

## CARCASS CHARACTERISTICS AND PRIMAL CUTS OF WEANER RABBITS FED GRADED LEVELS OF SORGHUM OFFAL DIETS AS REPLACEMENT FOR WHEAT OFFAL

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### ABSTRACT

*This study evaluates the carcass characteristics of weaner rabbits fed graded levels of sorghum offal diets as a replacement for wheat offal. A total of five dietary treatments were evaluated, with varying percentages of sorghum offal (0%, 25%, 50%, 75%, and 100%). Five rabbits from each treatment were slaughtered and subjected to live weight, carcass weight, dressing percentage, and primal cuts such as thigh, loin, shoulder, and back. The results indicated that while live weight, carcass weight, and dressing percentage did not show significant differences across the diets ( $P > 0.05$ ), notable variations were observed in specific primal cuts. The back and neck weights significantly increased in rabbits fed the highest level of sorghum offal (100%), suggesting that higher inclusion levels may enhance certain carcass traits. Overall, the findings show the potential of using sorghum offal as a viable alternative to wheat offal in rabbit diets up to 100% inclusion levels.*

**Keywords:** Carcass Characteristics, Primal cuts, Weaner Rabbits, Sorghum Offal, Wheat Offal

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### INTRODUCTION

Rabbit meat is increasingly recognized for its nutritional benefits, characterized by high protein content and low levels of fat, sodium, and cholesterol compared to other meats such as beef and pork (Ajayi *et al.*, 2017). The efficiency of rabbits in converting fibrous feeds and agro-industrial by-products into quality meat makes them an attractive option for sustainable animal protein production, especially in developing regions (Wafar *et al.*, 2018 incomplete in the reference section). Recent studies have explored the potential of various feed ingredients, including sorghum offal, as substitutes for traditional sources like wheat offal in the diets of weaner rabbits. For instance, research indicates that incorporating graded levels of sorghum offal can enhance carcass characteristics without adversely affecting growth performance (Bassey *et al.*, 2008). This study aims to evaluate the carcass characteristics and primal cuts of weaner rabbits fed graded levels of sorghum offal diets as replacements for wheat offal, contributing to the understanding of alternative feed strategies in rabbit production systems.

### MATERIALS AND METHODS

The experiment was carried out at the rabbitry unit of National Veterinary Research Institute Vom, Plateau state Nigeria. Vom lies on longitude 8°45 East and latitude 9°48 North and has an altitude of about 1280m above sea level. The average temperature is between 19°C to 22°C, mean annual rainfall of 131.75cm to 146cm with the highest rainfall is usually recorded during the wet months of July and August. The sorghum offal obtained from a local milling factory in Bukuru Town, Jos south Local Government of Plateau State. The groundnut haulms were purchased from a cattle market in Bukuru, Jos South. The sorghum offal and groundnut haulms were both obtained wet and sun dried to reduce the moisture content. A total of sixty, 5-6 weeks old cross breed weaned rabbits of both sexes were used for the experiment. Five iso-nitrogenous diets were formulated to meet 16% crude protein nutritional requirements of the weaner rabbits and similar levels of crude fibre by varying the levels of sorghum offal respectively in which groundnut haulms constituted 20% of each diet. The diets were designated T1, T2, T3, T4 and T5. T1 contained wheat offal which served as the control, while treatment (T2-T5) contained sorghum offal at 25, 50, 75, and 100% respectively. The test ingredients and five diets were analysed for their proximate composition. The composition of the diet is shown in Table 1.

