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A study on the performance of the Daothigir breed of chicken under intensive system of management in Assam

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Abstract

A study has been under taken to set up a benchmark on the performance of Daothigir birds under intensive system of management. The different traits measured were body weight of the birds at various week of age. Conformation traits and FCR at 5th week of age, age at maturity, egg weight at 32nd, 42nd, 52nd, 72nd weeks of age, egg production upto 72nd week, fertility and hatchability of egg, carcass characteristics and egg quality. Body weight at day old of combined sex was recorded as 25.50±0.95 g. Daothigir breed attained 1020.70±108.90 g body weight at 20th week of age. The Feed Conversion Ratio, breast Angle, shank length and keel length recorded at 5th week of age were 3.10, 41.5°, 5.06±0.05 cm and 5.45±0.20 cm respectively. At the end of 72nd week the egg production was recorded as 124.60±6.90 numbers. Albumen index, yolk index and haugh units recorded at the end of 72nd week in the present study were 3.85±0.93, 0.49±0.43 and 83.16±3.34 respectively. The dressing and giblet percentage for both male and female recorded in the present study are 73.88±2.68, 72.22 ±3.51 and 5.76±0.67, 6.75±1.02 respectively. Therefore it can be concluded that Daothigir has the production potential for higher production.

Keywords: conformation traits, Daothigir, egg quality, intensive system, performance

Introduction

Backyard poultry in Assam is based on conventional practices with little or no dependence on external inputs, which serves as a livelihood security and low cost animal protein source to the farmers. Indigenous breeds are comparatively disease resistant and well adaptive to the agro climatic condition of its place of origin. According to the 19th livestock census Assam's total poultry population was recorded as 27.2 million in 2012 which showed an astonishing 71.63 % change in 20th livestock census to reach 46.7 million in 2019 (DAHD, 2019).

Daothigir is one of the 19 registered breeds of chicken in India where as second in Assam following Miri breed, estimated population of Daothigir breed in the entire BTC region was around 14000 in the year 2005. (NBAGR, 2006). This breed is only found in the district of Kokrajhar, Chirang, Udalguri and Baska in Assam, reared mainly by the local bodo tribes under backyard or free range system of rearing. The breed derives its name from a plant "Thigir" (*Dillenia indica*) found in this region. This plant bears flowers of different colors similar to the plumage color of this bird. The shape of this flower also resembles the comb of these birds. In bodo language Dao means birds and hence the name of this bird Daothigir. It is small sized compact but heavy bodied with black interspersed with white feathers, striped and spotted pattern. (Vij *et al.* 2006)^[9].

There is hardly any information available for this breed of bird in respect of different traits in intensive system of management as population and distribution is limited to few pockets of Assam. Keeping in view of these facts this study has been under taken to set up a benchmark on the performance of Daothigir birds under intensive system of management.

Materials and Methods

Location of the study: The experiment was conducted under the project "AICRP on poultry breeding" Directorate of research (Vety.), Assam Agricultural University, Khanapara, Guwahati-22.

Selection of the experimental birds: A total of 300 number of day old chicks were procured from the hatchery of AICRP on poultry breeding and reared in the farm premises in deep litter

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system of management with standard managerial practice. All the birds were vaccinated and dewormed as per the standard schedule. The different traits measured were body weight of the birds at day old, 5th week, 20th week, 40th week and 52th week of age. Conformation traits at 5th week of age, FCR at 5th week of age, age at maturity, egg weight at 32nd, 42nd, 52nd, 72nd weeks of age, egg production upto 40th, 52nd and 72nd week, fertility and hatchability of egg over the period of time, carcass characteristics and egg quality.

For determination of carcass characteristics at 20 weeks of age 20 number of birds of both sexes were selected at random and slaughtered scientifically. For determination of egg quality traits 80 numbers of egg at different age were collected and various parameter were recorded.

Data analysis: All the data obtain were analyzed statistically as per the method describe by snedecor and Cochran (1994) [6].

Results and Discussion

Production performance: Body weights at different ages are shown in table 1. Body weight at day old of combined sex was recorded as 25.50±0.95 g and was comparable to Tantia *et al.* (2006) [7] in Ankleswar breed. Daothigir breed attained 1020.50±108.90 g body weight at 20th week of age while at the end of 52nd week of age the average body weight of male and female was recorded as 1830.70±175.60 g and 1550.50±112.30 g respectively and 1640.70±137.40 for the combined sex. The Feed Conversion Ratio (FCR) for the experimental birds were found to be 3.10 in this study.

Conformation traits: The breast Angle, shank length and keel length recorded at 5th week of age in this study were found to be 41.5°, 5.06±0.05 cm and 5.45±0.20 cm respectively and can be compared to that of PB2x Indigenous chicken (Kalita *et al.* 2016) [4].

Egg production: The average age at maturity was recorded as 165.30±7.40 in the present study. The egg production of the Daothigir birds were recorded upto 32nd week, 40th week, 52nd week and 72nd week of age. (Table 2.) At the end of 72nd week the egg production was recorded as 124.60±6.90 numbers and it is similar to that of Ankleswar breed which is found in Gujarat.

