

PERFORMANCE OF FINISHER TURKEY FED CASHEW NUT MEAL – MAIZE OFFAL MIX AS PARTIAL REPLACEMENT FOR MAIZE

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Abstract

The effect of partial replacement of maize with cashew nut meal – maize offal mix on the performance of finisher turkey was investigated. A basal (control) diet was formulated to meet requirements of turkey (finisher phase) and three other diets were formulated by substituting 10%, 20% and 30% of maize in the basal (control) diet with cashew nut meal – maize offal mix in ratio of 2:1-. One hundred and twenty 13 weeks old turkeys of NICOLAS White® strain was used in this study. They were randomly assigned to the four treatments which were replicated thrice with 10 turkeys per replicate. The design of the experiment was a completely randomized design. The turkey (finisher phase) were fed with their respective diets for four weeks during which records of the average weight gain (AWG), average feed consumed (AFC), feed conversion ratio (FCR), protein intake, protein efficiency ratio were taken. The replacement of maize with cashew nut meal – maize offal resulted in increase in final live weight and weight gain of turkey fed the experimental diets. The highest final weight (5,450g) was recorded in turkey fed 30% replacement level of cashew nut meal – maize offal (diet 4). While the lowest final live weight (5,180g) was obtained in turkey fed 0% replacement level of cashew nut meal – maize offal (diet 1). The highest average weight gain (1,910g) was recorded in diet (4) while the lowest average weight gain (1,700g) was obtained in diet (2). The lowest feed intake (6, 213g) was noticed in turkey (finisher phase) fed diet 4 (30% replacement level of cashew nut meal – maize offal) while the highest feed intake (6, 491g) was recorded in diet 3. The best feed conversion ratio (3.25) was obtained in diet 4 (30% replacement level of cashew nut meal – maize offal). It was recommended that maize could be replaced up to 30% level with cashew nut meal – maize offal in turkey (finisher phase) diets in regions where this waste is abundant with a view to achieving substantial saving in the unit cost of turkey production.

Keywords: Cashew nut meal, maize offal, maize, turkeys

Introduction

The future livestock production system will rely not only on maximizing the productive rate of a given animal species but on helping to meet the demands of society for the necessities of life (FAO, 1995). Feed cost constitutes between 60 and 80% of the commercial poultry and pig production in most developing countries including Nigeria (Onibi, 2006). Consequently, in order to reduce the cost of finish feeds essentially in poultry enterprise in Nigeria. Agbede *et al.*, (2005) and Ogungbenro *et al.*, (2013) emphasized the need to fully harness the potentials of the agro – industrial by products as partial or where possible whole substitute for the more expensive conventional energy or protein sources. Cashew nut meal has been found to be an excellent feed resource in poultry diet (Fetuga *et al.*, 1973; Onifade *et al.*, 1999; Sogunle *et al.*, 2005 and Ogungbenro *et al.*, 2013). The proximate composition of cashew nut meal (in an air dry basis): 91.05 percent, dry matter, 21.02 percent, crude protein, 1.49 percent, crude fibre, 46.63 percent, ether extract, 4.02 percent, ash and 26.84 percent, nitrogen – free extract (Ogungbenro *et al.*, 2013). Cashew (*Anacardium occidentale*) is among the widely cultivated fruits in South Western Nigeria. The fruits are squeezed and made into fruit juice while the seeds, which contain the nuts are processed into cashew nuts, resin and oils (Adeyeye, 2004). High consumption of cashew in this region has resulted in its large – scale production for local consumption and export during which, large quantities of the kernels are broken, bruised or burnt. Such grades of nuts, which do not meet local or export requirements are usually discarded as wastes in several industrial sites in South West of Nigeria. Thus, the present study was designed to evaluate the performance and economy of production of turkey (finisher phase) fed cashew nut meal – maize offal as partial replacement for maize.

MATERIALS AND METHODS

The research was carried out at the Turkey Unit of the Teaching and Research Farm, Federal University of Agriculture, Abeokuta, Nigeria (7°15'N, 30°25'E).

