



RURAL PRODUCTION OF TROPICALLY ADAPTED BREEDS OF CHICKENS IN RURAL AREAS OF KWARA STATE, NIGERIA

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ABSTRACT

Chicken keeping is a common thing with most household in rural areas of Nigeria. The birds are raised under extensive system of production with little or no feed provided by the farmers for the birds, hence there is the need to compare the rate of egg production of six different breeds of chickens reared under the same conditions in the rural areas. Twelve villages were randomly selected from the long list of villages in Kwara, 20 households per village and 4 villages per senatorial district, with a total coverage of 240 households for the study. The birds that were used for the study were indigenous chicken (Fulani), improved indigenous chickens (Shika Brown, Funaab Alpha and Noiler) and imported tropically adapted birds (Sasso and Kuroiler). Thirty six weeks old pre-vaccinated and brooded chickens of different breeds given to the farmers were managed under the traditional poultry scavenging system in all the three senatorial districts. The non-parametric Kruskal–Wallis test was used for the comparison between districts and breeds. There were no significant differences in egg production per senatorial district, egg production from different breeds and production from different senatorial districts remained averagely low. Low egg production by all the breeds showed that scavenging way of rural chicken production should be improved on for better productivity. This can be achieved through supplemental feed formulated and produced from locally available feed ingredients for the chickens.

Keywords: breeds; chickens; egg; production

INTRODUCTION

The demand for meat and egg is on the increase as a result of increase in the rate of population growth worldwide. Notably, poultry production development in Nigeria has taken a quantum leap in the last two decades; however, the development has been mainly restricted to commercial poultry production and not rural poultry production. The rural poultry production accounts for about 70 percent of the total poultry population (Ogunlade and Adebayo, 2009; Akinola and Essien, 2011), indigenous chicken eggs and meat has always fetched a much higher price than that from the commercial poultry and also, the products from both rural chickens and commercial birds have been running parallel with their own market segment and specific clientele (Omprakash and Pandian, 2011), yet, indigenous chicken has been totally neglected by both government and the commercial poultry investors.

A systematic and planned development of indigenous chicken production into small commercial units thus holds a tremendous potential for growth in rural areas, especially owing to consumer preference for its egg and meat (Bett et al., 2012). The consumers' preference for indigenous chickens is based on the perception that locally produced poultry products are from natural and safe feed crops and hence good for the family's consumption. Indigenous

chickens are considered as valuable asset for rural household and has contributed significantly to food availability for the household. This because, poultry mainly provides meat and eggs which increase households' consumption of animal sourced food. Eggs, however small in quantity provide micronutrients and high-quality protein in bioavailable forms to balance nutritionally the consumption of common staple food that is basically energy-based diet (De Bruyn et al., 2015).

Moreover, the contribution of poultry to food security can be related with income (Magothe et al., 2012; Abebe and Tesfaye, 2017) from sales of poultry and poultry products, which are often, used for purchase of additional food items necessary for the household from the market (Assa, 2012). More so, indigenous chickens are genetically envied for genetic exploration and hybrid vigour exploitation (Adeleke et al., 2011). Indigenous chicken farming is, however, faced with several challenges (Billah et al., 2013), including inherent slow growth rates, high rearing mortalities and susceptibility to diseases, poor housing, insufficient health care (Alders, Bagnol and Young, 2010), high feed cost, poor nutrition and poor layers laying small sized eggs, all these challenges has adverse effect on production (Sharaunga, Darroch and Mudhara, 2014; Ruel, Quisumbing and Balagamwala, 2018). Many improved breeds of broilers have been

imported into Nigeria and presently, there is an improvement in the potential of broiler strains to provide high quality meat at lower cost. The improved breeds grow faster and produce more meat and eggs than the local breeds. The objective of this study was to compare the rate of egg production of six different breeds of chickens reared under the same conditions in the rural areas.

Scientific hypothesis

Management practices has direct effect on rate of egg production than breeds of chicken

MATERIAL AND METHODOLOGY

The study was conducted between December 2017 and April, 2018 within the three Senatorial Districts of Kwara State of Nigeria. Kwara State is located in the North central geopolitical zone, commonly referred to as Middle Belt. The state comprises of rainforest in the Southern parts with wooded savannah covering the larger part of the state. Average maximum temperatures vary between 30 °C and 35 °C.

A total of four villages per Senatorial District were selected for the study. In each of the selected villages, twenty households were randomly selected for study, making a total of 240 households. The birds that were used for the study were indigenous chicken (Fulani), improved indigenous chickens (Shika Brown, Funaab Alpha and Noiler) and imported tropically adapted birds (Sasso and Kuroiler), as shown in Figure 1. The distribution of birds in each of the villages were as follows:

- four households with Sasso birds,
- four households with Kuroiler birds,
- three households with Fulani birds,
- three households with Shika Brown birds,
- three households with Funaab Alpha birds,
- three households with Noiler birds.

