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## Variations in Qualitative Traits in the Nigerian Local Chicken

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**Abstract:** Ninety (90) captive adult normal feathering female Nigerian local chicken in an ongoing study were scored for phenotypic characteristics (variation in plumage and shank colour, presence of ear lobe, ear lobe colour, comb type, head shape and ptilopody). Sole (black, white and light brown) and mottled plumages were dominant and had an occurrence of 54.38 and 38.46% respectively. Shank colour was predominantly black (42.22%). Comb type varied from pea, rose, walnut to single with a percentage occurrence of 18.18, 22.08, 15.58 and 44.16 respectively in the population studied. 82.05% of the population had plain head shape while 70% showed the presence of ear lobes dominated by white colour (73.21%). Ptilopody was observed in 5.41% of the population. The population of Nigerian local chicken studied showed heterogeneity in the phenotypic traits considered and therefore present a genetic pool from which selection could be made.

**Key words:** Nigerian local chicken, phenotypic traits, tolerance of birds

### INTRODUCTION

The Nigerian local chicken otherwise called the native or village chicken are widely distributed in the rural areas of the country where they are kept by the natives principally as a source of protein and income. These native chickens play major roles not only in rural economies but also contribute substantially to the gross national product (Momoh *et al.*, 2007). They have remained predominantly in villages because of their inherent advantages over their exotic breed contemporaries. This is often manifested in their ease of rearing, adaptability to prevailing conditions and better flavour of meat and eggs.

The unique adaptive features of the Nigerian local chicken predisposing it to adapt to the local environment have been reported by several workers (Adebambo *et al.*, 1999; Ikeobi *et al.*, 2001). In summary, these include their relatively small adult body size, flighty nature, relatively thick egg shells some fancy colour pattern of mottling, extension and spotting, the grey or black skin colour and the presence of some major genes affecting their feather structure and feather distribution.

The current study observed the variations in some of these phenotypic traits in a population of native chickens in Makurdi.

### MATERIALS AND METHODS

The experimental birds were assembled from the local market within Makurdi and its environ. They were randomly distributed into nine experimental units with a mating ratio of 1:10 sire to dam respectively per experimental unit. All the experimental units were however pooled for the purpose of this valuation. The population of local chicken was visually appraised for variation in the phenotypic traits.

Data obtained were subjected to simple descriptive statistics using Statistix® analytical package.

### RESULTS AND DISCUSSION

The summary of the phenotypic traits observed are tabulated in Table 1.

Black, white and light brown were observed as sole plumage colours with percentage occurrence of 32.22, 7.78 and 12.22 respectively. 26.67% of the population was mottled while 21.11% were spotted. The predominant shank colour was black (42.22%). Ear lobe was present in 78% of the population with frequencies of 73.02, 6.35 and 20.63% white, black and red respectively.

Comb type varied from rose (17.78%), Pea (23.33%), Walnut (15.36%) to single (43.33%). The crested head shape was least frequent (17.78%) relative to the plain head shape (82.22%). Ptilopody occurred in 5.56% of the population studied. Consequently, the Nigerian local chicken show heterogeneity in the phenotypic traits considered.

In general, the Nigerian local chicken is known to be hardy and quite adapted to the local environment. However, the degree of tolerance or susceptibility of individual birds to the stressful environment due to variation in phenotypic characteristics is a subject for further study. Since colour plays a role in the absorption and reflection of ultraviolet radiation, birds with black phenotypic characteristics may be more susceptible to heat stress under intense solar radiation. Birds with white phenotypic characteristics on the other hand may be more tolerant under same conditions.

Selection of better performing animals to be parents of the future generation is the basic tool for animal improvement. Selection is made possible due to

Table 1: Summary of phenotypic traits in the local chicken population

Trait	Characteristic	Frequency	Percentage
Plumage colour	White	7	7.78
	Light brown	11	12.22
	Spotted	19	21.11
	Mottled	24	26.67
	Black	29	32.22
	Sub total	90	100.00
Shank colour	Yellow	17	18.89
	White	35	38.89
	Black	38	42.22
	Sub total	90	100.00
Ear lobe	Absent	27	30.00
	Present	63	70.00
	Sub total	90	100.00
Ear lobe colour	Black	4	6.35
	Red	13	20.63
	White	46	73.02
	Sub total	63	100.00
Comb type	Rose	16	17.78
	Walnut	14	15.56
	Pea	21	23.33
	Single	39	43.33
	Sub total	90	100.00
Head shape	Crested	16	17.78
	Plain	74	82.22
	Sub total	90	100.00
Ptilopody	Present	5	5.56
	Absent	85	94.44
	Sub total	90	100.00

measurable variations in the animal population. Thus, the diversity in phenotypic characteristics in the population of native chicken studied present opportunity for selection. Such selection will be useful in the improvement of the native chicken if one or more of the observed characteristics is/are positively correlated to

traits of economic importance. Thus, further study is required to establish any positive relationship between the phenotypic traits and the desired metric traits.

Also, consumer preferences for the observed phenotypic presentations vary across the country. Breeders may concentrate on consumer preferences in their locality to meet local demand.

**Conclusion:** The population of Nigerian local chicken studied showed heterogeneity in the phenotypic traits considered. These variations may confer on individual birds differential levels of tolerance in a stressful environment. Further investigation is required to determine the tolerant level of the birds due to variations in their phenotypic characteristics. This will form a basic tool for selection of better performing birds in a stressful environment.

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