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# CARCASS QUALITY OF NOILER COMPARED TO BROILER AND COCKEREL

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**Abstract**
Rearing of Noiler as meat type chicken is gradually becoming popular in South Western Nigeria. This study compared carcass quality of male and female Noiler chicken with broiler and Isa brown cockerel chicken. Forty-eight (48) each of Noiler male (cockerels), Noiler female (pullets), broilers, and Isa brown cockerels were allotted into four (4) treatments constituting treatment 1 – 4, respectively. There were three (3) replicates per treatment and each replicate contained 16 birds. At eight (8) weeks for broilers and fourteen weeks (14) for Noilers and Isa brown cockerels, two (2) birds per replicate were slaughtered for carcass analysis. The birds were scalded in hot water for about 60 seconds, defeathered and eviscerated. Carcass cut parts were weighed and expressed as percentage of the live weight. The following values were obtained for live and plucked weight for broilers, Noiler male, Noiler female, and Isa brown cockerels; 2577.67 and 2370.00g/bird; 2309.67 and 2095.00g/bird; 2285.00 and 2072.67g/bird; 1224.33 and 1087.67g/bird, respectively. These values were significantly different ($P<0.05$) across the treatments except Noilers males and females that were similar ($P<0.05$). Head and neck weight were also significantly affected. Conclusively. broilers weights were the highest, however, proportion of the cut parts to the plucked weight were not significantly affected.

**Keywords: Broiler; Live weight; Noiler; plugged weight; Cockerel**

## Introduction

An ever growing population, income growth and urbanIsation have driven up the demand for meat and other livestock products in developing countries. Recent decades have seen the consumption of poultry meat in developing countries increase by more than double the increase seen in developed countries (Sandilands and Hocking, 2012). Selective breeding in conjunction with improved genetics, well-organized production systems, highly specialised nutrition and regular veterinary attention has produced a large, fast growing bird with high breast muscle yield that can reach market weight in as little as 5 weeks (Fanatico *et al*., 2007).

Since the development of the commercial poultry industry, genetic selection has largely been focused on enhanced production (Hoffmann, 2005). The development of indigenous poultry as a commercial enterprise is highly dependent on whether or not consumers find that the product meets their demands in terms of meat quality (chemical and sensory) and animal welfare, factors dependent growth rate and genetics. More recently, the focus has shifted to quality aspects of meat as opposed to the quantity of meat produced, which has been the norm, thereby providing an opportunity for market segmentation (Fanatico *et al*., 2007). Thus the need to identify breeds that suit these demands and quantify their suitability with

regards to production performance is essential. Although the production potential of indigenous chicken lines is low in comparison to commercial broilers, they have the added advantages of having evolved the ability to adapt and survive under a range of challenging environmental and ecological conditions. They are hardy and require low levels of input for production (Dyubele *et al*., 2010).
Kuroiler is a hybrid breed of chicken developed in India. Kuroilers are derived from crossing either coloured broiler males with Rhode Island Red females, or, White Leghorn males crossed with female Rhode Island Reds (Sandilands and Hockin, 2012). In order to promote the use of indigenous lines for commercial production, information on their meat quality and carcass characteristics is essential. This study compared carcass quality of male and female Noiler chicken with broiler and Isa brown cockerel chicken.

**Materials and methods**
Experimental site
The study was conducted at the Poultry Unit of Teaching and Research Farm of Oyo State College of Agriculture and Technology Igboora. Forty-eight (48) each of Noiler male (cockerels), Noiler female (pullets), broilers, and Isa brown cockerels were used to compare carcass characteristics of Noiler with two other poultry meat types.

**Experimental design and management of birds**
The experimental birds were allotted into four (4) treatments comprising Noiler male, Noiler females, broilers and Isa brown cockerels representing treatment 1 – 4, respectively. There were three (3) replicates per treatment and each replicate contained 16 birds. The experimental design was Complete Randomized Design (CRD). All the birds were fed the same commercial broiler feeds for the first eight weeks while Noilers and Isa brown cockerels were fed commercial grower feed for the remaining six weeks

**Determination of carcass characteristics of chickens**
At eight (8) weeks of broilers and (14) fourteen weeks for Noilers and Isa brown cockerels, two (2) birds per replicate were slaughtered for carcass analysis. The birds were scalded by immersion in hot water for one minute. The abdomen of the birds was opened and the internal organs were carefully removed and weighed. Live weight, plugged weight, feather weight and head weight, were carefully cut and weighed using sensitive electronic scale. The following were measured as percentage of the plucked weight; neck, wing, back, breast muscle, thigh muscle, drum stick, shank and leg.

