INFLUENCE OF PERIOD EGG PRODUCTION PERFORMANCE OF NOILER CHICKENS

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ABSTRACT

The study was conducted at Poultry unit of Bauchi State Agricultural Programme (BSADP) from July to September, 2018 to determine the influence of period on egg production performance of noiler chickens. A total of 135 adult noiler hens were used for the study out of which 63 were black strain, 52 brown and 20 spotted. Specifically, egg weight, egg mass, hen day production (HDP) and hen house production (HHP) were assessed. Data generated were subjected to analysis of variance using SPSS version 22. Period had significant effect on all the variable recorded and that these traits increases with increment in production cycle. Thus, selective improvement of these birds on these traits should be emphasised at peak laying.

Keywords: Noiler chicken, egg production and period

INRODUCTION

Poultry eggs constitute one of the most valuable sources of animal protein recommended for human consumption and offer means of solving the problems of animal protein shortage (Olawoyin, 2006). The need to produce more animal protein in the country has become increasingly urgent in view of the ever rising population. The human population in Nigeria is projected to grow at an annual rate of 2-5% to the year 2025 (Adebambo, 1999). Population growth has surpassed food production and at the moment it is estimated that about one quarter of the population are already facing chronic food insecurity. Poultry meat and eggs have been recommended among the livestock to bridge this protein gap, because of short generation interval, high rate of productivity, quick turnover rate, higher feed efficiency and low labour and land requirement (Ojedapo *et al.,* 2008). Adequate information on growth potentials of existing commercial layers in the country is essential to poultry farmers so as to guide or assist in the choice of stock. However, because these commercial layers vary in production indices, it is therefore imperative to assess them as a measure of their performance in the environment (Piper and Latter, 1974). Most commercial laying birds are bred in developed countries of Europe and America by International breeding companies and supplied to enfranchised companies locally from whom many farmers purchase their chicks (Oluyemi, 1978).

MATERIALS AND METHODS

Location of the study area

The experiment was conducted at the poultry unit of Bauchi State Agricultural Development Programme (BSADP) Headquarters Bauchi, Bauchi State, Nigeria. Bauchi State is located between latitudes 9^{o} 3' and 12^{o} 3' north, longititudes 8^{o} 50' and 11^{o} east of the equator, at an elevation of 537 meters above sea level. The land area is 49,119 km^2 representing 5.3% of Nigeria's total land mass. The area is primarily agrarian contributing 75% to the State's economy. The climate is characterized by two well defined seasons: The rainy season (May to October) and the dry season (November to April). The mean annual rainfall and temperature range are 905.33 mm and 11 - 41 ^{o}C, respectively (IAR/BSADP, 1996).

Experimental Design

A total of 135 noiler chickens of 8 weeks purchased from Bauchi State Agricultural Development Programme (BSADP) were used for the present study. It comprises of 63 Black, 52 Brown and 20 Spotted noiler chickens. The experimental design employed was (CRD) and the experiment lasted for three (3) months.

Experimental diets

From time of purchase to commencement of laying, the birds were fedwithcommercial growers' feed (CP = 14 %, Fat = 7 %, Crude Fibre = 10 %, Calcium=1.0 % and Available Phosphorous = 0.35 %). At 5% of laying, the feed was changed to commercial layers ration (CP = 16.5 %, Fat = 5 %, Crude Fibre = 10 %, Calcium = 3.50 % and Available Phosphorous = 0.40 %) feed. feed and water was supplied *ad-libitum*.