### RESULTS

The results of carcass weights of weaner rabbits fed graded levels of sorghum offal diets are presented in Table 2. There was no significant ( $p > 0.05$ ) differences on carcass parameters measured. The live weight values varied from (1662.33 - 2012.00g) in weaner rabbits on diets 5 (100%) and on (control) diet 1 values obtained were similar. The carcass weights values varied from (939.00 - 1017.47g) the highest value (1017.47g) obtained on weaner rabbits fed (control) diet 1 and lowest value (939.45g) on diets 4 were comparable to weaner rabbits fed diets 2 (959.85g), diet 3 (983.12g) and diet 5 (960.00g). The dressing percentage values ranged between (49.23 – 57.75%) weaner rabbits fed diets 3 (50%) and 5 (100%). The best dressing percentage value was observed in weaner rabbits fed diet 5 (57.75%) and poorest value 49.23% on diet 3 although values were similar to (50.57%, 50.75% and 50.22%) on diets 1, 2, and 4. The prime cut weight expressed as percentage of live weights includes

**Table 1: Ingredient Percentage Composition of Graded Levels of Sorghum Offal in Weaner Rabbits Diets as Replacement for Wheat Offal**

Ingredients	Diets				
	<b>1</b> <b>0%</b>	<b>2</b> <b>25%</b>	<b>3</b> <b>50%</b>	<b>4</b> <b>75%</b>	<b>5</b> <b>100%</b>
Maize	31.87	30.32	28.78	27.24	25.29
Soya beans	14.88	16.43	17.97	19.51	21.07
Wheat Offal	30	22.5	15	7.5	0
Sorghum Offal	0	7.5	15	22.5	30
Groundnut haulms	20	20	20	20	20
Bone meal	1.5	1.5	1.5	1.5	1.5
Limestone	1.0	1.0	1.0	1.0	1.0
Salt	0.25	0.25	0.25	0.25	0.25
Premix*	0.25	0.25	0.25	0.25	0.25
Lysine	0.13	0.13	0.13	0.13	0.13
Methionine	0.12	0.12	0.12	0.12	0.12
Total (%)	100	100	100	100	100
<b>Calculated Analysis (%)</b>					
Crude Protein (CP)	16.00	16.00	16.00	16.00	16.00
Metabolisable Energy(ME Kcal/Kg)	2619.70	2668.44	2726.55	2784.46	2842.40
Crude fibre (CF)	9.81	9.69	9.57	9.45	9.34
Either Extract (EE)	4.63	4.74	4.4.84	4.57	5.05
Calcium	1.12	1.12	1.11	1.12	1.11
Phosphorus	0.42	0.40	0.38	0.36	0.32
Lysine	1.39	1.37	1.35	1.31	1.32
Methionine	0.54	0.54	0.54	0.54	0.54

\*Bio-premix supplied per kg of diet: Vitamin A, 12500I.U; Vit. D3, 2500 I.U; Vit E, 50mg; Vit K3, 2.5mg; Vit B3.0mg; VitB6 6.0mg; Niacin, 40.0mg; Calcium pantothenate 10.0mg; Biotin 0.8mg; VitB 12 0.25mg; Folic acid 1.0mg; Choline chloride 300mg; Manganese 100mg; Iron 100mg; Zinc,50mg;Iodine 1.55I.U; Selenium 0.1mg

**Table 2: Carcass Characteristics of Weaner Rabbits Fed Graded Levels of Sorghum Offal Diets with Groundnut Haulms as Replacement for Wheat Offal**

