

## Reproductive Performance and Husbandry Practices of Indigenous Chickens in Delta State, Nigeria

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### ABSTRACT

The study was carried out using field data to investigate the reproductive performance and husbandry practices of indigenous chicken in Delta State. Traits considered were number of eggs lay per clutch, flock size, age at sexual maturity and body weight; and husbandry practices were house type, housing system, feed type and feeding practice. Data obtained were subjected to statistical analysis to determine percentage distributions. Results obtained showed that the mean flock size, number of egg per clutch, sexual maturity and body weight of indigenous chicken ranged from 11 to 15 birds, 6 to 10 eggs, 7 to 12 months and 0.71 to 1.50 kg respectively. Percentage distribution of housing type used was 79.3 %, 20.7 % and 92.7 % for thatches, feed bags and netting and scavenging respectively. Feeding was not common as only 5.3 % of the farmers feed once a day. Therefore, it was concluded that the performance of indigenous chickens under traditional management practices was low. It is recommended that the indigenous chicken producers in Delta State should practice modern husbandry practices that could lead to higher performance.

**Keywords:** Traditional, husbandry practices, distribution, reproductive, indigenous chicken, performance

### INTRODUCTION

The domestic fowl plays a major role in supplying the population with egg and meat, which are highly nutritious and popularly consumed. A large proportion of animal protein consumed in rural areas of Nigeria comes from indigenous chicken meat and eggs (Sonaiya 2003) and is considered to

be the main source of income for the rural poor (Badubi *et al.*, 2006). Despite these contributions, the Nigerian indigenous chicken has not been fully exploited for the purpose of genetic improvement, commercial production of indigenous chickens has not been effective because the stocks have been termed a 'poor producer'

(FAO, 2006). They constitute a significant contribution to human livelihood and contribute significantly to food security. Most importantly, they are known for their adaptive hardiness and superiority in terms of their resistance to endemic diseases and other harsh environmental conditions (Gueye *et al.*, 1998).

The Nigerian indigenous chickens are characterized by poor growth, small body size, and low egg production of 30-80 small eggs per hen per year (Sonaiya, 2003). However, various researchers have revealed that under good management the indigenous chicken expresses the potentials of a good producer (Adeleke *et al.*, 2011). Indigenous chicken in rural level are kept mainly for consumption and income. These chickens are mainly owned and cared for by women and are kept in flock ranging between 15 and 20 (Badubi *et al.*, 2006), managed on free - range systems where the birds mostly scavenge for feed picking on kitchen waste, worms, insects, grasses and vegetables growing round the households. In this system there is little or no controlled breeding. It is usually the most aggressive, strong and dominant cock, which sires

most offspring in the flock. The indigenous chickens of Nigeria are exposed to extremes of weather, diseases and parasites, which partly account for their poor productive performance. However, they can be made more productive by improving their production environment. Baseline information on the performance of the traditional chicken will enable it comparison when production is improved. A report showed that indigenous chickens of Nigeria may be more productive with improved diets when reared in confinement as compared to those who derived feed only from scavenging (Adeleke *et al.*, 2011).. But several reports indicate that a small change in the traditional husbandry practices of rural chickens may increase tangible production potential. Therefore, the objective of this study is to determine the reproductive performance and husbandry practices of indigenous chickens in Delta State.

## MATERIALS AND METHOD

The study area covered the three (3) senatorial districts (Delta South, Central and North) in Delta State of Nigeria. On average a total of thirty (30) communities were randomly chosen per Local Government

Areas. The communities were chosen in such a way that one local area had a radius of 100 km. The climate is forest and mangrove zones with high annual rainfall ranging from 2500 mm in the South to 3000 mm in the North. The state has a tropical climate characterized by two district seasons. The wet and dry seasons with average temperatures of 24°C in the wet season and about 27°C in the dry season. (FRN, 2007). The study focused on the resource poor farmers who raised indigenous chicken in fifteen (15) Local Government Areas in Delta State. The sampling for this study was done using a cross – sectional research approach to obtain desired data.

A multistage sampling procedure was carried out. The first stage involves the selection of fifteen (15) Local Government Areas (LGAs) in the State, identified as major indigenous chicken producers. The second stage involved a random selection of two communities from each LGA. The third stage involves a snowball sampling of twenty (20) indigenous chicken producers from each community. Data were obtained from a total of 300 indigenous chicken producers. Data

were collected for a period of three months (September to November, 2016). The questionnaires used were designed to be able to elicit information on reproductive performance; such as number of eggs lay per clutch, flock size, age at sexual maturity and body weight. Data obtained were subjected to descriptive statistical analysis to determine percentage distributions.

