

THE  
9<sup>TH</sup> ASAN-NIAS

JOINT ANNUAL MEETING &  
25<sup>TH</sup> ANNUAL CONFERENCE OF ASAN

(ABUJA 2020)

Date: November 15 – 18, 2020

*The Proceedings of the 25th Annual Conference of the Animal  
Science Association of Nigeria*

*Theme:*

**IMPROVED TECHNOLOGY: A KEY STRATEGY FOR  
ENHANCED LIVESTOCK PRODUCTIVITY  
AND NATIONAL ECONOMIC DEVELOPMENT**

*Edited by:*

**Odunsi, A. A., Dairo, F.A.S., Oluwafemi, R. A., Akande, K. E and  
Rotimi, Aanu**

*Venue:*

Evelyn's Recreational and Events Centre, Along 1st Avenue Junction,  
by 3rd Avenue, Gwarimpa, Abuja FCT

**ISSN: 1119 – 4308**

8	010	Shehu, F. N. and Abdu, S. B.	NAERLS, Ahmadu Bello University Zaria, Nigeria	Performance of growing rabbits fed diet containing raw and sprouted Hibiscuss sabdariffa seed meal	264-267
9	013	Azi, J. A., S.E. Alu and D.M. Ogah	Nasarawa State University, Keffi, Shabu-Lafia campus, Nasarawa State, Nigeria	Nutrient digestibility by weaner rabbit fed acha offal based diets supplemented with Maxigrain® enzyme	268-271
10	016	Muhammad, B. A., Kawu, U.Y., Babawuro, Y., <sup>4</sup> Doma, U. D.	Ministry of Agriculture and Animal Husbandry, Gombe, Nigeria	Growth performance and financial benefits of finisher broiler chickens fed dietary levels of local fish meal as replacement for imported fish meal	272-275
11	026	G. E. Enyenihi, U. A. Inyang and A. E. Antia	University of Uyo, Uyo Nigeria	Performance and carcass characteristics of broilers fed diets supplemented with Turmeric (Curcuma longa) powder	276-279
12	030	Ibe, E. A., Kudu, Y.S., Ayanwale, B. A. And Malik, A.A.	Akanu Ibiam Federal Polytechnic, Unwana Afikpo, Ebonyi State	Growth performance of broiler chickens fed differently soaked doum palm (Hyphaene thebaica) pulp meal diets at starter phase	280-282
13	037	Augustine, C., Dass, U.D., Amos, R., Igwebuike, J.U. Khobe, D., Madugu, A.J and Midau, A.	Adamawa State University, Mubi	Effects of replacing full-fat soya bean with fermented sickle pod (Senna obtusifolia) seed meal on the productive performance of broiler chickens and its economic implications	283-286
14	042	EDEH, H. O, OGWUEGBU M.C, Ilo, S. U and ANI, A.O	University of Nigeria Nsukka, Nigeria	Growth performance and haematological indices of broiler chicks to oral supplementation with neem leaf extracts.	287-289
15	044	Abdullahi, H. R., Alu, S. E., Yakubu, A. and Aliyu, A.M.	Federal University, Lafia, Nasarawa State of Nigeria.	Growth response and economic production of weaner rabbits fed tiger nut offal meal-based diet supplemented with Kingzyme enzyme	290-293
16	046	Makinta, A. A., Mustapha, A., Benisheikh, A. A., Marte, M.A.	Ramat Polytechnic Maiduguri, Borno State, Nigeria.	Effect of dietary levels of roasted sunflower seed meal on digestibility, haematology and carcass characteristics of broiler chickens in the semi-arid region of Nigeria	294-298
17	052	O.A. Irivboje, O.O. Olufayo and Y.I. Irivboje	The Federal Polytechnic, Ilaro, Nigeria.	Phytogenic compounds: A review of ginger and garlic as an alternative feed additive in poultry nutrition.	299-302
18	055	Amusa, H. O., Ogungbenro, S. D., Adebisi, I. A., Oseni, T. A., Adams, T. O., Adeoti, T.M and Amusa, F. L	Oyo State College of Agriculture and Technology, Igboora Oyo State, Nigeria	Haematological indices of broiler finisher chicken fed graded levels of acid soaked Cajanus cajan seed meal diet	303-305
19	057	Sa'adu A., Dalhatu M., A. Abubakar, Isa, A. M., Abdullahi A. U., and A. Y. Abbas	College of Agriculture and Animal Science, Wurno, Sokoto State	Effects of strains and energy levels on carcass and primal cuts of some broiler birds in wet season of Sokoto semi-arid, Nigeria	306-309