Parameters (%)	Diets					SEM
	<b>1</b> <b>(0%)</b>	<b>2</b> <b>(25%)</b>	<b>3</b> <b>(50%)</b>	<b>4</b> <b>(75%)</b>	<b>5</b> <b>(100%)</b>	
Live weight (g)	2012.00	1891.33	1997.00	1870.67	1662.33	56.75 <sup>NS</sup>
Carcass weight (g)	1017.47	959.85	983.12	939.45	960.00	0.91 <sup>NS</sup>
Dressing Percentage	50.57	50.75	49.23	50.22	57.75	1.60 <sup>NS</sup>
Thigh	14.34	15.26	17.73	15.63	17.43	0.78 <sup>NS</sup>
Loin	11.88	12.21	14.17	12.3	13.59	0.53 <sup>NS</sup>
Shoulder	7.59	7.69	9.03	7.65	9.05	0.36 <sup>NS</sup>
Back	4.95 <sup>b</sup>	4.60 <sup>b</sup>	5.17 <sup>b</sup>	4.73 <sup>b</sup>	6.66 <sup>a</sup>	0.26 <sup>*</sup>
Neck	2.10 <sup>b</sup>	2.63 <sup>ab</sup>	2.66 <sup>ab</sup>	2.15 <sup>b</sup>	3.57 <sup>a</sup>	0.20 <sup>*</sup>
Tail	0.55	0.55	0.77	0.49	1.35	0.13 <sup>NS</sup>
Feet	3.15	3.05	3.8	3.26	2.88	0.27 <sup>NS</sup>
Head	8.25	8.68	10.05	8.82	8.76	0.59 <sup>NS</sup>
Pelt	8.68	9.07	10.35	8.39	10.38	0.39 <sup>NS</sup>
Rib	8.16	10.17	9.21	8.89	10.9	0.44 <sup>NS</sup>

<sup>a, b, c</sup> means with different superscripts on the same row differ significantly (\*=P<0.05), SEM = Standard Error of Mean, NS =Not significant

values of thigh which varied between (14.34 – 17.73%) diets 1 and 3. Loin values ranged between (11.8 – 14.17%) diets 1 and 3. Shoulder weight values ranged from (7.59 – 9.05%) diets 1 and 5. Tail weight values varied between (0.49 – 1.35%) diets 4 and 5. Feet weight values varied from (2.88 – 3.26%) diets 5 and 4. Head weight values ranged between (8.25 – 10.05%) diets 1 and 3. Pelt weight values ranged from (8.39 – 10.38%) diets 4 and 5 while, the weight of ribs values varied from (8.16 – 10.17%) on diets 1 and 2. However, weight of back

ranged from (4.60 – 6.66%) in weaner rabbits fed diets 2 (4.60%) and 6. The highest value (6.66%) on diets 5 and lowest value (4.60%) on rabbits fed diet 2 showed significant ( $p>0.05$ ) differences across treatments means. The weight of neck varied from (2.10 – 3.57%) in weaner rabbits fed (control) diet 1 (2.10%) and diet 5 (3.57%) the highest value (3.57%) obtained on diet 5 and lowest value (2.10%) on (control) diet 1 were influenced by dietary treatment of sorghum offal ( $p<0.05$ ) across treatments means.

#### DISCUSSION

The carcass yield values of 49.23 – 57.75% obtained in this study was similar to range values 47.17 to 51.77% reported by Ogunsipe and Agbede (2014) (not in your reference) and values of 46.86 to 51.55% reported for rabbits fed cassava root meal by Eshiet *et al.* (1980) this consents with findings of Aduku and Olukosi (1990) on carcass yield for tropical rabbits. The higher values observed for the carcass weight, thigh, shoulder, loin, back, neck and feet weight at higher levels of inclusion of sorghum offal might be attributed to the higher fibre levels in these levels in these diets 4 and 5. The lack of a definite pattern in the tails weight across the dietary treatments could be traced to factors such as age, sex, or genetic (Bill *et al.*, 2007). The non-dietary influence and similar head and pelt weights conform to the earlier study on rabbits fed plantain peel-based diets Ogunsipe and Agbede (2010).

#### CONCLUSION

The study concludes that incorporating graded levels of sorghum offal into the diets of weaner rabbits can be beneficial without negatively impacting overall growth performance or carcass yield. While most parameters remained statistically insignificant, the increase in back and neck weights at higher sorghum offal levels suggests that this ingredient could enhance specific carcass characteristics. Therefore, it is recommended that sorghum offal be considered as a suitable replacement for wheat offal in rabbit feed formulations to optimize production efficiency and improve certain aspects of carcass quality.

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