The cashew nut meal used for this research was obtained from the Cashew nut meal Processing Company Limited Eleyele Ibadan, Nigeria. The maize – offal used for this research was obtained

from a nearby market in Abeokuta, Nigeria. A total of one hundred and twenty turkey (finisher phase) NICOLAS White® Strain were randomly allotted to 12 units. Four diets were formulated which contained 0%, 10%, 20% and 30% replacement level of cashew nut meal – maize offal in ratio 2:1 respectively. One hundred and twenty turkey (finisher phase) were randomly allotted to four dietary treatments, each treatment was replicated thrice with 10 turkey (finisher phase) per replicate. The diet were fed to the turkey (finisher phase) for four weeks during which the records of feed intake, average weight gain, final live weight, protein intake, feed conversion ratio, protein efficiency ratio All data obtained were arranged in a completely randomized design (CRD) and subjected to analysis of variance (Nousis, 1999). Mean value of variable showing significant ($P < 0.05$) difference were separated using Duncan's multiple range test. (Duncans, 1955).

Table I: Gross composition of Turkey (Finisher phase) diet (13 – 16weeks)

Ingredients	Replacement Level			
	0% (T1)	10% (T2)	20% (T3)	30% (T4)
Maize	63.50	57.15	50.80	44.45
Maize offal	-	2.12	4.23	6.35
Cashew nut meal	-	4.23	8.47	12.70
SBM	29.50	29.50	29.50	29.50
Limestone	3.40	3.40	3.40	3.40
Bone meal	2.40	2.40	2.40	2.40
Salt	0.30	0.30	0.30	0.30
DL- methionine	0.20	0.20	0.20	0.20
L – Lysine	0.25	0.25	0.25	0.25
Broiler Premix	0.25	0.25	0.25	0.25
Mycofix	0.20	0.20	0.20	0.20
Total	100.00	100.00	100.00	100.00
Determined composition				
Metabolizable Energy (MJ/kg)	12.45	12.65	12.80	12.95
Crude protein (%)	19.15	20.44	20.74	20.90
Crude fibre (%)	3.22	3.78	4.35	4.92
Ether extract (%)	2.98	4.42	5.86	7.30
Calcium (%)	2.10	2.10	2.11	2.12
Phosphorous (%)	0.47	0.47	0.47	0.48

RESULTS AND DISCUSSIONS

The performance of broiler (finisher phase) fed cashew nut meal – maize offal as partial replacement for maize is as presented in Table II. There was significant ($P < 0.05$) difference in the final live weight gain, feed intake, protein intake and protein efficiency ratio across the dietary treatments. The result obtained in this study confirmed the finding of Sogunle *et al.*, (2006) who reported a significant ($P < 0.05$) difference in the final live weight, weight gain and feed intake of broiler fed experimental diets. The highest final live weight (5,450g) and weight gain (1,910g) was recorded in diets 4.

Table II: Performance and Economy of production of turkey (finisher phase) (13 – 16weeks) fed cashew nut meal – maize offal as partial replacement for maize

Parameters	Replacement Level				SEM
	0% (T1)	10% (T2)	20% (T3)	30% (T4)	
Average initial weight (g)	3,360.00	3,560.00	3,520.00	3,540.00	39.61
Average final weight (g)	5,180.00 ^{cd}	5,260.00 ^{bc}	5,340.00 ^b	5,450.00 ^a	49.92
Average weight gain / turkey (g)	1,820.00 ^b	1,700.00 ^c	1,820.00 ^b	1,910.00	37.31
Average feed intake / turkey (g)	6,273.00 ^b	6,273.00 ^b	6,491.00 ^a	6,213.00 ^c	52.96
Average protein intake / turkey	1,201.28 ^c	1,201.28 ^c	1,411.14 ^{ab}	1,430.85 ^a	55.04
Feed conversion ratio	3.45 ^{ab}	3.69 ^a	3.57 ^a	3.25 ^b	0.08
Protein efficiency ratio	1.52 ^a	1.52 ^a	1.29 ^b	1.33 ^b	0.05
Mortality (%)	0.05	0.04	0.00	0.02	0.09

abcd means within the same row with different superscripts differ significantly ($P < 0.05$)

