

Assessment of Different Energy Sources on the Growth Performance of Grower Pigs

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ABSTRACT

A 12 weeks study was conducted to assess the effects of different energy sources namely: maize, garri sievate/palm kernel meal, bakery waste and guinea corn (sorghum) on growth performance of producing grower pigs. Thirty-two (32) grower pigs were randomly assigned to four treatment diets (1, 2, 3 and 4) in a completely randomized design (CRD). Each treatment group contained four replicates with two grower pigs per replicate. In diet 1 (control), maize served as the energy source, while in diet 2,3 and 4 garri sievate/palm kernel meal, bakery waste and guinea corn served as the energy sources respectively. Data on performance characteristics namely: feed intake, weekly weight gain, protein intake, feed conversion ratio and protein efficiency ratio were significantly ($p < 0.05$) influenced by the dietary treatments. The values ranged from 7.40-8.60kg, 1.80-2.50kg, 1.54-1.72kg, 3.26-4.48 and 1.16-1.61 respectively. Weight gain and feed conversion ratio were better in the control diet while diet 2 with the highest feed intake had the best protein efficiency ratio, was able to compete favorably with the control (diet 1) in terms of growth performance among the treatment diets was the most preferred energy source for grower pigs.

Keywords: Energy sources, Grower pigs, Growth performance

INTRODUCTION

The major effects of the present economy recession is the increasing cases of nutritional deficiencies especially protein malnutrition in Nigeria. FAO1993; Moseri, 2010 recommendation on protein consumption level of 65g per day per person of which 35g should be from animal sources is still far from being achieved by many Nigerians. Everyday piggery practice knowledge in Nigerian, the monogastric animals (pigs), apart from their high rate of reproduction. However, pigs are characterized by the best efficiency of nutrient transformation into quality animal protein. Nevertheless, the costs of this transformation are very high (Szebiotko, 1981; Igene, 2006), and feed conversion expressed in kilograms of feed per kilogram of body weight gain ranges from 2.0 to 2.8 and from 3.5 to 4.5 in broilers and pigs respectively.

This indicated that 4.3 to 6.00kg of plant protein is converted into kilogram of animal protein only. The search for alternative feed ingredients including those that contain high fiber content for livestock feeding especially non-ruminants continues to attract the attention of researchers

especially in the developing countries of the world for two main reasons. First is the stiff competition, which exists between humans and the livestock industry secondly the low production resulting in scarcity of cereal grains same vein, according to Sundu et al. (2006) the search for least cost formulation has led nutritionists to investigate the nutritional potentials of the non-conventional ingredients used for compounding animal rations, and to determine the percentage of combination of such ingredients that could bring satisfactory performance.

However, pig production in Nigeria is a viable economic enterprise if properly managed and its expansion will contribute to the economic growth of the nation. Oboh (2016) reported that the importance of proper feeding is very great, as the cost of feeds represents a very high proportion of the total cost of pig production sometimes as high as 90%.

Proteins from grains and their by product could provide the major proteins as well as amino acids. These proteins are likely to be deficient in methionine and lysine, and therefore need to be supplemented with animal protein to ensure

proper balance of essential amino acids (Igene, 2006). The knowledge of alternative cheap feed ingredients and levels of inclusion into animal feed without any harmful effects and/or impaired performance will go a long way to solving problem of high cost of feed production (Moseri, 2010). There is the need to search for locally available and cheap sources of feed ingredients particularly those that do not attract competition between human and livestock (Lala, 2007). Thus the objective of this study was to assess the growth performance characteristics of the grower pigs fed different dietary sources of energy.

MATERIALS AND METHODS

12 weeks study was conducted at the piggery unit of the Teaching and Research farm of the Faculty of Agriculture, Ambrose Ali University, Ekpoma, and Edo State. A total of thirty two (32 cross breed) from large white and landrace grower pigs were used for the experiment. These pigs were divided into four (4) groups based on their average initial weight (25-28kg) and each group of grower pigs were respectively allocated to each of the four treatment diets (1, 2, 3 and 4) in a complete randomized design

(CRD). Each treatment group contained 4 replicates of 2 pigs each (one male and one female). These pigs were fed twice daily and water supplied ad libitum. The diets consisted of the following energy sources, maize, garri sievate/palm kernel meal in ratio 1:1, bakery waste and guinea corn (Sorghum). Major protein source was groundnut cake while other ingredients consisted of bone meal, vitamin/mineral premix, Lysine, methionine and salt. Four experimental diets (including the control) were formulated. Diet 1 served as the control contained maize while in diets 2, 3 and 4. Garri sievate/PKM, bakery waste and guinea corn replaced maize as sources of energy respectively. All diets were formulated in such a way that they were iso-nitrogenous and iso-caloric as shown in table 1. At the beginning of the experiment and subsequently at weekly intervals throughout the duration of the experiment, the parameters that were measured includes: average weekly feed intake (kg), average weekly weight gain (kg), feed conversion ratio and protein efficiency ratio. The data collected were analyzed using the one way Analysis of Variance (ANOVA) and the differences between means were separated by least significant difference.

