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Sexual Dimorphism in Growth Traits and Carcass Characteristics in the Nigerian Fulani Ecotype Chicken

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ABSTRACT

A total of two hundred and eleven (211) indigenous Fulani Ecotype (FE) chicken were used to study differences in sex, using body weight (BW), body length (BL), body girth (BG), wing length (WL), drumstick length (DL) keel length (KL) thigh length (TL) shank length (SL) and shank diameter (SD). The results obtained showed no significant ($P>0.05$) differences in body weight and body parts for both males and females chicken from day old to 4 weeks of age. There was a significant ($P<0.05$) difference in all the growth traits at 8 weeks, with male chicken having higher values for BW (452.81g) compared to that of female (331.18g), BL was 29.88cm versus (vs). 27.70cm, BG (18.34cm vs. 15.58cm), WL (16.66cm, vs. 15.04cm), DL(9.58cm vs. 8.74cm), KL (7.56 cm vs. 6.16cm) TL (7.17cm vs. 6.77cm), SL (7.08cm vs. 6.25cm) and SD (0.49cm vs. 0.27cm). At 20 weeks old, 40 FE chicken (20 male and 20 female) were randomly selected from the population, starved overnight, and slaughtered to study the effect of sex on the carcass characteristics. The results obtained showed that males had significantly ($P<0.05$) higher values than females in slaughtered weight, dressed weight, feather weight, weight of scales and claws, but no significant ($P>0.05$) difference recorded in the percentage loss in blood and feather. The dressing percentage of female chicken (61.66%) was significantly ($P<0.05$) higher than that of male chicken (58.35%). The results showed that the breast muscle, the rib back, proventriculus and abdominal fats were significantly ($P<0.05$) larger in female FE chicken. There was no significant ($P>0.05$) in the chemical compositions of their meat.

Key words: Fulani Ecotype chicken, Sex, Growth traits, Carcass characteristics.

Introduction

Evaluation of farm animals is usually done using various indices among which we have growth and developmental trait. A number of factors such as nutrition, growth rate, sex and age have been reported to affect growth response (Oluyemi, 1974; Jovbert, 1980; Omeje and Nwosu, 1983), while carcass quality traits also depend on a number of factors such as genotype, sex and age (Pikul *et al.*, 1987). Among all these factors sex have greatest impact on the possibility of genetically improving growth response and carcass quality traits because, genetic variability is due to physiological processes, especially in body weight and body composition of male and female animal. Sexing of indigenous chicken at day old or at early age has been a difficult task and it is a major factor affecting the performance of the chicken especially the female when raised together with male.

Poultry meat production, particularly chicken meat has increased tremendously over the last decades (Fuzhu and Zhuye, 2008). Demand for poultry meat is higher because of its perceived superiority in health aspects when compared to red meat. The meat has comparably low contents of fat and cholesterol. The relatively low price, the typically convenient portion and lack of religious restriction made poultry producers and consumers to focus on the poultry carcass yield, composition and quality (Jaturashita, 2004). Le Behan –Dual (2004) also stated that many consumers prefer the local chicken to the exotic ones due to its leanness and relatively low price.

Logically, a typical poultry producer would want birds of size and weight that would maximize production of quality meat at an economic rate and attracts good price at market weight irrespective of sex. Thus, effect of sex on growth traits, carcass characteristics and the proportion of major basic carcass parts in our indigenous chickens need to be ascertained. Systematic differences in form between individuals of different sexes in the

same species must be established for accurate judgement of their performance. This will provide information on the type of chicken that can be used for meat production. Fulani Ecotype (FE) chicken is an indigenous chicken native to the drier parts of Nigeria, they are relatively bigger than chicken of other ecotype within the same locale (Atteh, 1990; Alaba 1990).

Growth traits and carcass characteristics has been regarded as vital parameters determining broiler meat quality (Sutö *et al.*, 1998; Ristic, 2003), a study on the effect of sex on growth performance and carcass characteristics of FE chicken will provide information on sexual differences in growth traits of indigenous chicken and the proportion of major basic carcass parts in each sex.

This study was designed to define the sex dependent differences between male and female FE chickens, including body weight and body parts measurements, and also to determine the effect of sex on the carcass characteristics and slaughter yield of the FE at 20 weeks of age.