This result is in agreement with the finding of Fanimo *et al.*, (2003) who reported the highest weight gain (18.9g) with rabbit fed 30% replacement level of cashew apple waste. The lowest feed intake (6,213g) was noticed in diet 4. (30% replacement level of cashew nut meal – maize offal). This result negate the finding of Sogunle *et al.*, (2006) who reported the highest feed intake in diet 4. The feed conversion ratio showed no significant ($P > 0.05$) difference across the treatments. This result negate the finding of Fanimo *et al.*, (2003) who reported a significant ($P < 0.05$) difference in the feed conversion ratio of broiler fed cashew apple waste across the treatments. The best feed conversion ratio (3.25) was obtained in diet 4. This result is in agreement with Fanimo *et al.*, (2003) who reported the best feed conversion ratio (3.25) in rabbit fed 30% replacement level of cashew apple waste. The cost of feed / kg (N) showed significant ($P < 0.05$) difference across the dietary treatments. The result of this research confirmed the finding of Sogunle *et al.*, (2006) who reported a significant ($P < 0.05$) difference in the cost of feed / kg (\$) across the dietary treatment. The lowest cost of feed / kg (N83.87) was recorded in diet 4 (30% replacement level of cashew nut meal – maize offal). The result of this research negate the finding of Sogunle *et al.*, (2006) who reported the lowest cost of feed / kg (\$) 0.34) in diet 1 (0% replacement level of cashew apple waste). The lowest cost of feed consumed / turkey (N521.08) was recorded in diet 4. (30% replacement level of cashew nut meal – maize offal). This result negate the finding of Sogunle *et al.*, (2006) who reported the lowest cost of feed consumed / bird (\$1.90) in diet 1 (0% replacement level of cashew nut meal). The lowest cost of feed consumed / weight gain (N272.82) was recorded in diet 4 (30% replacement level of cashew nut meal – maize offal). This result negate the finding of Sogunle *et al.*, (2006) who reported the lowest cost of feed consumed / weight gain (\$ 1.18) in diet 2 (5% replacement level of cashew nut meal). It was concluded that maize could be replaced up to 30% level with cashew nut meal – maize offal in turkey (finisher phase) diets in regions where this waste is abundant with a view to achieving substantial saving in the unit cost of turkey production.

REFERENCES

- Duncan, D. B. 1955. Multiple range and F tests. *Biometrics*, 11: 1 – 42
- Fanimo, A. O., Oduguwa, O. O., Alade, A. A., Ogunnaike, T. O. and Adesehinwa, A. K. 2003. Growth Performance, Nutrient digestibility and Carcass Characteristic of growing rabbits fed Cashew apple waste. *Livestock Research for Development* 15 (8) 2003. Pp 7 – 8
- Fetuga, B. L., Babatunde, G. M. and Oyenuga, V. A. 1974. Composition and nutritive value of cashew nut to rats. *Journal of Agriculture and Food Chemistry* 22: 678 – 682
- Ogungbenro, S. D., Bamgbose, A. M., Oso, A. O., Sogunle, O. M., Akinosun, A. A. and Oseni, T. A. 2013. The performance characteristics of poultry fed cashew nut meal – maize offal as partial replacement for maize. *Proceeding of 18th Annual conference of Animal Science Association of Nigeria* Pg 242 – 245
- Onifade, A. A., Tewe, O. O., Okunlola, O. and Fanimo, A. O. 1999. Performance of Laying pullet on cereal free diets based on maize offal, Cassava peels and rejects of cashew nut meal. *British Poultry Science* 40: 84 – 87
- Sogunle, O. M., Fanimo, A. O., Biobaku, W. O. and Bamgbose, A. M. 2005. The feeding value of fullfat cashew nut (*Anacardium occidentale*) rejects and low cereal diets for Broiler Chickens. *Nig Journal Animal Prod.* 32: 46 – 53.
- Sogunle, O. M., Iyanda, A. I., Elemo, I. O. and Fanimo, A. O. 2006. The performance of Broiler chicks fed on diets containing rice offal and cashew nut rejects meal. volume 55 (211): 273 – 280.
- SPSS for wundoms V. 17.0 Chicago IL: SPSS incorporated.