

**NSAP****47th Annual
Conference
(JOS 2022)****CONFERENCE
PROCEEDINGS**THEME
**SECURING ANIMAL
AGRICULTURE AMIDST
GLOBAL CHALLENGES**

CARCASS CHARACTERISTICS OF BROILER CHICKENS FED DIETARY LEVELS OF KAURA SORGHUM AS REPLACEMENT FOR MAIZE

²Jamilu, H., *¹Jama'a, N. A., ¹Doma, U. D., ³Zahraddeen, D., ⁴Sani, A. and ⁵H. S. Buhari

¹Department of Animal Production, Abubakar Tafawa Balewa University, Bauchi state, Nigeria

²Teaching and Research Farm, Faculty of Agriculture, Federal University Dutse

³Department of Animal Science, Ahmadu Bello University, Zaria

⁴Department of Animal Health and Production, Fed. Poly. Bauchi

⁴Collage of Agriculture and Animal Science, Division of Agricultural Collages, Ahmadu Bello University, Mando-Road, Kaduna

* Corresponding author email= najamaa4u@yahoo.com, Phone number = +2347061097766

ABSTRACT:

An experiment was conducted study the carcass and guts characteristics of broiler chickens fed dietary levels of Kaura sorghum as replacement for maize. Kaura sorghum replaced maize at 0, 25, 50, 75 and 100 % in diets 1, 2, 3, 4 and 5 respectively. Two hundred and forty broiler chicks were randomly allotted to five diets with four replicates in a completely randomized design. Forty birds were slaughtered for carcass yield and guts analysis. Results indicated significant ($P < 0.001$) difference on most of the carcass and gut parameters. It was concluded that Kaura sorghum can completely replace maize in broiler chickens diets without any negative effect on carcass yield and organ characteristics.

Key words: Carcass, guts, Kaura, broiler, chicken

INTRODUCTION

Maize has remained the main energy source in compounded feeds and constitutes about 50% of poultry ration (Amaefule *et al.*, 1998). Feeding alone accounts for 70- 80% of the total cost of production. It makes the utilization of multiple feed ingredients very expedient. Sorghum is an energy yielding ingredient due to its nutritional composition which is very similar to maize (Oluyemi and Roberts, 2013). The high cost of commercial diets for poultry due to high cost of maize as the major ingredients, if not addressed will result to lower income to poultry farmers and reduced protein intake among Nigerian populace. The energy of poultry diets represents the largest single dietary ingredient. The metabolizable energy value of maize is 3432Kcal/kg and sorghum is 3300Kcal/kg respectively (Oluyemi and Roberts, 2013). It is therefore important that, efforts should be made to explore comparative and cheaper alternative to maize so as to reduce cost of feed ingredients, increase availability, improve efficiency, productivity, carcass and egg quality in both broilers and layers, increase poultry farmers profit and also increase protein intake among Nigerians. The use of sorghum to replace maize in poultry diets can lower the cost of production and in turn reduce the deficiency in the animal protein intake among Nigerians. The aim of this research is to evaluate the carcass and guts characteristics of broiler chickens fed dietary levels of Kaura sorghum as replacement for maize.

MATERIALS AND METHODS

The research was carried out at the Teaching and Research poultry unit of the School of Undergraduate Studies College of Education Azare is located in Katagum Local Government Area of Bauchi State. It is located between latitudes 11° 30' N and 11° 10' E. The mean monthly



NSAP

47th Annual Conference
(JOS 2022)

CONFERENCE PROCEEDINGS

THEME
SECURING ANIMAL
AGRICULTURE AMIDST
GLOBAL CHALLENGES

temperature ranges from 20.10 – 22.50°C in December and January to 30.0 – 32.5°C in April and May. The temperature of the rainy season remains steady at about 25°C – 27°C for the month of June to October. The rainy season in Azare starts in April and lasts upto October with five months of dry season from November to March (Bura, 2000). The experiments were conducted from February 2015 to October 2016. Two hundred and forty (240) unsexed Anak 2000 broiler chicks were used for the research. Five diets of 23 and 20 % CP were formulated at the starter and finisher phases respectively in which Kaura sorghum replaced maize at 0, 25, 50, 75 and 100 % in diets 1, 2, 3, 4 and 5 respectively. Each diet was replicated four times with 12 birds per replicate in a completely randomized design. The experiment lasted for eight weeks where two birds were selected from each replicate making a total of forty birds. The birds were starved overnight and were slaughtered for carcass analysis. Data generated were subjected to analysis of variance as reported by Steel and Torrie (1980) and Duncan multiple range test was used to separate the means where significant differences exist.

