.88 ± 0.12 and 2.16 ± 0.09 cm, respectively and the female comb width and height as 2.53 ± 0.09 and 0.84 ± 0.06 cm, respectively. Contrary to the present findings, the male and female of indigenous dwarf chicken of Bangladesh had an average comb length of 12.61 ± 0.31 and 5.125 ± 0.09 cm respectively [5].

The mean beak length recorded in the present study in the indigenous chicken of Mizoram was recorded as 2.83 ± 0.02 cm (Table 1). Cocks had significantly ($P \leq 0.05$) longer beak of 3.00 ± 0.02 cm than in hens (2.74 ± 0.02 cm). The findings revealed that the local chicken of Mizoram is a long beak type chicken, which might have been evolved due to their scavenging system of rearing in this hilly terrain. The results were in agreement with that in indigenous chicken of Manipur [10]. He reported the male and female average beak lengths were 3.23 ± 0.44 and 2.88 ± 0.29 cm, respectively.

The present findings of non-significant differences in various quantitative traits of the indigenous chicken 'Zoar' of Mizoram between the two districts studied indicated the similarities in their genetic background.

Table 1: Mean values of physical characteristics of Local chicken 'Zoar' of Mizoram, India

Sl. No.	Class Traits	District		Sex		Over all (154)
		Aizawl (77)	Mamit (77)	Male (52)	Female (102)	
A. Body characteristics						
1.	Body Weight ^{NS} (g)	1561.7 ± 38.3	1616.6 ± 49.3	2024 ± 40.2 ^a	1367.4 ± 19.2 ^b	1589.1 ± 31.2
2.	Body length ^{NS} (cm)	45.79 ± 0.24	45.90 ± 0.60	51.97 ± 0.22 ^a	42.73 ± 0.28 ^b	45.85 ± 0.41
3.	Chest girth ^{NS} (cm)	29.89 ± 0.23	30.42 ± 0.24	32.56 ± 0.17 ^a	28.93 ± 0.17 ^b	30.15 ± 0.19
4.	Shank length ^{NS} (cm)	9.54 ± 0.12	9.60 ± 0.12	10.86 ± 0.04 ^a	8.9 ± 0.05 ^b	9.57 ± 0.08

5.	Breast angle ^{NS} (°)	53.54 ±0.34	51.37 ±0.46	55.67 ±0.30 ^a	50.81 ±0.32 ^b	52.45 ±0.30
6.	Wing span ^{NS} (cm)	74.09 ±0.42	73.10 ±0.49	77.96 ±0.35 ^a	71.37 ±0.25 ^b	73.60 ±0.32
B. Head characteristics						
1.	Wattle length ^{NS} (cm)	1.90 ±0.12	2.31 ±0.12	3.12 ±0.11 ^a	1.58 ±0.07 ^b	2.11 ±0.09
2.	Comb height ^{NS} (cm)	2.17 ±0.15	2.18 ±0.13	3.54 ±0.06 ^a	1.50 ±0.08 ^b	2.17 ±0.10
3.	Comb length ^{NS} (cm)	4.24 ±0.20	4.26 ±0.19	6.15 ±0.08 ^a	3.30 ±0.13 ^b	4.25 ±0.15
4.	Beak length ^{NS} (cm)	2.82 ±0.02	2.84 ±0.18	3.00 ^a ±0.02 ^a	2.74 ±0.02 ^b	2.83 ±0.02

^{NS}Non significant difference between the districts; ^{ab} Means bearing different superscripts in a row within a sub-class differed significantly ($P \leq 0.05$).

4. Conclusion

The findings suggested that the indigenous chicken 'Zoar' of Mizoram is a medium sized bird with a moderately developed single comb and wattle, long beak and shank, and a well developed wing span.

5. Acknowledgement

The authors are thankful to Central Agricultural University, Imphal, Manipur and all the staff of the Department of Animal Genetics and Breeding, C.V. Sc. & A.H., Selesih, Aizawl, Mizoram for providing financial support as well as technical assistance respectively during study.

6. Reference

- Aklilu E, Kebede K, Dessie T, Banerjee AK. Phenotypic characterization of indigenous chicken population in Ethiopia. *International Journal of Interdisciplinary and Multidisciplinary Studies* 2013;(11):24-32.
- Chatterjee RN, Sharma RP, Reddy MR, Niranjana M, Reddy BLN. Growth, body conformation and immune responsiveness in two Indian native chicken breeds. *Livestock Research for Rural Development* 2007;19(10):245-256.
- Faruque S, Siddiquee NU, Afroz MA, Islam MS. Phenotypic characterization of native chicken reared under intensive management system. *Journal of Bangladesh Agricultural University* 2010;8(1):79-82.
- FAO. Animal Genetic Resources Data Bank. 3: Descriptor lists for Poultry. FAO animal production and Health, No. 59/3, Rome, Italy 1986, 144.
- Ferdaus AJM, Bhuiyan MSA, Hassin BM, Bhuiyan AKFH, Howlider MAR. Phenotypic characterization and productive potentialities of indigenous dwarf chicken of Bangladesh. *Bangladesh Journal of Animal Science* 2016;45(1):52-61.
- Haunshi S, Doley S. Performance of native chicken of Mizoram under intensive system of rearing. *Indian Veterinary Journal* 2011;88(3): 45-47.
- Haunshi S, Shanmugam M, Niranjana M, Rajkumar U, Reddy MR, Pandam AK. Evaluation of two Indian native chicken breeds for reproduction traits and heritability of juvenile growth traits. *Tropical Journal of Animal Health and Production* 2012;44:969-973.
- Kalita N, Pathak N, Islam R. Performance of indigenous chicken in Intensive system of management. *Indian Veterinary Journal* 2012;89(12):43-44.
- Lahlimpua C, Singh NS, Prva M, Chaudhary JK, Tolengkomba TC. Phenotypic characterization of native chicken 'Zoar' of Mizoram, India in its home tract. *Journal of Entomology and Zoology Studies* 2021;9(1):1756-1759.
- Singh KM. Phenotypic characterization of local chicken of Manipur in its home tract. M.V.Sc. Thesis, Submitted to Central Agricultural University, Imphal, Manipur 2013.
- Vij PK, Tandia MS, Kumar BST, Viji RK. Characterization of Aseel, Danki, Kalasthi and Ghagus breeds of Chicken. *Indian Journal of Animal Sciences* 2006a;78(12):1420-1422.
- Vij PK, Tandia MS, Kumar KA, Viji RK. Phenotypic and Genetic Characterizations of Tellicherry breed of chicken. *Indian Journal of Animal Sciences* 2008;78(12):1420-1422.
- Vij PK, Tandia MS, Viji RK. Characterization of Punjab Brown chicken. *Animal Genetic Resources Information* 2006b;39:65-76.
- Vij PK, Tandia MS, Viji RK. Phenotypic and Genetic Characterizations of Bursa Breed of Chicken. *Indian Veterinary Journal* 2009;86(8):864-866.