20	058	Ibrahim, H., Aliyu, Z. Oluwawuni, T.B., and Awolola, G	Ibrahim Badamasi Babangida University, Lapai, Niger State, Nigeria.	Effect of garlic ( <i>Allium sativum</i> ) supplement on blood indices of broiler chickens.	310-313
21	059	Owuna, I. K., Alu, S. E. and Ari, M. M.	Nasarawa State University, Keffi, Shabu-Lafia campus, Nasarawa State, Nigeria	Effects of crude and synthetic enzymes on growth performance and economics of production of broiler starter chickens fed groundnut- cowpea shell meal	314-317
22	060	Ango, H. S., Malik, A. A. and Adama, J. S.	Federal University of Technology Minna, Nigeria	Growth performance and nutrient digestibility of broiler chicken fed diets containing varying levels of decorticated Baobab ( <i>Adansonia digitata</i> ) seed meal at the starter phase	318-321
23	063	Alaku, A.A., Ogah, D.M., and Alu, S.E.	Nasarawa State University, Keffi, Shabu-Lafia campus, Nasarawa State, Nigeria	Haematological and serum biochemical parameters of broilers chickens fed dried <i>Tridax procumbens</i> meal-based diets supplemented with fullzyme	322-326
24	064	Yahaya M.O. and Awodola-Peters O.O.	Federal college of Animal Health and Production Technology Moor Plantation Ibadan	Gut morphology and serum biochemistry of broiler chickens fed carrot wastes ( <i>Daucus carota</i> )	327-329
25	066	Agbai, K. N., Oimage, J. J., Sekoni, A. A., Afolayan, M.	Ahmadu Bello University, Zaria	Effect of diets containing different levels of Biotronic® top forte (commercial blended organic acids) fed during grower phase on subsequent performance of laying hens (19-38 weeks)	330-332
26	067	Ilo, S. U.; Udeh, F. U.; Edeh, H. O., Osita, C. O. and Uzochukwu, P. N.	University of Nigeria, Nsukka	The effect of ( <i>Musca domestica</i> ) maggot meal as a replacement for fish meal on haematological indices, carcass and organ characteristics of broiler finisher.	333-336
27	071	Adetutu O. I., Olabode A. D., Ojuoloruntaye T. J., Adetutu O. B., Ajah G. N. and Ubochi P. I.	Federal College of Agriculture, Ishiagu, Nigeria.	Efficacy of <i>Morinda lucida</i> leaf extract on growth performance and carcass yield of meat type chicken	337-340
28	076	Ogungbenro, S. D., Amusa, H. O., Adebisi, I. A and Adams, T. O.	Oyo State College of Agriculture and Technology, Igboora Oyo State, Nigeria	Dietary effect of substituting mixed saw dust for wheat offal on internal organ of broiler finisher	341-343
29	083	Samuel, I., Makinde, O.J. and Ibe, E.	Federal College of Education (Technical), Bichi, Kano	Replacement value of maize with millet processing waste meal on growth performance and carcass characteristics of finisher broilers	344-347
30	084	Samuel, I., Daudu, O. M. and Bawa, G. S.	Federal College of Education [Technical], Bichi – Kano.	Evaluation of dietary threonine levels on nutrient digestibility of growing Japanese quail ( <i>Coturnix coturnix japonica</i> ) in the tropics	348-351
31	085	Dim, C. E., Ugwuoke, J. I., Hassan, B., Umeneri, C. S. and Chukwudi, P.	University of Nigeria, Nsukka, Nigeria	Odor control in broiler houses using dietary bentonite	352-354

## Growth performance of broiler chickens fed differently soaked doum palm (*Hyphaene thebaica*) pulp meal diets at starter phase

Ibe, E. A<sup>1</sup>., Kudu, Y.S<sup>2</sup>., Ayanwale, B. A<sup>2</sup>. and Malik, A.A<sup>2</sup>.

<sup>1</sup>Department of Agricultural Technology, Akanu Ibiam Federal Polytechnic, P.M.B. 1007, Unwana Afikpo, Ebonyi State, Nigeria.

<sup>2</sup> Department of Animal Production, School of Agriculture and Agricultural Technology, Federal University of Technology, Minna, Niger State, Nigeria.