Materials and Method

Experimental Birds and Managements:

Two hundred and eleven Fulani Ecotype FE day old chicks obtained through incubation and hatching of FE eggs collected from an existing population of FE chicken at the University of Ilorin Teaching and Research Farm were used for this experiment. On the day of hatch, the chicks were wing banded for easy identification, weighed and randomly distributed to the brooding pens. They were brooded and raised for a period of 20 weeks, placed on the same diets as recommended by NRC (1994) for chicks and growing pullets. All the necessary vaccinations and medications were administered to the birds accordingly.

Measurements of Body Parameters:

Measurements of body weight and body parts were carried out fortnightly for 20 weeks. The body weight was measured in gram using Scout II electronic sensitive scale and top loading Mettler Balance (20 kg capacity). The linear body parts were measured using tape rule and Vernier calliper. Body length was measured as the linear distance between the nasal opening and the top of pygostyle when the neck is carefully stretched and the measuring tape is positioned along the midline of the birds back, body girth was determined by winding a tape rule around the region of the breast, shank length was measured as the distance from the foot pad to the hock joint, shank diameter was taken at the middle of the left shank of each bird, thigh length was measured from the tip of the tarsus to the ball joint. Keel length was measured from the cranial to the caudal terminals of the keel bone, wing length was measured by stretching the wing and the measurement taken from humerus – coracoids junctions to the tip of the digit while the drumstick length was measured from the tip of the hock joint to the ball joint of femur.

Determination of Carcass Characteristics:

Twenty chickens (20 males and 20 females) were randomly selected at 20 weeks old for carcass characteristics evaluation from population of the intensively kept FE chicken. The birds were fasted overnight, weighed, slaughtered, and manually de-feathered. The weight of feather, scales and claws, heart, liver, kidneys, proventriculus, gizzard and the intestine of each chicken was determined using an electronic balance (600g capacity). The weight of the separated fat tissue (abdominal fat) was determined from the quantity of fat found in the pelvic – abdominal cavity and recorded in gram. The dressed weight of each chicken was taken after the removal of the intestine and the visceral organs. The main-cut parts such as the thigh, drumstick, breast, tail back and rib back were weighed, recorded and expressed in g/kg of dressed weight, other part of the chicken weighed were the head, neck and shank. The dressing percentage was calculated as the ratio of the dressed weight to the live weight of each chicken, other data generated were abdominal fat percentages, percentage loss in blood and feathers. Meat samples were taken from the breast region of each slaughtered bird and subjected to proximate analysis (AOAC, 1990) so as to determine the levels of moisture, crude protein, crude fat, total ash and crude fibre content.

Statistical Analysis:

Data collected were subjected to one way analysis of variance (ANOVA).

Duncan Multiple Range Test (DMRT) was used to separate the means when significant differences existed between them at 5% significance level. The analysis was done using the General Linear Models (GLM) procedure of the Statistical Analysis System (SAS, 2003) software. The statistical model used was:

$$Y_{ij} = \mu + a_i + e_{ij}$$

Where:

Y_{ij} = performance of the j^{th} individual of the i^{th} sex

μ = Overall mean of the parameter

a_i = fixed effect of the sex i ($i=1-2$)

e_{ij} = residual error.

Results and Discussion

Effect of sex on growth traits in Fulani Ecotype chicken:

The results of these experiments showed that male FE chickens were not significantly ($P>0.05$) bigger in body weight, body length and body girth than female FE chickens from day old to 4 weeks of age, but significantly ($P<0.05$) heavier in body weight, and significantly ($P<0.05$) different in body length and body girth than their female counterparts from 6 to 20 weeks old (Table 1). Wing length, Keel length and Drumstick length measured for male were not significantly ($P>0.05$) different from those of female at the initial stage of life (0 to 4 weeks) but significantly ($P<0.05$) different from 6 to 20 weeks of age (Table 2.). Thigh length of male FE was not significantly ($P>0.05$) different from that of female from day old to 6 weeks and at weeks 14 and 20, but significantly ($P<0.05$) different at other ages, shank length and diameter were not significantly ($P>0.05$) different in both sexes from day old to week 4, shank length was significantly ($P<0.05$) different at other ages while shank diameter was not significantly ($P>0.05$) different in both sexes at weeks 10, 14 and 16 (Table 3). The results of these experiments showed a significant ($P<0.05$) differences in male and female FE in body weight and all the parts measured at 8 weeks (Table 1-3), this indicated that separation of FE chicken according to sex is achievable at this age using body weight and body parts measurement. However, the reports of this findings corresponds with that of Manchal *et al.* (2008), where significant differences in weight was reported for male and female local chickens in Plateau state, Nigeria. The results of this findings showed that the shank weight value was favoured in male FE chicken than female, this was in line with those of Munira *et al.* (2006) where lower values of shank weight were observed in females' birds.