**Data analysis**
Data obtained from the study were subjected to Analysis of Variance (ANOVA) using the general linear model procedure of Statistical Analysis System (SAS, 2008) and where difference exists between means, Duncan Multiple Range Test was used to separate the means at 5% probability level (Duncan, 1955)

**Results**
Carcass characteristics of different meat type chickens (Noilers, broilers and cockerels) are presented in Table 1. The live weight, plucked weight, head, and neck weights showed significant ($P<0.05$) difference while shank, thigh, breast muscle, leg, neck, gizzard and feather percentages were not significantly ($P>0.05$) affected by the dietary treatments.
The highest values of live and plucked weight were recorded for broilers (2577.67g/bird and 2370.00g/bird, respectively) followed by Noiler cockerels (2309.67g/bird and 2095.00g/bird, respectively), Noiler pullets (2285.00g/bird and 2072.67g/bird, respectively) while the cockerels had the

least values (1224.33g/bird and 1087.67g/bird, respectively). These values showed significant (P<0.05) difference across the treatments except Noilers males and females that were similar (P>0.05).

Head weight in Noiler pullet and cockerel were the highest. However, similar values were recorded for Noiler female (69,47g) and the broilers (66.83g). Isa brown cockerel recorded the value (56.78g) that was significantly lower than other types. Values of head and neck percentage of Isa brown cockerels were the highest, followed by Noiler male, Noiler female and broilers, sequentially (3.58 and 5.58; 3.32 and 5.41%; 2.25 and 3.68%; 5.22 and 5.77%, respectively). The values were significantly across the treatments. Other parameters were not significantly affected by type of bird the meat was obtained

**Table 1: Carcass characteristics of the four different poultry meat birds**

| Parameter | Noiler pullet | Noiler cockerel | Broiler | Cockerel | SEM |
|---|---|---|---|---|---|
| Live weight (g/bird) | 2209.64$^{b}$ | 2309.00$^{b}$ | 2577.67$^{a}$ | 1224.33$^{c}$ | 216.36 |
| Plucked weight (g/bird) | 2075.00$^{b}$ | 2092.67$^{b}$ | 2370.00$^{a}$ | 1087.67$^{c}$ | 188.21 |
| Head weight (g/bird) | 69.47$^{a}$ | 73.04$^{a}$ | 66.83$^{ab}$ | 56.78$^{b}$ | 2.45 |
| Head (%) | 3.32$^{c}$ | 3.58$^{b}$ | 2.25$^{d}$ | 5.22$^{a}$ | 0.33 |
| Neck (%) | 5.41$^{c}$ | 5.58$^{b}$ | 3.68$^{d}$ | 5.77$^{a}$ | 0.03 |
| Wing (%) | 9.42 | 9.92 | 10.14 | 10.76 | 0.41 |
| Back (%) | 17.03 | 17.08 | 17.36 | 14.58 | 0.47 |
| Breast muscle (%) | 18.41 | 20.09 | 29.57 | 15.57 | 1.74 |
| Thigh muscle (%) | 11.09 | 11.83 | 12.84 | 11.09 | 0.42 |
| Drum stick (%) | 13.30 | 11.34 | 13.10 | 10.93 | 0.43 |
| Shank (%) | 5.93 | 3.89 | 3.65 | 5.86 | 0.37 |
| Empty gizzard (%) | 2.68 | 2,74 | 1.75 | 3.65 | 0.22 |
| Leg (%) | 0.71 | 0.58 | 0.51 | 0.87 | 0.06 |
| Feather (%) | 8.09 | 9.22 | 12.69 | 11.04 | 0.99 |

**Discussion**

The live weight which is the final weight attained by the bird was significant among the meat types (Noilers, broilers and cockerels). This might be due to significant values of feed intake and feed conversion among the experimental birds. Feed intake and feed conversion are reported to be influenced by genetics and environment (Leeson and Summer, 2005). The weight of the broiler was higher than other three meat chicken types, this might be due to the fact that broilers were bred to be fast growing bird with high breast muscle yield that can reach market weight in as little as 5 weeks (Fanatico *et al.*, 2007).Noilers, especially males Noilers, being a dual purpose chicken (Harth, 2011) are promising and compared favourably with broilers as obtained in this study. However, cockerel especially Isa brown cockerels, are slow growing and usually attain market very late (Oluyemi and Robort, 2000). The poultry industry is seeing a continuing trend in consumer preference from whole birds to further/secondary

processed products, although in countries where the use of slow growing/ indigenous lines is developing as the majority is sold as whole birds (Zhao *et al*., 2012). The various parts as proportion of the plucked weight were not significantly different, this showed that cutting to sizes did not affect the proportion. Today, the majority of poultry is being marketed in a manner that targets the yield of high value products such as breasts and boneless filets (Young *et al*., 2001).

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