Egg quality: No available literature on egg quality of Daothigir birds was found for comparison. The results of egg weight, shape Index, albumen Index, yolk Index, haugh unit, shell thickness (mm) are presented in the Table 2.

Egg weight at 72nd week was 36.10±3.90g which was similar to that of Ankleswar breed, while all other Indian breeds had higher (>40g) egg weight (Vij *et al.* 2006a, 2006b, 2007, 2008) [9, 12, 13]. Shape index recorded at 72nd week of age was 74.19±3.98; however, shape index was numerically almost similar during different age under this study. Albumen index, yolk index and haugh units recorded at the end of 72nd week

in the present study were 3.85±0.93, 0.49±0.43 and 83.16±3.34 respectively which are almost similar to that of Haringhata black (Tantia *et al.* 2006, Vij *et al.* 2006a, 2007, 2008 and 2009) [7, 9, 12, 13]. The egg shell was quite strong having average thickness of 0.35±0.05 mm.

Reproductive trait: The fertility, hatchability on total egg set and hatchability on fertile egg set recorded in the present study as 80.30 ± 3.50, 66.84±4.90 and 83.90±5.60 respectively. The average age at sexual maturity was recorded as 165.30±7.40 in the present study.

Carcass characteristics: The average dressing percent and giblet percent for both male and female are presented in the Table. 3. It shows that the dressing and giblet percentage for both male and female recorded in the present study 73.88±2.68, 72.22 ±3.51 and 5.76±0.67, 6.75±1.02 respectively; However, giblet, liver, gizzard and heart percentage were higher in Kadaknath and Assel birds as compared to Daothigir in the present study (Haunshi S. *et al.*, 2011) [3]. The percent breast and back yield was found to be higher when compared to Aseel and Kadaknath breed of chicken at the age of 20th week (Haunshi S. *et al.*, 2011) [3] and Ekka P. (2018) [2]. Moreover, weight of the drumstick, thigh, Shank, neck, full wing, winglette, wingtip, wingdrumette and whole chicken leg were also recorded in the study (Table 4). Percent yield of different organ at 20th week of age are shown in Table. 5.



Fig 1: Daothigir bird

Table 1: Body weights of Daothigir bird upto 52nd week of age

Age	Male	Female	Combined Sex
0 days	-	-	25.50±0.95
5 th week	269.54±2.80	195.20±2.80	235.75±2.95
20 th week	1120.50±108.90	985.60±87.60	1020.70±104.90
40 th week	1810.40±185.40	1590.30±127.20	1680.80±135.60
52 nd week	1830.70±175.60	1550.50±112.30	1640.70±137.40

Table 2: Egg production, egg weight and egg quality of Daothigir birds

Age	Egg production upto	Egg weight at	Shape Index	Albumen Index	Yolk Index	Haugh unit	Shell thickness (mm)
32 week	-	31.50±2.60	-	-	-	-	-
40 week	41.30±2.60	34.60±3.80	72.86±2.61	2.95±0.49	0.44±0.33	81.69±2.31	0.35±0.05
52 week	73.40±4.30	35.70±3.60	73.51±2.13	3.28±0.86	0.47±0.27	85.24±3.59	0.35±0.05
72 week	124.60±6.90	36.10±3.90	74.19±3.98	3.85±0.93	0.49±0.43	83.16±3.34	0.35±0.05

Table 3: The average dressing percent and giblet (%) of Daothigir birds

Parameters	Male	Female
Dressing %	73.88±2.68	72.22±3.51
Giblet %	5.76±0.67	6.75±1.02

Table 4: Carcass characteristics of Daothigir breed of chicken at 20th weeks of age

% Yield of cutup parts	Male	Female
Breast	23.21±2.23	27.79±3.02
Back	15.91±1.64	14.98±1.37
Drumstick	16.06±2.68	12.91±1.95
Thigh	19.27±2.12	14.47±1.75
Shank	4.43±0.86	3.87±0.95
Neck	8.24±1.56	7.86±1.67
Full wing	11.05±2.03	13.82±3.10
Winglette	4.24±1.29	4.65±1.13
Wingtip	1.39±0.34	1.42±0.41
Wingdrumette	5.16±1.06	7.75±1.38
whole chicken leg	35.87±3.58	27.64±2.46
Abdominal fat	1.31±0.49	1.03±0.41

Table 5: Yield (%) of relative organ of Daothigir breed of chicken

Yield of relative organ (%)	Male	Female
Liver	2.14±0.63	2.74±0.59
Heart	0.96±0.24	0.64±0.19
Gizzard	1.93±0.48	1.35±0.39
Head	5.15±0.86	4.02±0.76
Intestine	4.86±1.14	5.29±0.97
Kidney	0.42±0.05	0.51±0.06

Conclusion

Daothigir is a dual type backyard chicken breed found in Chirang, Udalguri and Baska districts of Assam reared mainly by the Bodo tribes. Hence the farmer of Assam can rear the Daothigir birds for livelihood security and also to meet up their daily requirement of egg and meat. It has the production potential for higher production which needs to be exploited through selection, feed supplementation, creating awareness among the rearers.

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