



Effects of Strain on Body Weight and Morphometric Traits and Their Relationships in Four Broiler Chicken Types During the Starter and Finisher Stage



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Introduction

- Growth is one of the major characteristics of all living organisms. It involves dynamic physiological changes which commence when the zygote is formed at the moment of fertilization; and continues till maturity of the individual
- Body weights of live animals are the most reliable measure of growth performance. The significant use of linear body measurements of animals has been emphasized, especially in its use in predicting live weight, and relationship with other body morphometric traits
- Body weight is usually used as a measure of growth in farm animals; however numerous studies have shown that other growth traits relating to body morphometric measurements such as body length, shank length and body girth can serve as good indicators of growth.

Materials and method cont'd

- Eight hundred (800) day-old broiler chicks of four strains were purchased from a reputable broiler hatchery and used for the experiment. The birds were wing-tagged on arrival, and housed in brooding cages per strains for the first three (3) weeks before they were moved to a partitioned deep litter house that had been labelled according to strains and reared thereafter till they reached the age of 8 weeks. They were reared under the same management condition and fed ad libitum throughout the experimental period. All the necessary vaccination and medication for broiler chickens were administered as recommended by Oluyemi and Roberts (2000).
- Thirteen (13) parameters were measured on each broiler chickens per strain at weeks 4 and 8. Body weight (BW), Body length (BL), Keel length (KL), Shank length (SKL), Body height (BH), Drumstick length (DSL), Thigh length (THL), Wing length (WNL), Shank circumference (SC), Comb length (CBL), Body girth (BG), Neck length (NKL) and Beak length (BKL) were measured. Body weight of individual birds was determined by placing each one on the loading pan of a Mettler Toledo® top-loading scale. All linear measurements were done using a measuring tape and Venier calliper as described by Sola-Ojo and Ayorinde (2009).
- Statistical Analysis The data collected from the study were subjected to analysis of variance using the General Linear Model (GLM) procedure of Statistical Package for Social Science (SPSS) (2013) version 22. Significantly different means were compared for significance using the Duncan's Multiple Range Test (Duncan, 1955) of the same statistical package, while the Pearson's correlation coefficient procedure of the same software was used to estimate the relationships between body weight and the morphometric traits measured.

Effects of Strain on Body Weight and Morphometric Traits of four Broiler chicken types at Starter Phase in Week 4

Parameters	Strain			
	Arbor Ace (AA)	Hubbard (HB)	Manhã (MS)	Ross (RS)
BW	360.18 ± 8.46 (190)b	758.78 ± 7.52 (184)b	629.54 ± 8.13 (197)a	936.11 ± 3.71 (194)c
BL	22.04 ± 0.09 (190)b	23.51 ± 0.11 (186)c	21.36 ± 0.1 (197)a	23.08 ± 0.07 (194)d
SKL	5.49 ± 0.02 (190)a	6.09 ± 0.08 (186)c	6.08 ± 0.03 (197)b	6.61 ± 0.02 (194)c
SC	4.21 ± 0.02 (190)a	5.01 ± 0.08 (186)d	4.29 ± 0.02 (197)b	4.74 ± 0.02 (194)c
NKL	4.96 ± 0.03 (190)b	7.07 ± 0.05 (186)d	5.22 ± 0.03 (197)c	4.45 ± 0.02 (194)b
CBL	2.08 ± 0.04 (190)a	2.19 ± 0.08 (186)c	2.51 ± 0.02 (197)b	2.55 ± 0.02 (194)b
DSL	1.54 ± 0.01 (190)a	2.28 ± 0.02 (186)d	1.49 ± 0.01 (197)b	1.81 ± 0.02 (194)c
THL	7.78 ± 0.04 (190)c	8.03 ± 0.08 (186)d	6.64 ± 0.04 (197)b	6.44 ± 0.02 (194)b
BG	22.16 ± 0.09 (190)c	21.77 ± 0.09 (186)b	17.03 ± 0.08 (197)a	21.6 ± 0.08 (194)b
WNL	20.96 ± 0.05 (190)c	15.63 ± 0.06 (186)d	10.57 ± 0.06 (197)b	10.08 ± 0.03 (194)a
OSL	9.98 ± 0.04 (190)d	8.78 ± 0.08 (186)c	7.46 ± 0.05 (197)a	8.58 ± 0.02 (194)b
KL	7.78 ± 0.04 (190)c	7.17 ± 0.08 (186)b	5.28 ± 0.03 (197)a	8.27 ± 0.08 (194)d
BH	19.85 ± 0.11 (190)d	18.94 ± 0.06 (186)b	16.84 ± 0.02 (197)a	19.39 ± 0.07 (194)c

Conclusion and Recommendation

The results obtained from this study show that strain affects overall body weight, and morphometric traits in broilers at the age of four and eight weeks. HB strain used for this study had the best body conformation with respect to values obtained for their morphometric traits, followed by RS, AA and MS in that order. These results also showed that mean overall body weight values were highest for the RS strain at the ages of four and eight weeks. From this study it was discovered that some of the morphometric body parameters were positively correlated to body weight and so had the potential to contribute to overall body weight in broiler breeding programmes designed for improvement of chickens for meat production. Consequently, in selection of broilers for improved body weight, morphometric parameters that are positively and significantly correlated with body weight must be taken into consideration because such relationships will lead to improved overall body weight which is the goal of broiler chicken producers.

References

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Objective

This research was therefore designed to examine the influence of strain on body weight and morphometric traits of four broiler chickens type commonly raised for meat production as this could provide information for broiler chicken producers and breeders on the trait of interest in any improvement programme designed for optimum meat production.

Materials and Method

Experimental Location and Site