Thirty-six-week old pre-vaccinated and brooded chickens of different breeds given to the farmers were managed under the traditional poultry scavenging management system. The feeding of birds was supplemented with readily available commercial feeds, agricultural products (maize, rice, sorghum, wheat, millet, etc.) , agricultural by-products (corn bran, wheat bran, rice bran, groundnut cake, etc.) and kitchen wastes (leftover food, leafy vegetables, etc.). Based on the capacity of the farmers, health management practice was also carried out. In handling health challenges, traditional medicine was practiced by the rural resource-poor poultry farmers and this was done by practical application of indigenous medicinal herbs/plant extracts were used in controlling health challenges.

Statistic analysis

Statistical analysis was carried out using the SPSS Staistical Software. The non-parametric Kruskal–Wallis test was used for the comparison between districts and breeds. Statistical significance was determined at *p*-value of 0.005 (SPSS 2015).

RESULTS AND DISCUSSION

Indigenous chicken breeds are important in rural economies with respect to income generation and provision of nutritious chicken egg and meat for consumption (Vali 2008; Mahendra, 2016). The system of production adopted in the rural communities affect the availability of these products. The scavenging system of chicken production in the rural area is important (Alders and Pym, 2009) and cheap for the farmer but results in low productivity in terms of body weight gain and egg production (Natukunda et al., 2011). The interview conducted revealed that the farmers gave their chickens a handful of grain early in the morning and evening as supplementary feed but not compounded balanced diet. A Kruskal Wallis One Way ANOVA tests revealed that there was no significant difference in the total number of eggs produced in the senatorial districts (Table 1). However, egg production was observed to be significantly higher in the local breeds than the imported birds (Table 2).

Kruskal Wallis One Way ANOVA tests gives a probability of 0.000 which implies a significant difference in total number of eggs produced in the breed categories. From this result, the Noiler breed has superior and better performance in egg production, followed by Shika Brown, Kuroiler and Sasso. The breeds with least egg production were the Fulani and Fuaab Alpha (Table 3).

A comparison of egg production of the breeds across the senatorial districts showed that the rate of egg production by the improved indigenous chickens (Noiler and Shika Brown) were higher than the imported chickens (Sasso and Kuroiler) as shown in Figure 2. From the study, egg productivity from different breeds and senatorial districts remained averagely low for each of the districts and this is largely due to poor management practices of birds scavenging on their own for feed with little or no supplementary feed (Turk, 2013; Tadelle and Ogle, 2001), consequently, low and poor feed intake will result in low output productivity even with improved breeds of chickens. Hence performance of birds reared in the rural areas can be improved by change in husbandry, feeding, and better health cover (Fiorella et al., 2016). Another factor responsible for low production is that most of the rural chicken producers do not have the mindset of rearing of chickens for profit making (Dumas et al., 2016) most of the rural chicken producers raise chickens for consumption, entertainment of visitors during festive periods, dowry payment or to give as gift but not as a viable business (Melesse, 2014; Dhaka et al., 2017).

The result on egg production per breed shows that noiler breed has superior and better performance in egg production when raised under scavenging system of poultry management. The production of eggs by Sasso and kuroiler chickens were low compared to Noiler, an improved tropically adapted indigenous chicken. This could be due to inappropriate feeding regime and poor management practices (Varguez-Montero et al., 2012) which led to the low laying performance of the imported chickens that are known to have good laying ability (Javed et al., 2003). The scavenging system without adequate supplementary feed is a major contributory factor to low egg production even with breeds that has better genetic potential for growth and production.

Table 1 Egg Production in the senatorial districts (n = 2132).

Senatorial District	No. of Collection Point	Mean	Total Eggs	95% Confidence Interval for Mean	
				Lower	Upper
Kwara Central	478	12.87	6154	10.19	15.56
Kwara North	481	7.57	3642	6.65	8.49
Kwara South	1173	11.66	13676	10.53	12.79
Total	2132	11.01	23472	10.12	11.90

Note: Kruskal Wallis Value =0.329, Degree of Freedom = 2, p-value = 0.848.

Table 2 Egg production of imported and local breeds (n = 2132).

Breed	No. of Collection Point	Mean	Total Eggs	95% Confidence Interval for Mean	
				Lower	Upper
Imported	796	9.76	7771	8.65	10.87
Local Breed	1336	11.75	15701	10.49	13.01
Total	2132	11.01	23472	10.12	11.90

Note: Kruskal Wallis Value = 218.049, Degree of Freedom = 5, p-value = 0.000.

Table 3 Egg production per breed (n = 2132).

Breed	No. of Collection Point	Mean	Total Eggs	95% Confidence Interval for Mean	
				Lower	Upper
Fulani	342	5.70 ^c	1950	4.59	6.82
Sasso	356	10.31 ^b	3671	8.63	11.99
Noiler	212	31.03 ^a	6579	25.58	36.48
Kuroiler	440	9.32 ^b	4100	7.84	10.80
Shika Brown	446	12.36 ^b	5512	10.41	14.31
Funaab Alpha	336	4.94 ^c	1660	3.59	6.29
Total	2132	11.01	23472	10.12	11.90

Note: n = 2132, Kruskal Wallis Value = 218.049, Degree of Freedom = 5, p-value = 0.000.