Corresponding Author: ibeemmanuel87@gmail.com 08033656968

### Abstract

This study was carried out to determine the growth performance of broiler chickens (0-4wks old) fed different hourly soaked doum palm (*Hyphaene thebaica*) pulp meal diets. A total of 198 day-old broiler chicks were randomly allotted to six treatments. Each treatment consisted of 33 birds with three replicates of eleven birds each in a completely randomized design (CRD). Six experimental diets were formulated as follows: T<sub>1</sub> (Control) was 0 % of doum palm pulp meal while diets T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub>, T<sub>5</sub> and T<sub>6</sub> had 2, 4, 6, 8 and 10 hours soaked doum palm pulp meals respectively. Feeds and water were provided ad libitum. Significant ( $p < 0.05$ ) differences were observed in final weight, weight gain, feed intake and feed conversion ratio. Birds fed diet T<sub>6</sub> differs significantly ( $p < 0.05$ ) in weight gain (736.67 g/bird) and feed conversion ratio (1.10). Birds fed diets T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> had similar ( $p > 0.05$ ) values of weight gain (700.98, 726.72, 690.90) with T<sub>1</sub> (701.31 g/bird) in terms of weight gain. T<sub>2</sub> had significantly ( $p < 0.05$ ) lower mean value of weight gain (641.37) compared to other treatments. Feed cost per weight gain (FCR) showed that birds fed diet T<sub>4</sub> and T<sub>6</sub> had significantly ( $p < 0.05$ ) lowest cost of production (₦189.52 and ₦173.45) than other treatments. It was concluded that 4 to 10 hours soaked doum palm pulp meal diets could be used in broiler starter diets without any adverse effects on growth performance.

**Keywords:** Growth, Performance, doum palm, soaking, Broiler.

### Description of Problem

In Nigeria, maize is the most commonly used source of energy for poultry which usually constitutes about 40 -60 % of industrially formulated poultry diets (1, 2). The high cost of maize and other cereals is due to the competition between man and farm animals and their seasonal production. Many unconventional tropical feed resources and their by-products which have potential for use as alternative sources of feed for poultry, could be exploited to reduce cost and limit the dependence on maize (3, 4). Many developing countries of the world has protein deficiency gap, especially that of high quality animal protein. This low animal, protein intake has very serious implications on the health status and well-being of the citizenry (5).

There is need to search for non-conventional feedstuffs like doum palm (*Hyphaene thebaica*) pulp meal diets which might reduce cost of poultry feed, meat and animal products. According to the report of (6), doum palm pulp was found to contain 6.25 % ash, 89.25 % carbohydrate, 0.95 % oil, 316 mg/g glucose, 6.09 % protein but high calorific values of 3234 kcal/kg. This research is aimed at investigating the nutritive effect of differently hour soaked Doum palm (*Hyphaene thebaica*) pulp meal on the growth performance of broilers.

### Materials and Methods

The experiment was carried out at the Teaching and Research Farm of the Department of Animal Production, School of Agriculture and Agricultural Technology, Federal University of Technology, Bosso

Campus, Minna, Niger State, Nigeria. A total of 198 day- old Ross 308 broiler chicks were randomly allotted to six treatments. Each treatment consisted of 33 birds with three replicates of eleven birds each in a completely randomized design (CRD). The experiment lasted for 28 days. Data were collected on initial weight, final weight, daily weight gain and feed intake. Feed conversion ratio and cost of feed per kilogramme weight gain were also calculated. The feed materials used in this study include maize, doum palm pulp meal, soybean meal, fishmeal, groundnut cake, maize offal, bone meal, limestone, common salt, palm oil, premix, L-lysine and DL-methionine. All were purchased in Minna at Farida feed milling Industry. No. 7 Gida Matasa, Minna Niger State. While the mature ripe doum palm (*Hyphaene thebaica*) fruits were sourced from Mashi Local Government of Katsina State. The fruits were soaked in portable tap water at the rate of 1 kilogram to 5 litres of water at room temperature for 2 hours, 4 hours, 6 hours, 8 hours and 10 hours respectively using the method described by (7) after which the fruit mesocarp was removed with knife and sundried. It was milled using 3mm hammer mill and incorporated in the broiler chicks diets. Six experimental broiler starter diets containing the differently soaked doum Palm pulp meal was formulated as follows: T<sub>1</sub> (Control) was 0 % of doum palm pulp meal while T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub>, T<sub>5</sub> and T<sub>6</sub> were 2, 4, 6, 8 and 10 hours soaked doum palm pulp meal respectively. Compositions of the experimental diets are presented in Table 1.