Data Collection

Data on egg weight, hen day egg production (HDEP), hen housed production (HHP) and average egg mass (AEM) was recorded in three strains of chicken. Egg weights were recorded individually to the nearest gramme using an electronic scale (Professional scale), while HDEP, HHP and AEM were obtained using the following formulas.

$$\text{HDEP} = \frac{Total\ number\ of\ eggs\ produced\ in\ a\ day}{Total\ number\ of\ hens\ present} \times 100$$

$$\text{HHP} = \frac{Total\ number\ of\ eggs\ produced\ in\ a\ day}{Total\ number\ of\ hens\ at\ begining\ of\ laying} \times 100$$

Average egg mass = per cent HDEP × Average egg weight (g)

Data Analysis

The data generated were subjected to analysis of variance (ANOVA) using the General Linear Procedure (GLM) of SPSS, version 22 (2014). Significantly different means were compared using the Least Significant Difference (LSD). The model utilized was as follows:

$\mathbf{Y}_i = \mathbf{U} + \mathbf{W}_i + \mathbf{e}_i$

Where:

$\mathbf{Y}_i$ = Dependent variable (egg production performance)

$\mathbf{U}$ = Overall mean

$\mathbf{W}_i$ = Effect of i^{th} week of lay

$\mathbf{e}_i$ = Residual error

Table 1: Weekly Egg production of noiler birds

Week of production	Age of bird in days	Age of bird in weeks	Hen day production (%)	Egg weight (g)	Egg mass
1	154	22	2.82^{e}	44.15^{c}	1.25^{d}
2	161	23	17.15^{d}	43.48^{c}	7.46^{c}
3	168	24	32.30^{c}	46.17^{b}	14.91^{bc}
4	175	25	69.30^{b}	49.94^{b}	34.61^{b}
5	182	26	62.23^{b}	53.13^{a}	36.78^{b}
6	189	27	82.91^{ab}	53.59^{a}	44.43^{a}
7	196	28	86.99^{ab}	52.91^{a}	46.03^{a}
8	203	29	89.21^{a}	54.31^{a}	48.45^{a}
9	210	30	87.94^{a}	54.76^{a}	48.16^{a}
10	217	31	88.47^{a}	53.90^{a}	47.69^{a}
11	224	32	88.79^{a}	55.70^{a}	49.46^{a}
12	231	33	91.12^{a}	54.26^{a}	49.44^{a}
Overall mean	-	-	59.37	51.36	35.72

Means in the same column with different superscript are significant ($P<0.05$)

