EFFECTS OF SEX ON HAEMATOLOGICAL VALUES, BLOOD CHEMISTRY AND CARCASS CHARACTERISTICS OF NOILER CHICKEN

***Ibrahim M., Y.P Mancha & D.J.U. Kalla**
Department of Animal Production Abubakar Tafawa Balewa University Bauchi, Bauchi State Nigeria
**Corresponding author: kwala_laras@yahoo.com mobile No: 08038079331*

ABSTRACT
The experiment was conducted to determine the effects of sex on haematological values, blood chemistry and carcass characteristics of Noiler chicken. A total of one hundred and thirty-six (136) eight weeks old Noilers birds were purchased from the Bauchi State Agricultural Development Programme (BSADP). The birds were raised on deep litter system until the age of 18weeks before they were transferred to battery cage housing system. The experiment lasted for three months. The birds were fed uniformly with a standard commercial diet and water was supplied ad-libitum. The result showed that cocks and hens haemoglobin (Hb) and packed cell volume (pcv) values were significantly the same ($P<0.05$). The result of PCV (Packed Cell Volume) showed that the PCV values were ($P<0.05$) significantly the same (32.00 and 32.60) for the cocks and hens respectively. This shows that Hb and PCV were not influenced by androgen, which is a hormone that plays a major role in male traits and reproductive activities. The percentage of lymphocytes, neutrophyl, basophyl and eosinophyl were also not significantly different between cocks and hens. The result for biochemical values shows that that there was no significant difference between Noiler cocks and hens in all the parameters tested. From the result it was deduced that dressing percentage was affected by sex, which showed that cocks had higher dressing percentage (77.54) than hens (69.65). From the finding of this study it was concluded that there were no significant differences in haematological and biochemical values between sexes, however cocks showed superior dressing percentage.
Keywords: Sex, Carcass, Noiler, Haematological

INTRODUCTION
Globally, animal protein consumption has steadily increased in the last five years, this is as a result of increased beef consumption. Pork is the number one animal protein consumed around the world, however, the Food and Agriculture Organization (FAO, 2011) predicts chicken will overtake pork as the most consumed animal protein by the year 2020. Consumption is driven by poultry's lower cost and demographic interest that fit with their meat. Inadequate consumption of animal protein by an average Nigerian is on the increase due to the increase in population which has resulted in the demand for protein of animal origin to surpass its supply. Food and Agricultural Organization (2006) reported that an average Nigerian takes about 5.5g of animal protein per day which is very low compared to the recommended 77g per day. The solution to the problem of inadequate consumption of animal protein by an average Nigerian is to increase the production of highly productive animals with short generation interval such as rabbits, pigs and poultry (Ani and Adiegwu, 2005). The development of indigenous breeds with improved meat and egg production is also a solution to the problem of poor consumption of animal protein. Recently the development of NOILER chicken by Amofarm Siebere Hatchery in Nigeria is a step in the right direction becausese Noiler chicken is a natural cross breed between broilers, layers and indigenous local chicken. There is little information about the bird focusing on the haematological and carcass characteristics of Noiler chicken. This research is expected to generate information on the Carcass yield, Gut and Organ characteristics and haematological values of male and female Noiler chicken.

MATERIALS AND METHODS
The experiment was conducted at the poultry section of the Bauchi State Agricultural Development Programme (BSADP) along Yelwan Makaranta Dass Road, Bauchi State. A total of one hundred and thirty-six (136) eight weeks old Noilers birds were purchased from the Bauchi State Agricultural Development Programme (BSADP). The birds were raised on deep litter system until the age of 18weeks before they were transferred to battery cage housing system and were randomly distributed into 3 treatment groups based on strain using a Completely Randomized Design (CRD). The experiment lasted for three months. The birds were fed uniformly with a standard commercial diet and water was supplied ad-libitum.

Data Collection and Analysis

At 34 weeks, twenty four (24) birds were randomly selected from each of the three strains with each strain having twelve (12) cocks and hens respectively for haematology and biochemical analysis. 3ml of blood samples were collected from the basillic vein of the birds into a well labelled sterile bottle containing anticoagulants. These were used to determine packed cell volume, hemoglobin (hb), white blood cell count (WBC), and the differential counts which are Neutrophils, lymphocites, monocites, Eosinophil and Basophils. Another 3ml sample of blood was collected into sterile labelled bottles without anticoagulants to determine the serum biochemical metabolites as follows: total protein, cholesterol, Glucose, Albumin, calcium, phosphorus, uric acid.

Hematological technique

Total red blood cell count and Total white blood cell count were determined by a manual method using hematocytometer (Campbell, 1995). Differential counts were made on monolayer blood films, fixed and stained with leishman – stain. Packed cell volume was measured by a standard manual technique using micro hematocrit capillary tubes and hematocrit reader. Haemoglobin concentration was measured by cyanhemoglobin method (Ritchie *et al.,* 1994).

