EFFECT OF SEX, STRAIN AND AGE ON BODY WEIGHT IN TURKEY POULTS

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ABSTRACT
This study was conducted to assess the effect of breed, sex and age on the growth performance of turkey poults. A total of 86 Turkey poults which comprised of Black strain, White strain and Mixed strain were used to evaluate the weekly Body weight (BW) of these birds. The data on the weekly body weight obtained was subjected to analysis of variance and means was considered different at P < 0.05. The result of this study revealed that the male of Black strain have significantly (P<0.05) higher body weight than the male of Mixed and White strain. The study concluded that the effect (P<0.05) of breed and sex at different ages on body weight measurements showed the Black and mixed color demonstrate higher body weight than the White strain. The study recommends further investigation recommends genetic improvement through selective breeding of the black male and white female.

Keywords: Breed, Sex, Age, Growth performance

Introduction
Poultry is considered to be one of the most popular option in Nigeria in reducing the incidence of malnutrition particularly protein deficiency in the diet of populace (Obasoyo *et al*, 2005). Turkey breeders have selected birds for fast growth and large body size in order to maximize production (Kranis *et al*., 2008). Growth performance of an animal is the phenotypic expression of the animal genetic makeup (Oluyemi and Roberts, 2000). The exact time at which the animal is ready for slaughter can be consider on the basis of body weight and general development (Kabir *et al*., 2006).

Usefulness of body measurements as predictor of sex increases with increasing sexual dimorphism and with decrease in the variability within sexes (Fletcher and Homer 2003). In organism with determinate growth, sexual dimorphism occurs before maturity (Badyaev 2002; Mc Kenzie *et al* 2007). During developmental process of growing a part, an ontogenetic perspective on the evolution of sex size dimorphism (SSD). Cloaca examination, laparoscopy , analysis of steroid hormones and DNA analysis, which have been used for sex determination in birds required trained researchers and specialized equipment and are expensive and time -consuming (Palma *et al* 2001). Therefore, sexes distinguish by measuring morphological traits in the field would be especially useful.

Morphological variation within a species can provide biologists with a wealth of information, which could be quite attractive and useful for screening overall genetic diversity of different livestock species (Toro and Caballero 2005; Yakubu *et al* 2011). The information obtained could aid in ecological studies, conservation, selection and better management of Nigerian local turkeys. Linear body measurements are useful in live weight determination (Gul *et al*.2005).

Turkey production in Nigeria is not well documented and information on growth pattern of turkey is mostly non-available (Riva*et al*., 2002). There is need for researchers to seek how to improve turkey production in terms of its growth and carcass characteristics (Lawrence and Fowler, 2002). These can be achieved on the basis of conducting studies on the effects and relationships among strains, age and sex in relation to growth Breed, sex and feeding also influence carcass quality which affect market demand. This study was conducted to obtain information on different breeds of turkey (Black, Mixed and White)with interest on growth and body parameters. Hence the objective of this study was to determine the effects of sexes and strains age on the body weight and morphometric traits in turkey poults

MATERIALS AND METHODS
Location of the study
The rearing of parent birds and hatching of eggs were carried out using the poultry facilities at the Department of Animal Production, University of Ilorin. Ilorin is located between rainforest of the Southwest

and Savannah grassland of Northern Nigeria with co-ordinates of 8° 30' 0" North, 4° 33' 0" East. It lies on an altitude of 305m, 1001' above sea level, with annual rainfall, relative humidity and day temperature of 600-1200 mm, 65-80% and 33-37^0 C, respectively.

Experimental animals and Management

A total of 86 day old poults comprising Black, Mixed and White was used for this study. Day old Poults of three plumage varieties of Turkey were purchased from a certified Farm. The Norfolk have black plumage while Mammoth have white plumage and Bronze have brown plumage.