Table 1: Effect of sex on Body weight, Body length and Body girth of the Fulani Ecotype chicken.

| Traits Age(wks) | Body weight (g) | | Body length (cm) | | Body girth (cm) | |
|--------------------|---------------------------|--------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | Male | Female | Male | Female | Male | Female |
| 0 | 38.74±0.20 ^a | 33.96±0.05 ^a | 11.87±0.03 ^a | 11.34±0.02 ^a | 9.31±0.03 ^a | 8.58±0.02 ^a |
| 2 | 80.06±0.23 ^a | 79.24±0.07 ^a | 15.76±0.04 ^a | 14.53±0.02 ^a | 11.11±0.03 ^a | 10.86±0.04 ^a |
| 4 | 169.56±0.36 ^a | 151.14±0.12 ^a | 20.93±0.04 ^a | 19.59±0.02 ^a | 13.53±0.04 ^a | 12.42±0.02 ^a |
| 6 | 305.86±0.21 ^a | 221.86±0.14 ^b | 26.09±0.04 ^a | 23.96±0.02 ^b | 16.94±0.03 ^a | 15.77±0.09 ^b |
| 8 | 452.81±0.22 ^a | 331.18±0.19 ^b | 29.88±0.04 ^a | 27.70±0.02 ^b | 18.34±0.03 ^a | 15.58±0.03 ^b |
| 10 | 547.52±0.19 ^a | 439.28±0.18 ^b | 32.50±0.04 ^a | 30.01±0.03 ^b | 19.52±0.02 ^a | 17.58±0.03 ^b |
| 12 | 652.30±0.20 ^a | 487.40±0.23 ^b | 32.49±0.03 ^a | 31.39±0.03 ^b | 21.00±0.03 ^a | 18.30±0.03 ^b |
| 14 | 755.60±0.16 ^a | 590.60±0.23 ^b | 32.68±0.03 ^a | 31.89±0.04 ^b | 21.60±0.03 ^a | 18.50±0.03 ^b |
| 16 | 893.00±0.33 ^a | 683.80±0.26 ^b | 37.68±0.02 ^a | 34.59±0.05 ^b | 23.30±0.02 ^a | 19.80±0.03 ^b |
| 18 | 1107.40±0.08 ^a | 921.00±0.29 ^b | 39.38±0.02 ^a | 36.26±0.04 ^b | 24.30±0.02 ^a | 23.00±0.03 ^b |
| 20 | 1237.90±0.03 ^a | 984.40±0.29 ^b | 39.79±0.02 ^a | 39.29±0.02 ^b | 25.10±0.02 ^a | 24.00±0.03 ^b |

Means on the same row within the same week and column followed by different superscripts (a-b) differs significantly ($p<0.05$).

Table 2: Effects of sex on Wing length, Keel length, and Drumstick Length of the Fulani Ecotype chicken.

| Traits Age (wks) | Wing Length (cm) | | Keel Length (cm) | | Drumstick Length (cm) | |
|---------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | Male | Female | Male | Female | Male | Female |
| 0 | 5.40±0.04 ^a | 5.22±0.02 ^a | 1.90±0.07 ^a | 1.85±0.01 ^a | 3.10±0.03 ^a | 3.68±0.03 ^a |
| 2 | 8.53±0.03 ^a | 7.57±0.02 ^a | 3.02±0.02 ^a | 2.74±0.01 ^a | 4.22±0.02 ^a | 4.31±0.05 ^a |
| 4 | 10.86±0.03 ^a | 10.80±0.02 ^a | 5.75±0.02 ^a | 5.24±0.01 ^a | 6.17±0.02 ^a | 5.96±0.02 ^a |
| 6 | 15.40±0.02 ^a | 12.75±0.03 ^b | 6.89±0.02 ^a | 5.41±0.01 ^b | 8.75±0.03 ^a | 7.24±0.02 ^b |
| 8 | 16.66±0.02 ^a | 15.04±0.09 ^b | 7.56±0.03 ^a | 6.16±0.02 ^b | 9.58±0.03 ^a | 8.74±0.02 ^b |
| 10 | 18.01±0.03 ^a | 16.34±0.02 ^b | 7.73±0.02 ^a | 6.78±0.02 ^b | 10.02±0.02 ^a | 9.37±0.02 ^b |
| 12 | 18.20±0.03 ^a | 16.30±0.03 ^b | 8.00±0.02 ^a | 7.12±0.03 ^b | 11.10±0.02 ^a | 9.78±0.02 ^b |
| 14 | 19.30±0.03 ^a | 17.70±0.03 ^b | 8.57±0.06 ^a | 7.71±0.02 ^b | 11.20±0.02 ^a | 9.90±0.02 ^b |
| 16 | 19.50±0.03 ^a | 18.70±0.03 ^b | 8.91±0.02 ^a | 8.20±0.01 ^b | 12.40±0.02 ^a | 11.30±0.02 ^b |
| 18 | 20.40±0.02 ^a | 19.00±0.03 ^b | 9.98±0.02 ^a | 9.20±0.01 ^b | 13.70±0.01 ^a | 12.30±0.02 ^b |
| 20 | 20.90±0.01 ^a | 19.30±0.04 ^b | 11.70±0.01 ^a | 10.70±0.02 ^b | 14.70±0.01 ^a | 15.80±0.08 ^b |