Biochemical technique

Total protein, glucose, calcium, phosphorus, cholesterol, and uric acid, were determined by automatic analyzer.

Gut and Carcass Analysis

At the end of the experiment, nineteen (19) birds were randomly selected from each of the three strains with each strain having ten (10) hens and nine (9) cocks. They were deprived of feed for twelve hours but provided with drinking water. The chickens were weighed and slaughtered. Slaughtered birds were scalded in hot water (about 50^0c) for 1 minute and plucked manually, offal were then eviscerated for carcass yield and organ weight determination. The carcass yield and organ weight were calculated as percentage of the live weight. Dressing percentage was calculated using the relationships: -

$$\text{Dressing percentage} = \frac{\text{carcass weight}}{\text{live weight}} \times 100$$

Statistical Analysis

Analysis of variance was carried out on data collected using the general linear model of SPSS (2011). Where means differed, Duncan multiple range test (DMRT) was used to separate them (Duncan, 1955).

RESULTS AND DISCUSSION

The result for the effects of sex on haematological values of Noiler chickens is shown in Table 1.The result showed that cocks and hens haemoglobin (Hb) and packed cell volume (pcv) values were ($P<0.05$) significantly the same. The result disagrees with the study conducted by Addass et al., (2012) on indigenous chickens where they observed that cocks generally have higher hb value than the hens. PCV values were ($P<0.05$) significantly the same (32.00 and 32.60) for the cocks and hens respectively. The percentage of lymphocytes, neutrophyl, basophyl and eosinophyl were also not significantly different ($P<0.05$) between cocks and hens.

The result for the effects of sex on biochemical values of Noiler chicken is shown in Table 2. The result obtained indicates that there was no significant difference between Noiler cocks and hens in all the parameters tested.

Table 1: Effects of Sex on Haematological Values of Noiler Chickens

	Sex		
Parameters	**Cocks**	**Hens**	**SEM**
Heamoglobin (gldl)	11.47	10.90	0.39NS
Parked cell volume %	32.00	32.60	1.19NS
White blood cell %	3.62	4.54	0.54NS
Neutrophil %	39.04	38.28	0.73NS
Lymphocytes%	50.80	55.94	0.87NS
Monocytes%	2.23	3.66	0.17NS
Basophils%	0.00	0.00	0.00NS
Eosinophils%	0.00	0.20	0.00NS

SEM=standard error of mean, NS= Not significant

Table2: Effects of Sex on Biochemical Values Noiler Chicken

	Sex		
Parameters	**Cocks**	**Hens**	**SEM**
Total protein(gl)	63.92	57.98	1.19NS
Albumin (mmol/l)	22.61	23.94	0.46NS
Glucose (mmol/l)	4.29	1.38	0.23NS
Cholesterol (mmol/l)	2.46	5.41	1.74NS
Calcium (mmol/l)	3.31	2.36	0.59NS
Phosphorus (mmol/l)	1.23	2.58	1.01NS

SEM-standard error of mean, NS= Not significant

The result for effects of sex on effects of sex on carcass and gut characteristics Noiler chickens is shown in Table 3. From the result it was deduced that only dressing percentage was affected by sex. The cocks have higher dressing percentage (77.54) than the hens (69.65). Dressing percentage is the proportion of live weight that is obtained as a carcass. The dressing percentage indicates the quantity of meat that could be obtained from the animal. Report by Jones et al. (1994), who reported a higher dressing percentage for cocks agrees with the finding of this research. However the dressing percentage of the Noiler hen indicated that it can also be used as a meat animal thereby qualifying the Noiler as a dual purpose breed.

Table 3: Effects of Sex on Carcass and Gut characteristics Noiler Chickens

Parameters	Sex			
	Cocks	**Hens**	**SEM**	**LS**
Live weight	2.48	3.61	0.108	NS
Plucked weight	2.2	3.36	0.104	NS
Eviscerated weight	1.94	3.12	0.102	NS
Carcass weight	1.74	2.81	0.98	NS
Dressing percentage	77.54^{a}	69.65^{b}	1.24	*
Head	6.8	7.21	7.194	NS
Leg	6.8	7.28	4.192	NS
Gizzard	3.9	3.12	1.24	NS
Liver	3.9	3.12	41.18	NS
Kidney	0.3	0.35	0.083	NS
Small intestine	9.6	5.26	4.39	NS
Large intestine	0.9	0.82	0.22	NS
Pancrease	0.3	0.35	3.13	NS
Abdominal fat	9.07	5.9	6.94	NS
Spleen	0.17	0.2.	1.65	NS
Ceacum	1.7	1.6	16.7	NS
Lungs	1.1	1.2	10.35	NS
Heart	1.2	1.2	12.61	NS

SEM – Standard error of mean, LS= Level of significant, * = Significant (P<0.05)
NS- Non significant

CONCLUSION

From the finding of this study it was concluded that there were no significant differences in haematological and biochemical values between sexes, however cocks showed superior dressing percentage.

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