RELATIONSHIP AMONG BODY WEIGHT AND MORPHOMETRIC TRAITS OF FULANI ECOTYPE CHICKENS IN SOUTH WESTERN NIGERIA

BY

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PRESENTATION OUTLINE

- Introduction
- Materials and Methods
- Data collection and analysis
- Results and discussion
- Conclusion

INTRODUCTION

- The native chickens constitute about 80 percent of the 120 million poultry birds found in Nigeria (FMA and RD, 2006).

- These animals are also known for their adaptation superiority in terms of their resistance to endemic diseases and other harsh environmental conditions (Nwakpu *et al.*, 1999).

- Fayeye *et al.* (2005) described local chicken as a pool of heterogeneous individuals which differ in adult body weight and plumage.

Introduction cont'd

- There have been reports on the characterisation of the local chicken in Nigeria and its potential for egg and meat production (Adebambo, 2005).

- Olawoyin (2006) concluded that genetic improvement of Nigerian indigenous cockerels could help to alleviate the problems of animal protein shortage especially in the rural areas.

- It is important to have knowledge of the variation of morphometric traits in local genetic resources as such measurements have been discovered to be very useful in comparing body size and by implication, shape of animals (Latshaw and Bishop, 2001).

MATERIALS AND METHODS

- **Experimental site**
- **Experimental Birds**
- **Data Collection and Analysis**

RESULTS AND DISCUSSION

Table 1: Simple genetic and phenotypic correlations analysis of body weight and morphometric traits

Traits	BW	BL	DL	DC	BG	NT	STT	HW
BW (g)		0.82**	0.78**	0.76**	0.67**	0.44**	0.61**	0.83**
BL (cm)	0.79**		0.80**	0.72**	0.63**	0.49**	0.58**	0.82**
DL (cm)	0.72**	0.75**		0.62**	0.56**	0.48**	0.43**	0.91**
DC (cm)	0.75**	0.67**	0.56**		0.62**	0.37**	0.50**	0.64**
BG (cm)	0.85**	0.75**	0.67**	0.77**		0.46**	0.42**	0.66**
NT (cm)	0.66**	0.73**	0.68**	0.58**	0.55**		0.49**	0.39**
STT (cm)	0.50**	0.55**	0.48**	0.48**	0.38**	0.53**		0.52**
HW (cm)	0.75**	0.78**	0.83**	0.55**	0.72**	0.63**	0.59**	

*** Significantly (P<0.01) different*

BW=Body weight, BL=Body length, DL=Drumstick length, DC=Drumstick circumference, BG=Breast Girth, NT=Nose to shoulder, STT=Shoulder to tail and HW=Height at withers.

Table 2: Shows Body weight predictive equation, Root Mean Standard Error and Coefficient of determination(R^2) for the fitted linear and quadratic models from morphometric traits.

WEEK	TRAITS		PREDICTIVE EQUATIONS	RMSE	R^2	SIGNIFICANCE
17	DL (cm)	L	$Y=-385.88+122.50DL$	103.64	61.36	<0.0001***
		Q	$Y=-2234.82+433.12DL+12.94DL^2$	104.13	62.34	<0.0001***
	DC (cm)	L	$Y=-431.08+143.97DC$	115.01	62.12	<0.0001***
		Q	$Y=5438.03-844.01DC+41.23DC^2$	108.92	67.02	<0.0001***
	NT (cm)	L	$Y=-998.98+112.09NT$	102.87	61.93	<0.0001***
		Q	$Y=2490.26-263.54NT+10.07NT^2$	103.84	62.55	<0.0001***
	STT (cm)	L	$Y=-434.75+64.64ST$	159.73	08.23	$<0.12^{ns}$
		Q	$Y=-10.35+930.27ST-18.89ST^2$	162.02	08.83	$<0.27^{ns}$
	HW (cm)	L	$Y=-747.26+47.53HW$	80.56	76.66	<0.0001***
		Q	$Y=1653.78-76.94HW+1.60HW^2$	80.17	77.69	<0.0001***
	BG (cm)	L	$Y=-1187.32+84.55BG$	90.34	70.64	<0.0001***
		Q	$Y=4984.54-372.92BG+8.44BG^2$	87.16	73.61	<0.0001***
	BL (cm)	L	$Y=-1174.87+50.02BL$	115.93	51.65	<0.0001***
		Q	$Y=2413.20-110.90BL+1.80BL^2$	117.40	52.13	<0.0001***
25	DL (cm)	L	$Y=-277.30+127.01DL$	99.26	71.78	<0.0001***
		Q	$Y=1366.18-139.59DL+10.68DL^2$	98.99	72.76	<0.0001***
	DC (cm)	L	$Y=-431.08+143.97DC$	115.01	62.12	<0.0001***
		Q	$Y=5438.03-844.01DC+41.23DC^2$	108.92	67.02	<0.0001***
	NT (cm)	L	$Y=-499.56+89.94NT$	116.53	61.11	<0.0001***
		Q	$Y=888.08-50.66NT+3.53NT^2$	117.93	61.34	<0.0001***
	STT (cm)	L	$Y=-1719.51+124.61ST$	125.61	54.81	<0.0001***
		Q	$Y=6193.83-540.64ST+13.95ST^2$	125.94	55.91	<0.0001***
	HW (cm)	L	$Y=-531.32+46.35HW$	87.86	77.89	<0.0001***
		Q	$Y=1876.65-76.09HW+1.54HW^2$	86.67	79.92	<0.0001***
	BG (cm)	L	$Y=-1640.62+99.63BG$	85.31	79.16	<0.0001***
		Q	$Y=3526.51-256.46BG+6.11BG^2$	84.23	80.28	<0.0001***
	BL (cm)	L	$Y=-950.86+46.83BL$	110.10	55.29	<0.0001***
		Q	$Y=4123.19-166.99BL+2.24BL^2$	119.50	66.67	<0.0001***

****=Significant ($p<0.0001$), ns= not significant, L=linear regression model, Q=Quadratic regression model, Y=body weight, RMSE= Root Mean Standard Error, R^2=Coefficient of determination, BW=Body weight, BL=Body length, DL=Drumstick length, DC=Drumstick circumference, BG=Breast Girth, NT=Nose to shoulder, STT=Shoulder to tail and HW=Height at withers.*

CONCLUSION

- From this study, positive relationships exist between body weights and morphometric traits (i.e. drumstick length, drumstick circumference, breast girth, nose to shoulder, shoulder to tail, body length and height at withers) which can be used to predict the value of body weight at any period range from 17- 25 weeks old of Fulani ecotype chickens.

- Quadratic model is hereby recommended for body weight prediction and week 17 is recommended for sexing of Fulani ecotype chickens.

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THANK YOU FOR LISTENING!