

# A BIOMETRIC STUDY OF THE CONFORMATION OF NATIVE GUINEA FOWL (*NUMIDA MELEAGRIS*) IN NORTH EAST NIGERIA

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## Abstract

Twenty adult guinea fowls, ten each of both sexes, were obtained from local markets in Maiduguri, Potiskum and Jama'are to establish average body measurements at selling point. Average body weight for males was  $1.24 \pm 0.02$ kg and  $1.7 \pm 0.02$ kg for females. Back length, neck length and shank length measured  $15.31 \pm 0.01$ cm,  $9.53 \pm 0.16$ cm and  $6.2 \pm 0.4$ cm, respectively for males and  $14.83 \pm 0.01$ cm,  $9.02 \pm 0.16$ cm and  $6.02 \pm 0.4$ cm respectively, for females. Generally, a sexual dimorphism in favour of the males is significant ( $p < 0.05$ ) for most body measurements, especially body size and breast muscle. Guinea fowls in this region usually range openly to find their own food. Being essentially a low input husbandry, birds are generally poorly fed, exposed to disease, theft and predators. Attention on research and development activities to improve the rural poultry sub-sector in Nigeria is essential, particularly in the study area.

**Key words:** Biometry, Guinea Fowl, North East, Nigeria

## Introduction

There are three poultry management systems: intensive, semi-intensive and extensive/scavenging, which are differentiated on the basis of flock sizes and input-output relationships (Sonaiya, 1990; Kitalyi, 1998). In the extensive or scavenging management system, different poultry species are kept. These are: chickens, guinea fowls, ducks, geese and turkeys. Chickens (*Gallus domesticus*) dominate in number and economic contribution (Sonaiya, 1990; Fanuel, 1997). Guinea fowls may be more popular in the flocks of West Africa, coming second to chickens (Velum, 1987; Bouzat and Saunders, 1990; Ouandaogo, 1990; FAO, 1995).

In the North East sub-region, particularly around Jama'are, Potiskum and Kari, guinea fowl meat is well relished in high standing restaurants and meat stands while the eggs are normally sold in local markets, motor parks and on highways. Egg production rates vary from 75 to 90% (Ngou, 1989).

In these predominantly farming communities, it is probable that guinea fowl rearing is providing employment, improving income and nutrition of the rural households and thereby contributing to the national gross product.

Precise measurement of the productivity, and biometry of the rural poultry is often complicated by the effects of indiscriminate cross breeding (Oluyemi *et al.*, 1979; Nwosu *et al.*, 1985; Eshiett *et al.*, 1989). However, the typical indigenous guinea fowl is a mongrel which can be generally recognized by its small adult size, relatively long legs, varied plumage colour and flightiness. The body measurements generated in this study represent a basic information upon which continuity and coordination of research efforts is hoped for eventual upgrading of this poultry stock.

## Materials and Methods

### Birds

Twenty of adult male and female guinea fowls were procured from local markets in Pokistum, Kari and Jama'are. Sexing was achieved by listening to sounds made. Only the hens can 'buck wheat'. Both can make the other sounds but the hens can only make the two syllable sound referred to as "buck wheat" (Bob, 2001). However, four out of the 20 were sexed wrongly using the sounds. This confirmation was achieved only at post-mortem. A combination of sexing methods could have reduced this failure rate. The research birds were not precisely aged. However, having large wattles and helmets largely informed our recognition and declaration of them as adults.

### Biometry

Each fowl was weighed live using a Torsion balance. Each was thereafter slaughtered and properly bled. The contour feathers were removed by soaking in hot water. It was carefully removed, dried and weighed the following day. The skin as well as specialized skin structures (combs, wattles, brood patches and leg scales) were carefully removed using razor, scalpel blade and forceps.

The musculature was carefully freed from the skeletal system and weighed. The remaining residual musculature on the skeletal structures were boiled off in 2 litres of water containing 5g of potassium hydroxide. The bones were properly dried and weighed. The viscera was carefully removed and the lengths and weights determined.

Average bone weights were obtained by weighing all the pneumatic bones. Means of body weight for both guinea hens and cocks were compared statistically using student t-test.

**Results**

The average body measurements of guinea fowl at between 4-5 months of age is presented in Table I. A comparative biometrical data of the guinea hens (females) and cocks (males) is presented in Table II.

Table I: Average body measurements of local guinea fowls between 4 and 5 months of age

Body weight (kg)	1.15±0.02
Back length (cm)	15.07±0.01
Neck length (cm)	9.27±0.16
Shank length (cm)	6.11±0.40
Plucked weight (kg)	1.14±0.01
Feather weight (kg)	0.0091±0.10
Breast muscle weight (kg)	0.182±0.01
Carcass weight (kg)	0.574±0.02
Skull weight (kg)	0.003±0.01
Bone weight (kg)	0.069±0.01

business in these areas with the involvement of middlemen and women. They do sell at higher prices during the dry season than in the rainy season.

Sexing is rather difficult even among adults. However, in older adults, the helmet and wattles of the males are usually larger. Relying on these physical parameters failed us severally. Sound therefore, except perhaps in captive guinea fowls, is a good way to determine sex. However, a combination of vent examination method, sound method and a post mortem confirmation of reproductive organs must be employed to eliminate the attendant failures accompanying the use of only one method.

Ralph (2002) observed 14 colours patterns of the guinea fowl. However, the study observed largely pearl gray with a few white and chocolate colour patterns in the region.

The rural poultry, particularly guinea fowl farming, in the area of study represents a promising extensive or scavenging management system that could be transformed into a world class guinea fowl production zone in Nigeria.

Table II: Comparative biometrical data of guinea hens and cocks

	Body weight (kg)	Back length (cm)	Neck length (cm)	Shank length (cm)	Feather weight (kg)	Carcass weight (kg)	Breast Muscle weight (kg)
Males	1.24±0.02	15.31±0.01	9.53±0.16	6.2±0.4	0.091±0.01	0.716±0.02	0.203±0.016
Females	1.07±0.02	14.83±0.01	9.02±0.16	6.02±0.4	0.10±0.01	0.574±0.02	0.161±0.02

**Guinea colours spotted in the region**

The following colours are spotted in the region of study: pearl gray, white and chocolate. Pearl gray colour pattern is the most preponderant.

**Discussion**

In the area of study, guinea fowl rearing is an established component of the rural socio-economy. However, Dafwang (1989), in a comprehensive study in the neighbouring Plateau State reported that losses to disease, predators, theft and accidents could sometimes be as high as 77.8%.

The average weight of guinea fowls in this region does not compare favourably with the 2.2-2.4kg (males) and 2.3-2.5 (females) at the end of season in France (Anon., 1980). This marked differential in weight remains largely a function of feeding. Dafwang (1989) reported that the rural poultry pick grains, earthworms, insects, vegetables, grass, household wastes and kitchen remains. Rural farmers supplement feeds in handfuls and occasionally.

Rural poultry products have shown increases in markets (Suleman, 1989). Buying and selling is becoming a big

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