**Table 1: Ingredients and calculated nutrient composition of the Experimental broiler Starter diets**  
Hours of soaking Doum Palm (*Hyphaene thebaica*) pulp meal (hrs)

Ingredients (%)	T1	T2	T3	T4	T5	T6
Maize	50.00	43.75	43.75	43.75	43.75	43.75
Doum palm meal	0.00	6.25	6.25	6.25	6.25	6.25
Maize offal	5.00	5.00	5.00	5.00	5.00	5.00
GNC	17.00	17.00	17.00	17.00	17.00	17.00
Soya cake	19.95	19.95	19.95	19.95	19.95	19.95
Fish meal	3.00	3.00	3.00	3.00	3.00	3.00
Limestone	1.00	1.00	1.00	1.00	1.00	1.00
Bone meal	2.00	2.00	2.00	2.00	2.00	2.00
Palm oil	1.00	1.00	1.00	1.00	1.00	1.00
Common salt	0.25	0.25	0.25	0.25	0.25	0.25
*Vitamin Premix	0.30	0.30	0.30	0.30	0.30	0.30
L-lysine	0.25	0.25	0.25	0.25	0.25	0.25
DL-methionine	0.25	0.25	0.25	0.25	0.25	0.25
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Calculated nutrients (%)</b>						
ME(Kcal/kg)	3086.15	3086.54	3068.6	3041.55	3054.06	3068.43
Crude protein	22.03	22.00	22.00	22.00	22.00	21.90

T1 = (0 hour soaked); T2 to T6 = 2, 4, 6, 8 and 10 hours soaked doum palm pulp meal diets.  
GNC= Groundnut cake

**Table 2 Growth Performance of Broiler Chickens Fed differently soaked Doum Palm pulp meal diets (0-4 week)**

Parameters	T1	T2	T3	T4	T5	T6	SEM	LOS
Initial weight (g/bird)	50.36	50.46	50.69 <sup>a</sup>	50.61	50.60	50.66		
Final weight (g/bird)	751.67 <sup>ab</sup>	691.83 <sup>b</sup>	751.67 <sup>ab</sup>	777.33 <sup>ab</sup>	747.50 <sup>ab</sup>	787.33 <sup>a</sup>	0.16	NS
Total weight gain (g/bird)	701.31 <sup>ab</sup>	641.37 <sup>b</sup>	700.98 <sup>ab</sup>	726.72 <sup>ab</sup>	690.90 <sup>ab</sup>	736.67 <sup>a</sup>	44.14	*
weekly body weight gain	175.33 <sup>ab</sup>	160.34 <sup>ab</sup>	175.25 <sup>ab</sup>	181.68 <sup>ab</sup>	174.23 <sup>ab</sup>	184.17 <sup>a</sup>	44.14	*
Daily body weight gain	25.05 <sup>ab</sup>	22.99 <sup>b</sup>	25.03 <sup>ab</sup>	25.96 <sup>ab</sup>	24.89 <sup>ab</sup>	26.31 <sup>a</sup>	11.03	*
Total feed intake (g/bird)	910.02 <sup>a</sup>	794.99 <sup>c</sup>	928.18 <sup>a</sup>	870.11 <sup>ab</sup>	869.55 <sup>ab</sup>	816.03 <sup>b</sup>	1.58	*
weekly feed intake (g/bird/week)	227.50 <sup>a</sup>	198.75 <sup>c</sup>	232.04 <sup>a</sup>	217.52 <sup>ab</sup>	217.39 <sup>ab</sup>	204.00 <sup>b</sup>	35.01	*
Daily feed intake (g/bird/day)	32.50 <sup>ab</sup>	28.39 <sup>d</sup>	33.15 <sup>a</sup>	31.08 <sup>abc</sup>	31.06 <sup>b</sup>	29.14 <sup>c</sup>	8.75	*
Feed conversion ratio	1.30 <sup>c</sup>	1.24 <sup>c</sup>	1.33 <sup>bc</sup>	1.21 <sup>b</sup>	1.25 <sup>b</sup>	1.10 <sup>a</sup>	1.25	*
Cost of feed/kg weight(₦ /kg)	220.51 <sup>c</sup>	194.24 <sup>b</sup>	208.95 <sup>bc</sup>	189.52 <sup>ab</sup>	195.60 <sup>a</sup>	173.45 <sup>a</sup>	0.09	*

<sup>abcd</sup> Means on the same row with different superscripts are significantly (P<0.05) different. SEM: standard error of mean; LS: Level of significance; NS: Non significant difference (p>0.05), \*Significant difference (P<0.05) different. T1 = (0 hour soaked); T2 to T6 = 2, 4, 6, 8 and 10 hours soaked doum palm pulp meal diets.