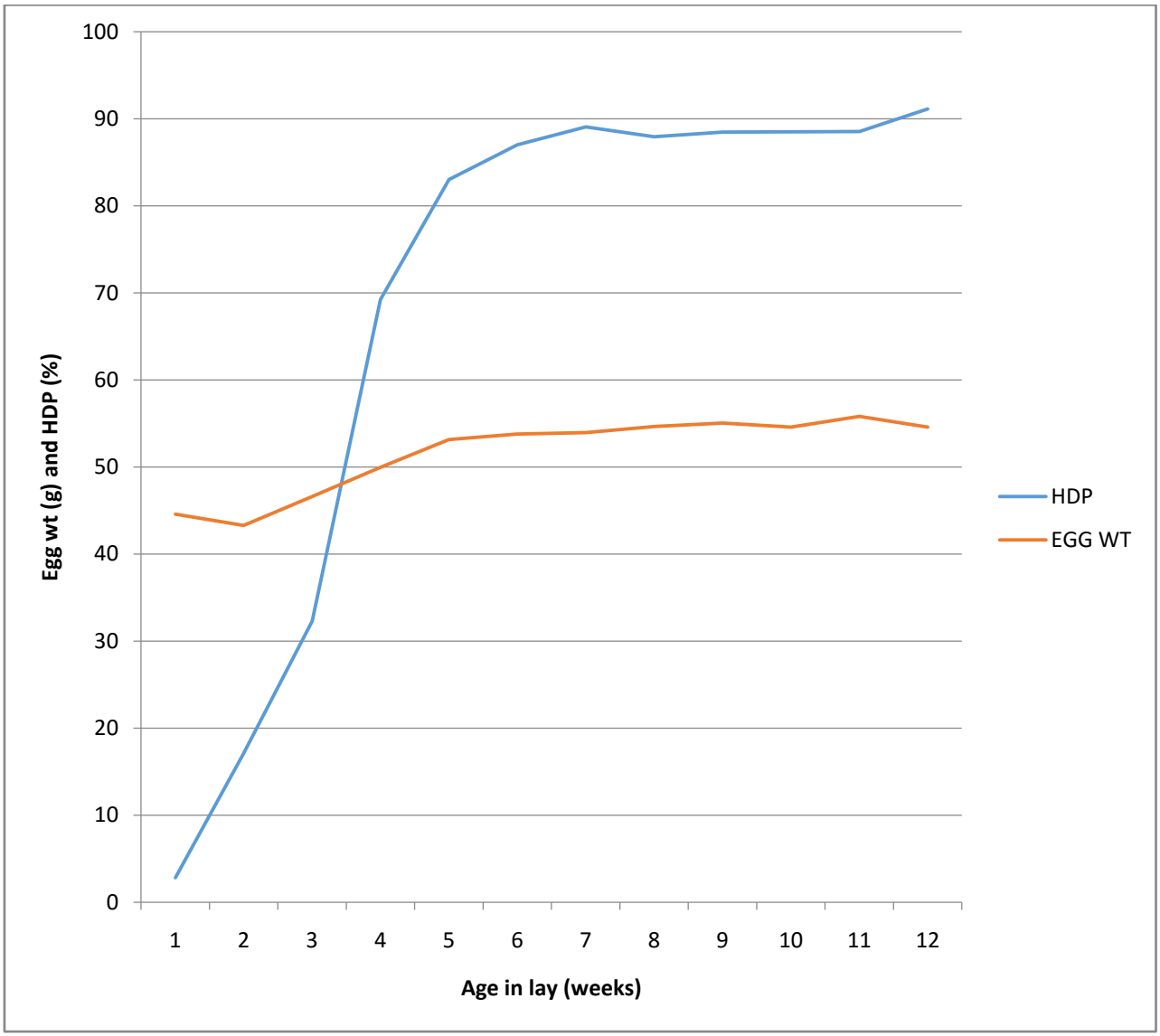

Figure 1: Egg production pattern of Noiler chicken

RESULTS AND DISCUSSION

Averages of hen day production (HDP), egg weight and egg mass according to week of production are presented in Table 1. Significant influence ($P<0.05$) of week of production was observed in these traits. This is line with the work of Padhi *et al*. (2013) who observed that egg quality traits of commercial layer bird increases significantly from 28 weeks of age to 72. However, the authors revealed that egg weight at 52, 64 and 72 weeks of age did not differ significantly indicating that in early period there was gain in this trait and thereafter, it remain static. Similar observation was reported by Suk and Park (2001). Tumova and Gous (2012) also reported non-significant effect of age on egg shape index in broiler breeder and laying hen. Usman *et al*. (2017) reported significantly higher egg production in first laying cycle than second and third among Aseel chicken native to Pakistan and attributed it to low level of fat deposition on the reproductive organs in the younger birds. They further explained that fat deposition on the ovary increases with increasing age. Usman *et al*. (2013) also stressed that egg production of commercial layer birds decreased with age advancement. Regarding egg mass, chicken in the first cycle production had significantly larger egg mass which could be as a result higher number of egg produced compared to the second and third cycles (Usman *et al*., 2013). Similar to the present result, the earlier work of Haq *et al*. (1997) showed that feed conversion ratio (FCR) values of layers during the first production cycle were better than in the second production cycle. However, Vargas *et al*. (2009) reported that FCR is not influenced by

age. Regarding egg parameters, Vargas *et al*. (2009) reported higher mean in third laying cycle compared to second and first and could be due to the weight and size of egg laid by birds of this age group. In another study, higher egg breadth in older birds has been reported which is positively correlated to the size of the oviduct (Johnston and Gouys, 2007). Contradictory statement has been reported by Sohail *et al.* (2013) who observed non-significant effect of age on egg surface area. In figure 1, HDP and egg are presented. The result revealed that HDP increases with age advancement and peaked at 6 to 7 weeks of production. Thereafter, the production is maintained. For egg weight, the deviation from the initial weight was insignificant.

CONCLUSION

The study therefore revealed that both egg mass and HDP increases with increase in weeks of production, while the changes observed in egg weight was insignificant.

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