Original Research Article

Short Communication

Comparison of Body Weight of Layer Chickens During Egg Production

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Abstract

The study was conducted to compare the body weight of three strains of layer-type chicken during their egg production. The chickens used for this purpose were an exotic strain (ISA Brown), Nigerian adapted chicken (FUNAAB Alpha) and the local chicken. A total number of sixty birds were used, twenty birds per strain and were raised on deep litter pens. Data was collected for twelve weeks starting from fifty-two weeks to sixty-four weeks of age. The ISA Brown had highest mean body weight (1.93±0.09)kg but not significantly different with the mean body weight of the FUNAAB Alpha chickens (1.93±0.09) kg. The local chicken had the least mean body weight (1.21±0.10) kg which differed significantly with the mean body weight of the ISA Brown and the FUNAAB Alpha.

Keywords: Body weight, ISA Brown, FUNAAB Alpha, local chickens.

Introduction

Body weight has often been used as the criterion for selection in experiments designed to examine both direct and correlated genetic changes in populations undergoing artificial selection (Dunnington and Siegel, 1985). Body weight at the onset of egg production is a major factor influencing hen productivity, while egg weight increases significantly when the initial body weight of the hens is high (Perez-Bonilla *et al.*, 2012). Growth increases with age in laying birds and consistency in egg number and egg weight (Ojedapo *et al.*, 2008). Heavier hens at the onset of the laying period consume more feed and produce bigger eggs throughout the egg cycle than lighter

hens (Elzubeir and Mohammed, 1993).

Body weight variation within a flock can be attributed to genetic and environmental factors that impinge on the individual's growth characteristics. Of the main factors influencing egg size and feed intake, body size is the most important (Summer and Leeson, 1983).

The objective of the study was therefore to compare the body weight of three strains of layer-type chicken during egg production.

Materials and Methods

The study was conducted at the Poultry Breeding and Genetic Research unit of the Department of Animal Science, Delta State University, Asaba Campus, Asaba, Nigeria. The three strains used in this study were housed separately according to their strain, on deep litter pens. Daily operations and routine management were strictly adhered to, and birds were fed on a commercial ration. The birds were weighed individually on a digital scale, and readings were taken to the nearest kilogram. Data were taken from 52 weeks to 64 weeks of age and subjected to analysis of variance (ANOVA) using SAS (2004). A completely randomized design was adopted as strain was the only factor of interest. The following model was used:

$$X_{ij} = \mu + S_i + \Sigma_{ij}$$

Where

X_{ij} = Observation made on the individual birds
μ = Population mean
S_i = Strain effect
Σ_{ij} = Experimental error

Results and Discussion

From the data obtained in this study (Table 1) the ISA Brown birds had the highest mean body weight measurement (1.93±0.09) kg, followed by the FUNAAB Alpha chickens with the mean body weight of (1.91±0.09) kg. The local chickens had the least mean value of 1.21±0.10kg.In most weeks of the study, the ISA Brown had the highest mean body weight, followed by the FUNAAB Alpha followed by the local chicken. For four weeks (2,8, 9 and11) during the period of the study, the FUNAAB Alpha numerically outperformed the ISA Brown in mean body weight, although there were no significance differences observed between them. This showed that FUNAAB Alpha chicken competed favourably with the ISA Brown, while ISA Brown and FUNAAB Alpha superseded the local chicken. There have been some reports on the better performance of the exotic chickens over the local chickens as in this study. The ISA Brown, being an exotic strain, proved its superiority over the other two strains. The FUNAAB Alpha, being an improved local strain, outperformed the pure local chickens.

Result obtained in this study is in conformity with what Omeje and Nwosu (1988), Asuquo *et al.* (1992) and Oluyemi and Robert (2007) reported on the better performance of the exotic strains over the local strains of chickens.

Table 1: Mean and Standard error mean values of the body weight (kg) in three strains of layer-type chicken

Week	ISA Brown	FUNAAB Alpha	Local chicken
1	2.04 ± 0.09^{b}	1.98 ± 0.09^{b}	1.35 ± 0.09^{a}
2	1.98 ± 0.09^{b}	2.02 ± 0.09^{b}	1.37 ± 0.10^{a}
3	1.94 ± 0.09^{b}	1.93 ± 0.09^{b}	1.30 ± 0.09^{a}
4	1.98 ± 0.09^{b}	1.97 ± 0.09^{b}	1.32 ± 0.10^{a}
5	1.98 ± 0.09^{b}	1.97 ± 0.09^{b}	1.32 ± 0.10^{a}
6	1.96 ± 0.08^{b}	1.93 ± 0.08^{b}	1.32 ± 0.09^{a}
7	1.93 ± 0.08^{b}	1.90 ± 0.08^{b}	1.33 ± 0.09^{a}
8	1.88 ± 0.08^{b}	1.89 ± 0.08^{b}	1.29 ± 0.08^{a}
9	1.86 ± 0.07^{b}	1.89 ± 0.07^{b}	1.28 ± 0.08^{a}
10	1.87 ± 0.08^{b}	1.84 ± 0.08^{b}	1.30 ± 0.09^{a}
11	1.82 ± 0.09^{b}	1.84 ± 0.09^{b}	1.29 ± 0.10^{a}
12	1.89 ± 0.10^{b}	1.81 ± 0.10^{b}	1.29 ± 0.11^{a}
13	1.93 ± 0.11^{b}	1.79 ± 0.11^{a}	1.27 ± 0.12^{a}
Mean ± SE	**1.93 ± 0.09^{b}**	**1.91 ± 0.09^{b}**	**1.21 ± 0.10^{a}**

a, b, mean values with different superscript are statistically different (P<0.05)

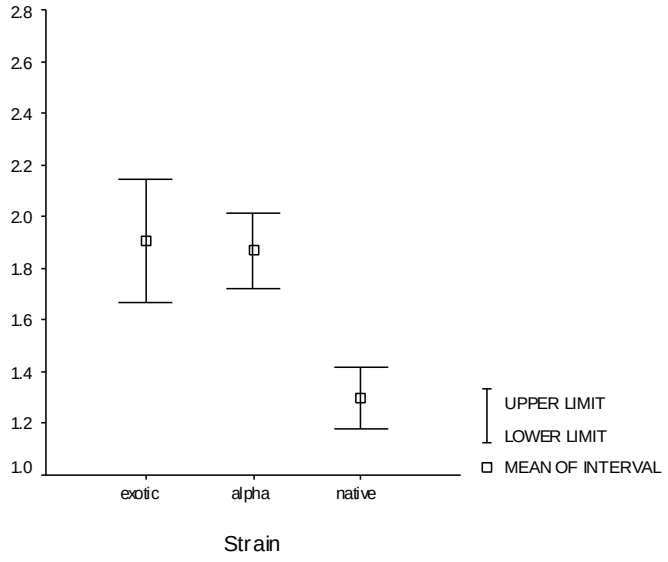

Fig. 1: The 95% confidence limits of the mean body weight of three strains of chicken

Conclusion and Recommendation

The FUNAAB Alpha strain, which is a Nigerian adapted chicken, was found to compete favourably with the exotic ISA Brown, and better above the local chickens. Hence the FUNAAB Alpha strain could be integrated into National planning.

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