RESULTS AND DISCUSSION

The results obtained in Table 3 after the analysis indicated that live weight, carcass weight and dressing percentage (81.62-83.14%) were not significantly influenced by the dietary levels of kaura sorghum even though the values of dressing percentage were slightly higher than those (68.18-78.69%) reported by Bello *et al.* (2011) for broiler chickens. This is probably due to better utilization of the diets resulting in higher tissue deposition. However, the cutup parts were significantly ($P < 0.001$) affected by the dietary levels of kaura sorghum. This result conforms to the result of Adamu *et al.* (2012) in broiler chickens fed yellow sorghum diets and also similar to the report of Kwari *et al.* (2014) in broiler chickens fed different cereals based diets. This result is expected due to the tannin content in sorghum but differ with the findings of Jama'a *et al.* (2014) that found no significance on all internal organs except spleen. Similarly, liver (1.62 – 2.44%) and gizzard were highly influenced by the inclusion levels of kaura in the diets This further suggests that kaura sorghum can completely substitute maize as energy source in poultry diets.

Table 1: Ingredients composition of dietary level of kaura sorghum based diets fed to broilers at starter phase (1 – 5 weeks)

Ingredients	Diets				
	1 (0%)	2 (25%)	3 (50%)	4 (75%)	5 (100%)
Maize	47.80	35.85	23.90	11.95	00.00
Kaura Sorghum	00.00	11.95	23.90	35.85	47.80
Soya bean	33.30	33.30	33.30	33.30	33.30
Wheat offal	10.00	10.00	10.00	10.00	10.00
Additives	8.90	8.90	8.90	8.90	8.90
Total	100	100	100	100	100
Crude protein (%)	23	23	23	23	23
Met. Energy (Kcal/kg)	3069.40	3050.60	3037.80	3021.70	3006.30

**Table 2: Ingredients composition of dietary levels of Kaura sorghum based diets fed to broilers at finisher phase (5 – 9 weeks)**

Ingredients	Diets				
	1 (0%)	2 (25%)	3 (50%)	4 (75%)	5 (100%)
Maize	52.88	39.66	26.44	13.22	00.00
Kaura Sorghum	00.00	13.22	26.43	39.66	52.88
Soya bean	23.23	23.23	23.23	23.23	23.23
Wheat offal	15.00	15.00	15.00	15.00	15.00
Additives	8.90	8.90	8.90	8.90	8.90
Total	100	100	100	100	100
Crude protein (%)	20.00	20.00	20.00	20.00	20.00
Met.Energy (Kcal/kg)	3026.93	3009.15	2992.03	2074.25	2991.45

Table 3: Carcass characteristics of broiler chickens fed dietary levels of kaura sorghum based diets as replacement for maize