Before the arrival of the poults, the brooding house was cleaned, disinfected and fumigated. On arrival, the birds were brooded on deep liter with the aid of Charcoal pot and Kerosene lanterns as sources of heat and rechargeable lamps as the source of light in the brooding house. A commercial chick marsh with a calculated Crude Protein content of 21.09% (CP) and Metabolizable Energy (ME) of 2795 kcal/kg was fed to the birds for a period of 8 weeks and water was supplied *ad-libitum* to all the birds. *Vaccines, antibiotics and anticoccidiosis were administered to the birds at appropriate time to protect them from diseases. The experiment lasted for 8 weeks.* Other management practices such as routine medication and sanitation were as recommended for chicken by NRC (1994).. *All birds were subjected to similar treatment throughout the experiment.*

Data collection

The body weight of an individual bird was taken with a weighing scale of 20g in the morning before feeding at an interval of one week (i.e. day 1, 1week, 2weeks, 3weeks, 4weeks, 5weeks, 6weeks, 7weeks and 8weeks) respectively. To avoid error all measurement were taken by the same person throughout the experiment.

Statistical analysis

Microsoft excel program was used to record all the data before preliminary statistical analysis were done. Data collected were subjected to Generalized Linear Model (GLM) procedure of SAS (2002). Difference among the breeds in terms of body weight were compared using Duncan Multiple Range Test (DMRT) Duncan, (1955).

RESULTS

The results in table 1 revealed that body weight were significantly affected ($p<0.05$) by age, strain and sex with Black strain having superior values. At 1 and 3 weeks of age, sex has no significant effect ($p>0.05$) and strain at 5,6,7,8 weeks of age has no significant effect ($p>0.05$). The effect of interaction between sex and strain shows no significant effect ($p>0.05$).

Table 1: Effect of Age strain and sex on body weight (g) of Turkey poults from 0-8 weeks of age.

AGE (WEEK)	STRAIN			SEX		P-VALUE		
	A	B	C	Male	Female	Sex	Strain	sex*stran
0	38.33^b	43.57^a	41.50^a	41.67^a	38.21^b	0.0042	0.0011	NS
1	68.61^b	79.29^a	73.50^{ab}	75.24^a	67.50^b	0.0742	0.0438	NS
2	87.22^b	100.00^a	95.50^{ab}	96.91^a	85.00^b	0.0186	0.0349	NS
3	123.33^b	150.00^a	140.00^{ab}	141.43^a	121.43^b	0.1067	0.0149	NS
4	183.33^b	235.71^a	210.00^{ab}	219.05^a	175.00^b	0.0057	0.0140	NS
5	266.68^b	328.57^a	300.00^{ab}	314.29^a	250.00^b	0.0043	0.1092	NS
6	372.22^b	421.43^a	400.00^{ab}	419.05^a	346.43^b	0.0040	0.3007	NS
7	475.00^b	528.57^a	500.00^{ab}	533.33^a	432.14^b	0.0010	0.3088	NS
8	583.33^b	642.86^a	655.00^{ab}	669.05^a	535.71^b	<.0001	0.1921	NS

a, b, c means having different superscripts on the same row are significantly different ($p<0.05$) * Strain A= Bronze white(Mammoth), B= Norfolk black and C= Broad breast bronze. Highly significant ($p<.0001$)***, NS= Not significant($p>0.05$)

DISCUSSION

The male of all the strains had superior in body weight, as observed in this study. This is in agreement with the finding of Ogah (2011) who reported that the body weight of the indigenous turkey were significantly affected by sex. The values of respective traits reported in this study were however, lower than those reported by Kodinetz (1940) and Muzic (1990) from Zagorje turkey at 8 weeks of age.

As the age of the poults increases their bodyweight increases with males having the superior measurement. Black strain therefore possesses gene for faster growth than the Mixed and White strain breed. This result is in line with reports of Sonaiya *et al.* (1986) that age is a major determinant of growth and physiological development. Omeje and Nwosu (1986) opined that these relationships could be utilized in the genetic improvement of growth through selection. Giordani *et al.* (1993) also reported significant difference in the growth performance of different strains of birds.

CONCLUSION

The study concluded that there was increased in body weight traits in male and female of the three strains at different ages. And the results obtained from this study revealed the significant effect ($P<0.05$) of breed and sex at different ages on body weight measurements showed the Black and mixed color demonstrate higher body weight than the White strain.

RECOMMENDATION

The study recommends that For breeding purpose the male of Black and female of White and vice versa may be crossed to monitor the growth of offspring and Furthermore research should be carried out to raise the birds separately and do the sexing at day old.

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