Means on the same row within the same week and column followed by different superscripts (a-b) differs significantly ($p<0.05$).

The rate of increase in body weight on weekly basis in male FE ranged from 52.78 to 10.54% while that of female FE chicken ranged from 59.39 to 6.44% from day old to 20 weeks. Both sexes had the highest rate of increase in body weight between week 2 and 4, lowest rate of increase existed between weeks 18 and 20. This is an indication that a more rapid development in body weight were obtained at the early stage of birds' life. There

was a decrease in the rate of growth from 10 to 14 weeks, followed by a slight increase from 14 to 18 weeks of age, then a sharp drop, before the age of 20 weeks, this observation agrees with the fact that poultry generally maximize their weight gain at the initial stage of life, especially from day old to the point of inflection (Nwosu *et al.*, 1985), after which they grow at a slower rate at the onset of puberty (Oluyemi and Oyenuga, 1974; Nwosu, 1979; Ayorinde, 1995). At 20 weeks of age, the average body weight of male and female FE chickens were 1237.90g and 984.40g, respectively, this was higher than adult body weight reported for Nigeria local chicken by Omeje and Nwosu (1983) and also higher than those reported for various male and female indigenous chicken (Khondoker *et al.*, 1996; Barua and Yoshimura 1997; Haque and Howluder, 2000; Islam, 2000).

Table 3: Effects of sex on Wing length, Keel length, and Drumstick Length of the Fulani Ecotype chicken.

| Traits Age(wks) | Thigh Length (cm) | | Shank Length (cm) | | Shank Diameter (cm) | |
|--------------------|-------------------------|-------------------------|-------------------------|------------------------|------------------------|------------------------|
| | Male | Female | Male | Female | Male | Female |
| 0 | 2.03±0.02 ^a | 2.06±0.03 ^a | 1.99±0.06 ^a | 1.92±0.01 ^a | 0.12±0.01 ^a | 0.16±0.01 ^a |
| 2 | 3.27±0.02 ^a | 2.93±0.01 ^a | 3.27±0.02 ^a | 2.73±0.02 ^a | 0.23±0.01 ^a | 0.20±0.01 ^a |
| 4 | 5.05±0.02 ^a | 4.62±0.02 ^a | 5.01±0.02 ^a | 4.54±0.02 ^a | 0.32±0.01 ^a | 0.30±0.01 ^a |
| 6 | 6.81±0.02 ^a | 5.58±0.02 ^a | 6.25±0.02 ^a | 5.62±0.01 ^b | 0.35±0.01 ^a | 0.33±0.01 ^b |
| 8 | 7.17±0.02 ^a | 6.77±0.03 ^b | 7.08±0.02 ^a | 6.25±0.02 ^b | 0.40±0.01 ^a | 0.39±0.01 ^b |
| 10 | 7.50±0.02 ^a | 7.00±0.02 ^b | 8.14±0.01 ^a | 7.62±0.02 ^b | 0.45±0.01 ^a | 0.43±0.01 ^a |
| 12 | 7.90±0.02 ^a | 7.30±0.02 ^b | 8.54±0.02 ^a | 7.74±0.02 ^b | 0.50±0.01 ^a | 0.45±0.01 ^b |
| 14 | 8.80±0.02 ^a | 8.10±0.06 ^a | 9.00±0.02 ^a | 7.96±0.01 ^b | 0.53±0.01 ^a | 0.50±0.01 ^a |
| 16 | 9.10±0.02 ^a | 8.90±0.02 ^b | 9.70±0.02 ^a | 9.00±0.02 ^b | 0.60±0.10 ^a | 0.58±0.01 ^a |
| 18 | 9.40±0.01 ^a | 8.90±0.02 ^b | 10.20±0.01 ^a | 9.30±0.02 ^b | 0.64±0.01 ^a | 0.60±0.01 ^b |
| 20 | 10.30±0.01 ^a | 10.40±0.02 ^a | 12.50±0.01 ^a | 9.78±0.02 ^b | 0.78±0.01 ^a | 0.70±0.01 ^b |