## RESULTS

Management practices adopted by respondents are presented in Table 1. The result revealed that a total of 374 (62.3 %) of the total respondents surveyed did not provide any housing for their chickens, while only 226 (37.7 %) of the farmers provided housing of some kind. The chickens were reported to roost on the treetops and sometimes on any raised item that could be found in the homestead of the respondent 79.3 % were made of thatches and 20.7 % from feed bags and netting.

Indigenous chickens depend mainly on scavenging for their food (92.7 %), with only 5.3 % of the farmers feeding their chickens once a day. Most farmers (78 %) who feed their chickens used kitchen waste, grains and their by-products where available throughout the year. Use

of commercial feeds was found to be minimal with only 9 (1.5 %) farmers using both grower and layer mash. The flock size distribution presented in Table 2, showed that flock size ranged from 1 to > 25 in the study area. Majority (46 %) of them had flock size of 11 to 15. The number of eggs per clutch ranged from 6 to 20. Majority lay between 6 and 10 eggs per clutch. The birds attained sexual maturity at the age of 7 to 12 months. The body weight of the birds ranged from 0.71 to 1.50 kg with majority (30 %) of the weight clustering between 1.31 and 1.40 kg (Table 2).

## DISCUSSION

Management practices of indigenous chickens in terms of housing system (Table 1) shows that numerous reasons were advanced for not housing chickens, such as the belief that housing chickens will predispose them to parasites, predators and diseases. This observation is in line with that of McAinsh *et al.* (2004) who reported that materials used for houses as well as nests could make good living and hiding conditions for external parasites which live a great deal of their lives off the host hiding in cracks and crevices in buildings. The observed housing system in the

current study agrees with housing system for indigenous chickens observed in Tanzania (Msoffe *et al.*, 2001), Senegal (Missohou *et al.*, 1998), Ethiopia (Tadelle and Olge, 2001), Botswana (Badubi *et al.*, 2006) and Nigeria (Sonaiya, 2003). Different types of housing used in the study area were not surprising because housing type have been observed to differ between regions and countries, agreeing with observations of Sonaiya (2003). The housing type can be said to determine their feeding. Badubi *et al.* (2006) reported that scavenging was the main source of indigenous chicken's food with occasional supplementation with kitchen leftovers, and grains and by-products during harvest time. Since the farmers are resource poor scavenging was therefore their major source of feeding. Similar supplementation of indigenous chicken feed had also been reported by Sonaiya (2003) in Nigeria. The findings from the study also agreed with the results of these authors (Tadelle and Olge, 2001). This type of feeding management resulted in the low productivity of indigenous chickens because they could hardly find enough to eat and what they ate was mainly exerted during scavenging (Ahders, 2004).

Interaction with the farmers during the survey revealed that water was not provided regularly. It appeared that most farmers did not know the importance of providing water for their chickens.

Household (HH) flock sizes in the study fall below the ranged of (11 - 20) as was also reported in Malawi (Ahders, 2004) and other countries in Africa (Ekue *et al.*, 2002) but lower than 23 chickens in a communal area and 35 chickens in a small - scale commercial area reported by Maphosa *et al.* (2004). However, an average flock size of 16 birds was reported in the central parts of Ethiopia (Tadelle and Olge, 2001), which is in good agreement with the current study. Flock size was observe to vary between seasons mainly because of the availability of feed, the occurrence of disease, the presence of predators as well as the economic status of the owners as was also reported by Adeleke *et al.*, (2011). The disparity observed in flock size can be attributed to the different environment and production intensity.

Majority of indigenous chickens lay between 6 and 10 eggs per clutch (Table 2). This result agreed with

the findings of Orheruata *et al.*, (2006) and Badubi *et al.* (2006) but contrary to that of Tadelle and Olge (2001) that carried out a similar study in Edo State, Nigeria and in the central Highlands of Ethiopia respectively. In their study, the average egg per clutch was 15-20. Comparing the number of eggs laid in the field and that of the On-station suggest that the laying ability of the chickens were not bad and with proper management, there could be increase in number of eggs laid. According to Gueye *et al.*, (1998) there is room for improvement of the indigenous chickens because many eggs are laid with little input.