Table 1. Composition of the Experimental Diets

Ingredients	1(Maize Based Control)	2(Garrisievate/PKM)	3(Bakery Waste)	4(Guinea Corn)
Maize	20	-	-	-
Cassava/PKM	-	20	-	-
Bakery Waste	-	-	20	-
Guinea Corn	-	-	-	20
Groundnut Cake	10	10	10	10
PKC	30	30	30	30
Breweries				
Dried Grain	30	30	30	30
Bone meal	2.5	2.5	2.5	2.5
Salt	0.5	0.5	0.5	0.5
Total	100	100	100	100
Cal C.P (%)	19.78	20.45	20.02	19.92
Cal. Energy (Kcal/kg)	2541.40	2460.20	2579.40	2517.40

RESULTS AND DISCUSSION

The results obtained on feed intake by the experimental animals are shown on table 2. The results indicate that the animals were significantly (p<0.05) affected by the dietary treatments used. The feed intake of pigs fed diet 2 (garri sievate/palm kernel meal) was significantly (p<0.05) higher than those of pigs fed diets 1, 3 and 4. The results obtained were 8.01, 8.60, 7.40 and 8.10kg for diets 1, 2, 3 and 4 respectively. Animals on dietary treatment 2 had the highest

feed intake followed by treatment 4 and 1. Treatment 3 had the least feed intake. The weekly weight gain of pigs obtained in experimental animals were significantly (p<0.05) affected by the dietary treatments. There were significant differences between the control diet and the test diets. Animal fed the control diet had the highest weekly weight gain, followed by those on garri sievate/palm kernel meal, bakery waste and guinea corn respectively. The values obtained were 2.50, 2.40, 1.90 and 1.80kg respectively for diets 1, 2, 3 and 4.

The average weekly protein intake indicated that animals significantly ($p < 0.05$) differed from one another with respect to the dietary treatments used. The protein intake of pigs fed diet 2 (garri sievate/palm kernel meals) was the highest, followed by those fed the bakery waste diet (diet 3). Guinea corn diet (diet 4) and the control maize based diet. There were also significant differences ($p < 0.05$) in the feed conversion ratio of the animals on the various dietary treatments used, Animals on dietary treatments 4 and 3 were significantly ($p < 0.05$) higher than those on the control diet with maize as the dietary energy source as well as the cassava sievate /PKM diet. The values were 3.26, 3.93 and 4.48 respectively for diets 1, 2, 3 and 4 the average weekly protein efficiency ratio

indicates that the animals were significantly ($p < 0.05$) affected by the Dietary treatments. The results were 1.61, 1.40, 1.19 and 1.16 for diets 1, 2, 3 and 4 respectively. The values were 3.26, 3.61, 3.93 and 4.48 respectively for diets 1, 2, 3 and 4 respectively. Animal on dietary treatment 1 (control) and 2 showed significant ($p < 0.05$) difference from each other and were significantly higher than those of diets 3 and 4. Numerically animals on the control diet had the highest value, followed by diet 2, 3 and 4 respectively the overall results on the performance characteristics of grower pig on the treatment diets indicate that garri sievate/palm kernel meal was a better replacement for maize (control) more than bakery waste and guinea corn without any growth depression.

Parameters	Dietary Treatments				SEM(±)
	1(Maize Based Control)	2 (Garri sievate/PKM)	3(Bakery Waste)	4(Guinea Corn)	
Average initial weight/pig (kg)	27.30	28.00	27.00	27.67	
Average final weight/pig (kg)	44.80	44.80	40.60	40.27	
Average weekly feed intake (kg)	8.01 ^c	8.60 ^a	7.40 ^d	8.10 ^b	0.12
Average weekly weight gain (kg)	2.50 ^a	2.40 ^b	1.90 ^c	1.80 ^d	0.09
Average weekly protein intake (kg)	1.54 ^d	1.72 ^a	1.60 ^b	1.56 ^c	0.02
Average feed conversion ratio/kg wt gain/pig	3.26 ^d	3.61 ^c	3.93 ^b	4.48 ^a	0.12
Average protein efficiency ratio	1.61 ^a	1.40 ^b	1.19 ^c	1.16 ^d	0.47

Note: Means within the same row with different superscripts are significantly ($p < 0.05$) different

The performance characteristics of the animals on the test diets are shown in Table 2. The data of grower pigs fed the different dietary treatments of maize (control), garri sievate/palm kernel cake, bakery waste and sorghum as energy sources revealed significant ($p < 0.05$) variations in average weekly feed intake, weekly weight gain, average weekly protein intake, average feed conversion ratio/kg, weight gain/pig and average protein efficiency ratio. The feed intake of pigs fed diets 2 and 4 were significantly ($p < 0.05$) higher than those on diet 3 and control (1). The results obtained were 8.01, 8.60, 7.40 and 8.40 and 8.10kg for diets 1, 2, 3 and 4 respectively. Animals on dietary treatment 2 had the highest feed intake followed by 4 and control (1), while diet 3 has the least fed intake. The results obtained on feed intake agreed with the report of Igene (2006) of a daily feed intake of 1.3kg for 30kg to 40kg live weight pigs and 1.8kg for 40kg to 60kg live weight pigs. These results were also in accordance with the recommendations of (Tewe and Oke, 1983; Oboh, 2014; Igene, 2006).

CONCLUSION

The performance of the garri sievate/PKM among the different treatment diets which had the best

performance can be used as better feed substitute for grower pigs feeding and production. However, garri sievate/PKM is therefore recommended as a cheap source of feed for pig farmer compared to other energy sources.

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