Means on the same row within the same week and column followed by different superscripts (a-b) differs significantly ($p < 0.05$).

Effect of sex on carcass characteristics of Fulani Ecotype chicken:

Mean live weight, slaughtered weight, feathered weight, and dressed weight were significantly ($p < 0.05$) higher in the males than that in the females FE (Table 4). The slaughtered and feathered weights were 93.45%, 14.75% of live weight respectively in males and 98.47% and 14.78% respectively in females, showing that percentage of slaughtered weight relative to the live weight in female FE was higher than that of males. The feathered weight of both sexes constitutes similar percentage of live weight. There was no significant difference ($p > 0.05$) in percentage loss in blood and feather in both sexes. However, the dressing percentage was significantly ($p < 0.05$) higher in the females.

Table 4: Effect of sex on carcass characteristics of the Fulani Ecotype chicken.

| | Male | Female |
|-------------------------------|--------------------------|--------------------------|
| Live weight (g) | 1436.5±3.79 ^a | 1239.5±2.52 ^b |
| Slaughtered weight (g) | 1342.5±4.11 ^a | 1220.0±2.52 ^b |
| Feather weight (g) | 211.9±6.00 ^a | 183.3±5.69 ^b |
| Dressed weight (g) | 838.0±3.79 ^a | 798.9±3.16 ^b |
| Dressing percentage (%) | 58.3±1.37 ^b | 61.7±1.76 ^a |
| Loss in blood and feather (%) | 21.3±2.31 | 20.0±2.14 |
| Scales and claws (%) | 6.4±0.95 ^a | 5.5±0.63 ^b |

(a-b) Means on the same row followed by different superscripts differ significantly ($p < 0.05$)

There were significant ($p < 0.05$) differences between the sexes in the cut parts with males having higher values except for the breast weight and rib back (Table 5). The percentage of cut parts relative to live weight in males were 15.4, 9.62, 8.85, 6.36, 5.21, 3.11, 2.66, and 3.48% for breast, thigh, drumstick, wings, tailback, rib back, neck and shank weight, respectively. The corresponding values in females were 18.9, 8.43, 7.47, 5.82, 4.53, 4.05, 1.69 and 3.64%. Head weight constitutes 4.61% in both male and female FE.

Table 5: Effect of sex on eviscerated cut parts in the Fulani Ecotype chicken.

| Parts (g/kg Dressed wt) | Male | Female |
|-------------------------|-------------------------|-------------------------|
| Breast | 207.6±0.90 ^b | 234.0±0.80 ^a |
| Thigh | 138.2±0.50 ^a | 104.5±0.80 ^b |
| Drumstick | 127.3±0.40 ^a | 92.6±0.60 ^b |
| Wings | 91.3±0.10 ^a | 72.2±1.50 ^b |
| Tail back | 74.9±0.50 ^a | 56.2±0.70 ^b |
| Rib back | 44.8±0.50 ^b | 50.2±0.80 ^a |
| Neck | 38.2±0.40 ^a | 20.9±0.70 ^b |
| Head | 66.2±1.80 ^a | 57.2±0.20 ^b |
| Shank | 50.0±6.40 ^a | 45.2±1.05 ^b |

(a-b) Means on the same row followed by different superscripts differ significantly ($p < 0.05$)

The weight of the kidney and heart of the males were significantly ($p < 0.05$) higher than that of the females (Table 6). No significant ($p > 0.05$) differences in the weight of the liver and dressed gizzard for male and female respectively. The weight of proventriculus, abdominal fat and intestinal offals of the female were significantly ($p < 0.05$) higher than those obtained for the male. The kidney, liver, hearts, proventriculus, dressed gizzard, abdominal fat, intestinal offal, claws and scale constituted 0.17, 1.84, 0.47, 0.48, 2.57, 0.83, 13.86 and 0.45% in male FE. Those of female FE were 0.16, 2.15, 0.47, 0.57, 2.99, 1.24, 16.49 and 0.44% respectively. However, the percentage of intestinal offal's relative to the live weight was higher in female FE than in male. The abdominal fat in male FE was significantly ($p < 0.05$) lower than that of female. No significant ($P > 0.05$) differences existed in crude protein, fat, total ash, crude fibre and moisture content (Table: 7).