Seventy (70) per cent of the indigenous chicken reared in the study areas attained sexual maturity at the age of 7-12 months with body weight clustering between 1.11 to 1.40 kg. This age and weight is not surprising because the chickens spent so much energy scavenging for feed hence could not grow as expected. The age at sexual maturity reported by Sonaiya 2003) were lower than the ones recorded in this study Badubi *et al.* (2006) reported that it takes indigenous chicken (hens and cockerels) about 6 month to reach adult live weight of

2.0 to 2.2 kg. The study concentrated in one Agricultural district while the present study captured the whole of Delta State. Badubi *et al.*, (2006) reported that possible reasons for slow growth rates of the indigenous chickens could be due to the difference in age at first lay, ranging between 6 and 8 months, which were repeatedly higher than the 4 to 5 months observed in commercial layers (Sonaiya 2003).

The body weight of indigenous chickens ranging between 0.71 kg - 1.50 kg (Table 2) in the current study was in agreement with those reported by Adeleke *et al.*, (2011) under field conditions. As expected, the mature male chickens were significantly heavier than females and are in line with the reports of Ekue *et al.* (2002) The body weight value of 0.71- 1.50 kg reported in this study is less than the 2.0 to 2.2 kg reported by Badubi *et al.* ,(2006).

## CONCLUSION AND RECOMMENDATION

The results of this field survey have reaffirmed that traditional husbandry practices do not allow the chicken perform to their genetic potentials. Therefore, indigenous chicken producers in the study area should improve in their housing

and feeding to obtain higher performance from our indigenous chickens.

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**Table 1: Management Practices Adopted by Farmers in Rearing of Indigenous Chicken in the Study Area**

| Variables               | Number Observations | of Frequency (%) |
|-------------------------|---------------------|------------------|
| <b>House types</b>      |                     |                  |
| Thatch                  | 476                 | 79.3             |
| Feed bags and netting   | 124                 | 20.7             |
| <b>Total</b>            | <b>600</b>          | <b>100</b>       |
| <b>Housing system</b>   |                     |                  |
| No provision of shelter | 374                 | 62.3             |
| Provision of shelter    | 226                 | 37.7             |
| <b>Total</b>            | <b>600</b>          | <b>100</b>       |
| <b>Feed types</b>       |                     |                  |
| Commercial feed         | 09                  | 1.5              |
| Kitchen waste           | 468                 | 78.0             |
| Grains and by-products  | 123                 | 20.5             |
| <b>Total</b>            | <b>600</b>          | <b>100</b>       |
| <b>Feeding practice</b> |                     |                  |
| Feeding once a day      | 556                 | 92.7             |
| Feeding twice a day     | 32                  | 5.3              |
| No feeding              | 12                  | 2.0              |
| <b>Total</b>            | <b>600</b>          | <b>100</b>       |

**Source:** Survey Data (2016)



**Plate 1: Backyard type of housing system**



**Plate 2: Platform type of housing system**



Plate 3: Backyard type of housing system  
Source: Field survey, (2016)



Plate 4: Indigenous chicken scavenging for food

**Table 2: Performance Characteristics and Frequency Distribution of Indigenous Chicken**

| Variables                              | Number of Observations | Frequency % |
|--|------------------------|-------------|
| <b>Flock size (no.)</b>                |                        |             |
| 1-6                                    | 06                     | 1.00        |
| 6-10                                   | 72                     | 12.00       |
| 11-15                                  | 276                    | 46.00       |
| 16-20                                  | 168                    | 28.00       |
| 21-25                                  | 54                     | 9.00        |
| >25                                    | 24                     | 4.00        |
| <b>No. of egg lay Per clutch (no.)</b> |                        |             |
| 6-10                                   | 444                    | 74.00       |
| 11-15                                  | 150                    | 25.00       |
| 16-20                                  | 06                     | 1.00        |
| <b>Age at sexual Maturity (mo.)</b>    |                        |             |
| 7-12                                   | 420                    | 70          |
| 13-18                                  | 180                    | 30          |
| <b>Body weight (kg)</b>                |                        |             |
| 0.71 – 0.80                            | 12                     | 2.00        |
| 0.81-0.90                              | 24                     | 4.00        |
| 0.91-1.00                              | 48                     | 8.00        |
| 1.11-1.20                              | 168                    | 28.00       |
| 1.21-1.30                              | 120                    | 20.00       |
| 1.31-1.40                              | 180                    | 30.00       |
| 1.41-1.50                              | 48                     | 8.60        |

Source: Field Survey (2016)