Figure 1 The chicken breeds used for the study (Adebambo et al., 2018).

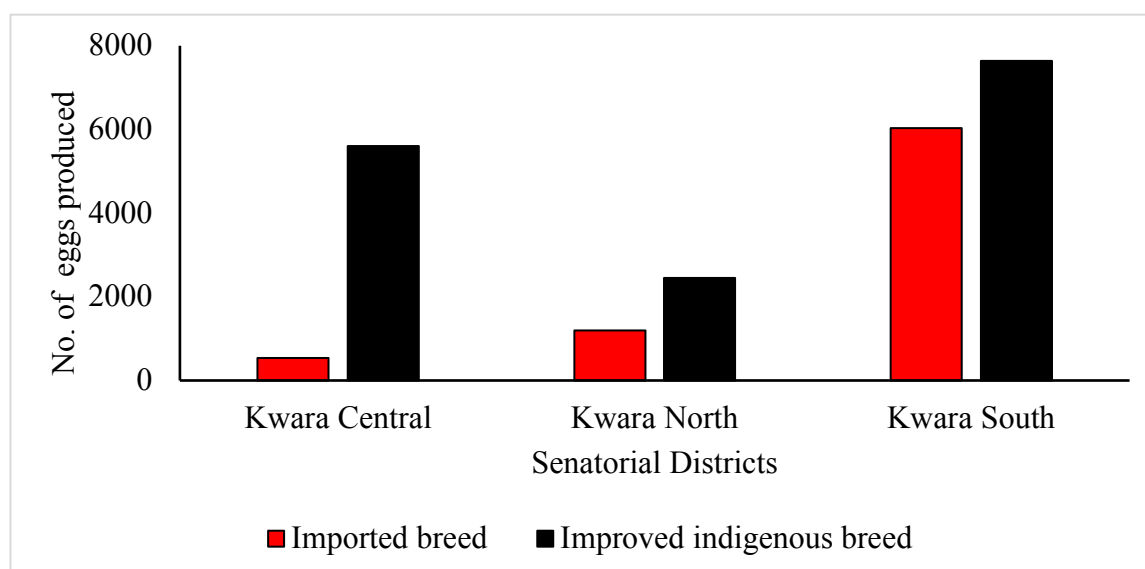


Figure 2 Egg production of the imported and improved indigenous breeds.

Mutayoba et al., (2012) reported that supplementation can lead to improved performance of local chickens in terms of growth, egg production and quality.

The cost and availability of commercial feed influenced its use by people of low resources in the rural areas however, supplementary feed can be compounded from locally available feed ingredients in the rural areas. It is of importance that scavenging system must be supplemented either with compounded feed or left over meal from individual household. Left over meals can only be possible where the household has more than enough to eat but in situations where there are no leftovers as a result of poverty or food scarcity, it will have negative effect on the chickens resulting in low body weight and egg production (Gondwe et al., 2005).

Another factor that may be responsible for this low egg production by the imported chickens may be adaptability problem. The variation in temperatures, high humidity, excessive heat and rainfall exact significant effects on poultry birds in terms of egg production, body weight, health, diseases, income of farmers, diet of the people, quality and quantity of poultry products and the economy of the developing countries (Tumova and Gous, 2012; Diarra and Tabuaciri, 2014).

Though the six breeds are tropically adapted birds but the rate of adaptability may vary among breeds having effect on the productivity of the chickens. Probably the rate of adaptability may also be reason why noiler birds did better than sasso and kuroiler birds. The performance of any chicken is also affected by genotype and the environment (Dessie et al., 2012), important attributes of indigenous chickens are their hardiness in the ability to tolerate harsh environmental condition and poor husbandry practices in terms of climate, handling, watering, and feeding without much loss in production are all for survivability and not for production as observed in this study.

CONCLUSION

Low egg production by all the breeds shown in Figure 2 showed that scavenging method of rural chicken production should be supplemented with home formulated feed produced from locally available feed ingredients. Most of the chicken producers in the rural areas do not keep chickens for profit making hence, the need to educate them on improved management system of poultry production. Improved practices will not only increase income level generation but will also bring about positive change in the socio-economic level and food security of the rural communities.

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Acknowledgments:

This study was made possible by International Livestock Research Institute (ILRI) –led by Dr. Tadelle Dessie the International Program Leader for African Chicken Genetic Gains (ACGG), Prof. F.B. Sonaiya the PI. ACGG-NG, Prof. O.A. Adebambo the Co-PI. ACGG-NG and Dr. O. Bamidele, the National Project Coordinator for ACGG-NG.

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