Table 6: Effect of sex on visceral organ, abdominal fat, intestinal offal, claws and scale of the Fulani Ecotype chicken.

| Organs (g /kg BW). | Male | Female |
|--------------------|-------------------------|-------------------------|
| Kidney | 2.5± 0.01 ^a | 1.9±0.01 ^b |
| Liver | 26.4±0.02 | 26.6±0.03 |
| Heart | 6.7±0.02 ^a | 5.9±0.18 ^b |
| Proventriculus | 6.9±0.12 ^b | 7.1±0.72 ^a |
| Dressed Gizzard | 36.9±5.52 | 37.0±3.42 |
| Abdominal fat | 11.9±1.14 ^b | 15.4±0.82 ^a |
| Intestinal offal | 199.2±6.10 ^b | 204.4±1.38 ^a |
| Claws and Scale | 6.5±0.23 ^a | 5.5±0.12 ^b |

(a-b) Means on the same row followed by different superscripts differed significantly ($p < 0.05$)
BW – Body weight

Table 7: Nutrient composition of Fulani Ecotype chicken meat.

| Parameters(%Dry weight) | Male (%) | Female (%) | |
|-------------------------|----------|------------|----|
| Crude Protein | 69.05 | 68.92 | NS |
| Total Ash | 4.59 | 4.63 | NS |
| Crude Fat | 8.97 | 9.63 | NS |
| Crude Fibre | 0.06 | 0.05 | NS |
| Moisture Content | 70.03 | 69.96 | NS |

NS: Not Significantly different. ($p > 0.05$).

The value obtained for the carcass yield and meat composition corresponds with the findings of Joseph *et al.* (1992) where the carcass yield of the male local chicken was reported to be significantly higher than that of the female and no significant differences recorded in percentage water and fat content and those reported by Bogosavljevic *et al.* (2006), Ristic (1995) and Ozkan *et al.* (1997), that carcass weight in male chickens were significantly higher compared to the females ones. The protein content of the meat was a bit higher than range (46- 66%) reported by Adebajo and Oluyemi (1981). The dressing percentages obtained for male and female FE chicken used in this study corresponds with 57- 63% and 53-63% reported for Indigenous naked neck and Indigenous full feathered by Howliger *et al.*(1995), and Haque and Howliger (2000), respectively. Values obtained for the dressing percentage and breast meat yield in FE chicken were more than 52.57% and 13.96 % reported for those traits, respectively, in indigenous full feathered by Paul *et al.*(1990). The total carcass weight obtained for the male was significantly ($p < 0.05$) higher than that of female, while the total fat and breast weight in female FE was significantly ($p < 0.05$) higher than that of male FE. These findings correspond with the report of Theerachai (2009) where the male local chicken was reported to have higher proportion of total carcass and less total fat. Higher percentage of breast muscle reported for the female FE corresponds with the findings of Merkle *et al.* 1980 and that of Lazzari and Paganni (1999) where significant differences between sexes were reported, and female broilers were said to have greater breast weight and back but smaller leg. However, higher breast weight in the female FE chicken might be due to the fact that the females are approaching sexual maturity as at the time of measurement and this is in accordance with earlier report of North (1984) where it was stated that the development of breast muscle in female chickens is faster than that of males as they approach sexual maturity.

Conclusion:

The results obtained shows that body weight and linear body measurements can be used to separate males and females Fulani Ecotype chicken at eight weeks old, because at this age, males appear bigger than the females and their comb are well pronounced, this will help both sexes to grow uniformly, prevent indiscriminate mating before attaining the age of sexual maturity and help in selection of Fulani Ecotype chicken for improvement in meat and egg production.

The dressing percentage of the Fulani Ecotype female was significantly higher than that of the males, while some cut parts that contribute significantly to total yield were significantly higher in male Fulani Ecotype. Although, the abdominal fat collected from male Fulani Ecotype was significantly lower than that of female,

there was no significant difference in their analysed crude fat content. Presence of lower abdominal fat in male Fulani Ecotype chicken makes it a product with leaner carcass.

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