### Statistical analysis

Data collected were subjected to analysis of Variance using SAS software (8) while significant means were separated with Duncan multiple range test at 5% level of significance.

### Results and Discussion

The results of the growth performance are presented in Table 2. There were significant (p<0.05) differences on the final weight, daily body weight gain, daily feed intake and feed conversion ratio across the dietary treatments. Birds fed diet T<sub>6</sub> differs significantly (p<0.05) in weight gain and in feed conversion ratio compared to those birds fed other

diets. The feed intake (32.50 g/bird) and weight gain (701.31 g) of birds fed the control diet (T<sub>1</sub>) was similar (P>0.05) to those birds fed diets T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> (33.15 g, 31.08 g, 31.06 g) respectively. Feed intake was higher (P<0.05) in birds fed diet T<sub>3</sub> (33.15 g) than those fed other diets. Birds fed diet T<sub>2</sub> differs significantly (p<0.05) in feed intake (28.39 g) and weight gain (641.37 g) compared to other treatments. Birds fed diet T<sub>6</sub> had the best (1.10) feed conversion ratio (FCR) amongst all the treatment groups. Feed cost in Naira per kilogramme weight gain showed that birds fed diet T<sub>4</sub> and T<sub>6</sub> had significantly (p<0.05) lowest cost of production ₦ 189.52 and ₦ 173.45 respectively compared to other treatments.

This finding agrees with the reports of (9) who observed that processing of cereals and legume seeds by soaking led to significant ( $P < 0.05$ ) decrease in anti-nutritional factors and consequently increase the availability and digestibility of nutrients.

### Conclusion and Application

Based on the findings of these studies, it was concluded that 4 to 10 hours soaked doum palm (*hyphaene thebaica*) pulp meal diets could be used in broilers diets without any adverse effects on feed intake, weight gain and feed conversion ratio of broiler chicks. It was recommended that 4 to 10 hours soaked doum palm pulp meal diets could be conveniently used in broiler starter diets without any adverse effects on feed intake and growth performance of broiler chicks.

### References

1. FAO (2006). Food and Agricultural Organisation of the United Nations. *Poultry review - Ghana: The structure and importance of the commercial and village based poultry in Ghana*, by K.G. Aning. Final review report. Rome.
2. Heise, H., Crisan, A. and Theuvsen, L. (2015). The poultry market in Nigeria: Market structures and potential for investment in the market. *International Food and Agribusiness Management Review*, 18(1), 197-222.
3. Kudu, Y.S, Alabi, J. O., Egena, S.S.A. and Umaru, M. A. (2008). Effect of four different commercial feeds on cockerel production Proceedings of 33<sup>rd</sup> Annual Conference, NSAP. Ayetoro. Ogun State, 18- 20<sup>th</sup> March. pp. 443-445.
4. Annongu, A.A, Joseph K.L., Adeyina A. O., Sola-Ojo, F.E., Edoh, J.H and Ajide, S.O. (2017). Utilization of African Star Apple (*Chrysophyllum albidum*) kernel meal in broiler diets. *Journal of Agricultural Sciences*, 62(20), 143-154.
5. Ayanwale, B.A., Adebimpe, O.M. and Kudu, Y.S. (2006). An evaluation of feather meal as a protein sources in rabbit diets. In: proceedings 31st Annual Conference Nigerian Society for Animal Production 12th -15th March 2006, Kano State, pp 234-238.
6. Abdulsalam, I., Magaji, M. Y. and Bah, S. U. (2018). Effects of Dietary Levels of Doum Palm Pulp Meal (*Hyphaene thabaica*) Supplementatio n on the Performance of Broiler Chickens. *Asian Journal of Research in Animal and Veterinary Sciences*, 2(2), 1-8.
7. Nafiseh, Z., Mohamad, S.B., Ali, N. and Mahmoud, S. (2013). Effect of line Soaking and Cooking time on water absorption, texture and splitting of red kidney beans. *Journal of Food Science Technology*, 50 (1), 108-114.
8. SAS. (2015). Statistical Analysis System Institute. User's guide. Version 9.3, SAS Institute Inc. Cary, N. C.
9. Abd El-Moneim, M. R. A., Hossam S. E., Samiha, M. A. and Azza, A. O. (2012). Effect of Soaking, Cooking, Germination and Fermentation Processing on Proximate Analysis and Mineral Content of Three White Sorghum Varieties (*Sorghum bicolor* L. Moench). *Notulae Botanicae Horti Agrobotanici Cluj-Napoca*, 40(2), 92-98.