Parameters	Diets					SEM
	1 (0%)	2 (25%)	3 (50%)	4 (75%)	5 (100%)	
Live weight (kg)	1900.00	2000.00	1925.00	1925.00	1925.00	60.84 ^{NS}
Carcass (kg)	1550.00	1650.00	1600.00	1600.00	1537.50	54.30 ^{NS}
Dressing (%)	81.62	82.42	83.05	83.14	80.03	1.38 ^{NS}
Thigh (%)	11.23 ^b	13.96 ^{bc}	14.51 ^{abc}	14.67 ^{ab}	17.70 ^a	0.57***
Back (%)	5.46 ^b	5.78 ^b	6.37 ^{ab}	6.25 ^{ab}	7.31 ^a	0.23***
Drum stick (%)	3.94 ^{ab}	4.50 ^{ab}	3.45 ^b	4.53 ^{ab}	5.14 ^a	0.22***
Breast (%)	9.58 ^b	11.56 ^{ab}	13.41 ^a	13.09 ^a	14.99 ^a	0.60***
Leg (%)	2.58 ^b	3.63 ^a	3.55 ^a	3.58 ^a	3.18 ^{ab}	0.23*
Wing (%)	4.39 ^c	5.27 ^{bc}	5.36 ^{abc}	6.69 ^a	6.01 ^{ab}	0.24***
Neck (%)	3.09 ^b	3.63 ^b	3.63 ^b	3.88 ^b	6.01 ^a	0.19**
Head (%)	1.86	2.31	2.34	2.26	2.00	0.16 ^{NS}
Liver (%)	1.62 ^b	1.68 ^b	1.84 ^{ab}	2.44 ^a	2.23 ^{ab}	0.11***
Lungs (%)	0.47 ^b	0.54 ^{ab}	0.53 ^{ab}	0.56 ^{ab}	0.76 ^a	0.04***
Heart (%)	0.40	0.50	0.44	0.48	0.60	0.05 ^{NS}
Gizzard (%)	1.47 ^b	1.66 ^{ab}	2.22 ^a	1.70 ^{ab}	1.81 ^{ab}	0.11***
Abdominal fat (%)	0.81 ^c	1.63 ^a	1.63 ^a	0.88 ^{bc}	1.40 ^b	0.17***

abc= means bearing same superscripts within rows are statistically similar (* = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$) NS= Not Significant, SEM = Standard Error of Mean.

**NSAP****47th Annual
Conference
(JOS 2022)****CONFERENCE
PROCEEDINGS**THEME
**SECURING ANIMAL
AGRICULTURE AMIDST
GLOBAL CHALLENGES**

CONCLUSION

The non-significant differences obtained in live and carcass weights as well as dressing percentages indicated that Kaura sorghum can completely replace the highly competed maize in broiler diets without any negative effect on the carcass and organs parameters.

REFERENCES

- Adamu, M.S., Kubkomawa, H.I., Doma, U.D., and Duduwa (2012). Carcass and gut characteristics of broilers fed diets contain yellow sorghum (sorghum bicolor) variety in place of maize. *International Journal of Sustainable Agriculture* **4** (1) 08-11. Article Retrieved from: <http://www.iipav.org.co/Irrd/Irrd18/5/abub/8065.htm>
- Amaefule, K.U. and Obioha, F.C. (1998). Performance and nutrients utilization of broiler starter fed diets containing raw, boiled and dehulled pigeon pea seeds (*Cajanus cajan*). *Nigerian Journal of Animal Production*, **36** (1): 61-73.
- Bello, K.M., Oyawoye, E.O., Bogoro, S. E. and Dass, U. D. (2011). Performance of broilers fed varying levels of palms kernel cake. *International Journal of poultry Science*, **10** (4): 290 – 294.
- Jama'a, N. A., Abubakar, M. M. and Oyawoye, E. O. (2014). Evaluation of the nutritive value of sorghum variety ICSV400 in broiler diets. *International Journal of Poultry Science* **13** (6):329-334, 2014 ISSN 1682-8356, Asian Network for Scientific Information, 2014
- Kwari, I.D., Igwebuike, J.U., Shuaibu, H. Titima, S.I. and Raji, A.O. (2014). Growth and Carcass Characteristics of Broiler Chickens Fed maize, Sorghum, Millet and their combinations in the semi-arid zone of Nigeria. *International Journal of Science and Nature*, **5** (2): 240-245.
- Oluyemi, J.A. and Roberts, F.A. (2013). Poultry Production. In: Warm Wet Climate. Macmillan Press Limited, 2nd Edition, Spectrum Books Ltd. Ibadan, Nigeria.
- Steel, R. G. and Torrie, J. H. (1980). **Principles and Procedures of Statistics**. McGrawHill book company. New York U.S.A.