



ISSN (E): 2277-7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2022; SP-11(7): 4549-4550  
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[www.thepharmajournal.com](http://www.thepharmajournal.com)  
Received: 02-04-2022  
Accepted: 08-06-2022

**N Kalita**  
AICRP on Poultry Breeding  
Directorate of Research (Vety.),  
Assam Agricultural University,  
Khanapara, Guwahati, Assam,  
India

**A Talukdar**  
AICRP on Poultry Breeding  
Directorate of Research (Vety.),  
Assam Agricultural University,  
Khanapara, Guwahati, Assam,  
India

## A study on the performance of the Dahlem red breed of chicken under intensive system of management in Assam

**N Kalita and A Talukdar**

### Abstract

A total of 500 number of day old chicks were procured from the hatchery of AICRP on poultry breeding and reared in the farm premises under deep litter system of management with standard management practice. The different traits measured were body weight of the birds at day old, 5<sup>th</sup> week, 20<sup>th</sup> week and 40<sup>th</sup> week of age. Age at sexual maturity, FCR and different conformation traits like shank length, keel length and breast angle at 5<sup>th</sup> week of age was measured. Moreover egg production upto 40<sup>th</sup> and 52<sup>nd</sup> week of age and egg weight at 32<sup>nd</sup>, 40<sup>th</sup>, 52<sup>nd</sup> weeks of age was recorded. Feed Conversion Ratio was recorded as 2.60 at 5<sup>th</sup> week of age. Shank length (mm)  $61.30 \pm 2.90$ , Keel length (mm)  $53.90 \pm 2.80$ , Breast angle ( $^{\circ}$ )  $63.80 \pm 2.50$  was observed in the study at 5<sup>th</sup> week of age. At the end of 40<sup>th</sup> and 52<sup>nd</sup> week the egg production was recorded as  $66.60 \pm 2.50$  and  $123.10 \pm 4.30$  numbers respectively. Egg weight recorded in the present study, at 32<sup>nd</sup>, 40<sup>th</sup>, 52<sup>nd</sup> weeks of age  $49.60 \pm 5.20$ ,  $59.40 \pm 6.90$  and  $61.50 \pm 7.20$  gm respectively. Therefore it can be concluded that Dahlem red breed of chicken can be reared with higher production in intensive system of rearing.

**Keywords:** Dahlem red, intensive system, performance, egg quality, conformation traits

### 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. However these breeds are not superior in terms of production performance. According to the 19<sup>th</sup> livestock census Assam's total poultry population was recorded as 27.2 million in 2012 which showed an astonishing 71.63 % change in 20<sup>th</sup> livestock census to reach 46.7 million in 2019 (DAHD, GOI., 2019) [1]. India is the second largest country by population and there is a huge demand for poultry products. Eggs and meat serves as cheaper and highly affordable source of animal protein for humans. The share of the poultry sector in the total Gross Domestic Product (GDP) is approximately 1% and 11.70% in the livestock GDP (DAHD, GOI, 2019) [1]. Dahlem Red is an egg-purpose breed of chickens, imported from Germany to India. It is a red feathered breed laying brown colour eggs with good egg weight and known for its high disease tolerance and immune competence (Kundu *et al.*, 1999) [6]. This breed is used to produce improved germplasm suitable for backyard rearing in India. This study is conducted to study the performance of the breed under intensive system of rearing which will help in designing the selection and breeding for further improvement of native chicken.

### 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 500 number of day old chicks were procured from the hatchery of AICRP on poultry breeding and reared in the farm premises in deep litter system of management with standard management practice. All the birds are vaccinated and dewormed as per the standard schedule. The different traits measured were body weight of the birds at day old, 5<sup>th</sup> week, 20<sup>th</sup> week and 40<sup>th</sup> week of age. FCR at 5<sup>th</sup> week of age, age at sexual maturity, different conformation traits like shank length, keel length and breast angle

**Corresponding Author**  
**N Kalita**  
AICRP on Poultry Breeding  
Directorate of Research (Vety.),  
Assam Agricultural University,  
Khanapara, Guwahati, Assam,  
India

was measured. Moreover egg weight at 32<sup>nd</sup>, 40<sup>th</sup>, 52<sup>nd</sup> weeks of age, egg production upto 40<sup>th</sup> and 52<sup>nd</sup> week of age was recorded.

**Data analysis:** All the data obtain were analyzed statistically as per the method describe by snedecor and Cochran (1994) [10].

## Results and Discussion

### Production performance

Body weights at different ages are shown in table 1. Body weight at day old chick was recorded as 37.10±2.80 and was comparable to Sarma *et al* (2020) [8]. Dahlem Red breed attained 1290.50±120.30 g body weight at 20<sup>th</sup> week of age while at the end of 40<sup>th</sup> week of age the average body weight of combined sex was recorded as 1850.50±430.50. Lower body weights at 20<sup>th</sup> and 40<sup>th</sup> weeks were recorded by Jha *et al.* (2013) [3] and Dinesh K. *et al.* (2020) [2]. The Feed Conversion Ratio (FCR) for the experimental birds was found to be 2.60 in this study.

**Table 1:** Economic and conformation traits of Dahlem red birds

| Traits   |                |
|--|----------------|
| <b>Body weight (g) at</b>                                |                |
| Day old  | 37.10±2.80     |
| 5 <sup>th</sup> week                                     | 390.10±70.30   |
| 20 <sup>th</sup> week                                    | 1290.50±120.30 |
| 40 <sup>th</sup> week                                    | 1850.50±430.50 |
| FCR up to 5 weeks  | 2.60           |
| <b>Conformation traits at 5<sup>th</sup> week of age</b> |                |
| Shank length (mm)  | 61.30±2.90     |
| Keel length (mm)   | 53.90±2.80     |
| Breast angle (°)   | 63.80±2.50     |
| Average age at sexual maturity (Days)                    | 160.40±7.30    |

### Conformation traits

the breast Angle, shank length and keel length recorded at 5<sup>th</sup> week of age were 63.80±2.50°, 61.30±2.90 mm and 53.90±2.80 cm respectively which is higher compared to that of Indigenous chicken of Assam in intensive system of rearing (Kalita *et al.* 2012) [5]

### Reproductive traits

The average age at maturity was recorded as 160.40±7.30 in the present study. The egg weight of the Dahlem Red birds at 32<sup>nd</sup> week, 40<sup>th</sup> week and 52<sup>nd</sup> week of age were recorded as 49.60±5.20, 59.40±6.90 and 61.50±7.20 respectively and the egg production of the Dahlem Red birds upto 40<sup>th</sup> week and 52<sup>nd</sup> week of age were recorded as 66.60±2.50 and 123.10±4.30 numbers. Better egg production performance upto 40 week and egg weight at 32 and 40 week in compared with the finding of Sivaprasad *et al.*, (2017) [9] was observed in this current study. These differences may be due to demography variations as well as managerial practices opted therein.

**Table 2:** Egg production and egg weight of Dahlem Red birds

| Age     | Egg production upto | Egg weight at |
|---------|---------------------|---------------|
| 32 week | -                   | 49.60±5.20    |
| 40 week | 66.60±2.50          | 59.40±6.90    |
| 52 week | 123.10±4.30         | 61.50±7.20    |

## Conclusion

Dahlem red is an egg type exotic chicken breed suitable for

farming for livelihood security and also meets up daily requirement of egg. It has the potential for higher production which in turn have the potential for fulfill the gape of egg production in the state apart from improving the performance of indigenous chicken when rural variety of chicken is developed. Creating awareness among the farmers about this breed would defiantly improve the egg production scenario of the state.

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