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RESEARCH ARTICLE

GROWTH RESPONSE OF GROWER PIGS FEED DIETS CONTAINING FRESH GREEN GUINEA GRASS (*Panicum maximum*) AS FORAGE SUPPLEMENT

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ABSTRACT

A feeding trial was conducted to test the efficacy of fresh green guinea grass (FGGG) as green food supplement on growth response of grower pigs. A total of 45 young pigs between 18 and 19 kg live body weight on the average, were used in a completely randomized design (CRD) experiment. The pigs were obtained from a landrace x large white crosses. There were five treatments of nine animals each replicated three times with three animals per replicate. Pigs in treatment 1 taken as the control consumed only a formulated basal diet while pigs in treatments 2, 3, 4, and 5 received the basal diet in addition to 5, 10, 15 and 20% of their daily ad *libitum* feed as FGGG respectively. The whole experiment lasted for 60 days. At the end, pigs that fed 5% FGGG had better final body weight, than the control and other pigs that fed FGGG. Inclusion of FGGG above 5% did not better result in body weight than the control.

INTRODUCTION

In Nigeria, monogastric animal production is faced with numerous challenges especially in the area of nutrition. This is due to high cost of protein concentrates and maize used to formulate a balance diet. According to Madubuike and Ekenyem (2001) 70 – 80% of the total cost emanated from high cost of these concentrates.

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Earlier, Olomu and Oboh (1995) had reported that only 0.42% of the world's pig's population in 1990 was from Nigeria. However, recently, pig production in Nigeria is becoming an important livelihood activity of smallholder farmers especially in the Southern region. These groups of farmers cannot afford the cost of conventional feedstuffs and at the same time maximize their profits. Any approach to reduce cost of diets for pigs may be welcomed by the pig farmers.

To this end the use of cheaper feed ingredients to reduce cost of production and make pig meat affordable for the populace has been advocated (Ekenyem, 2004). Not only cheaper sources of feed, but there is the need to search for feed ingredients that are not competed for by both man and animals. To reduce cost, Esionu *et al.* (2002) preferred the use of leaves of tropical legumes, grasses and browse plants to feed monogastric animals. Interestingly, guinea grass (*Pannicum maximum*) grows in abundance in Southern region of Nigeria. It can be seen freshly growing in fodder banks, established pastures and in the wild.

Though, guinea grass is used extensively in ruminant nutrition because of their ability to handle high fibre in their diets much attempt have not been made to include grasses in pig diets. There is this fear that monogastric animals do not digest fibre effectively. Recent reports have shown that pigs require some level of lignocelluloses the major component of fibre (Kroismayr, 2008). Available findings showed that pigs can thrive on diets containing forage and forage products such as cocoyam leaves Roddriguez *et al.* 2006); wild sunflower leaf meal (Olayeni *et al*. (2006) and morning glory leaves Ekenyem (2006). Unpublished reports show that small scale pig farmers allow their pigs access to green forage as supplement. However, note is not usually taken to determine the amount of the forage required. Therefore, the objective of this study is to determine the possibility of incorporating fresh guinea grass in diets for grower pigs as supplement and also the level required.

MATERIALS AND METHOD

Site of Experiment: The research was conducted at the piggery unit of the Teaching and Research Farm of the department of Animal Production and Health, Imo State Polytechnic, Umuagwo, Nigeria. Umuagwo is located at altitude 5^{o} 6^{1} North and longitude 6^{o} 07^{1} East. The average animal rainfall is 2000 – 2480mm and temperature range of 25-30°C

Collection and Preparation of Grass: The grass was obtained from an established pasture of goat and sheep unit of the research farm. The age of the pasture was not established. However, the grass was cut at its bloom stage during June-July period of the year. Cutting of grass was done every evening (1700 hrs), chopped into pieces and washed with clean water. The grass was then stored in a clean plastic container.

***Experimental Diets and Proximate Analysis*:** A based dry mash diet was formulated using trial and error method according to Olomu and Oboh (1995) for pigs in the warm humid tropics. Proximate analysis of both the diet and the grass was carried out accordingly AOAC. (1990).

***Management of Experimental Animals*:** Forty-five (45) landrace x large white grower pigs with live body weight range of 18–19 kg were obtained from a commercial breeding farm. On arrival to the farm, they were quarantined and monitored for seven days. After the quarantine, the animals were dewormed and antibiotic and vitamin drugs were prophylatically administered for 5 days. At the end of 14 days the pigs were divided into five dietary groups of nine animals. Each dietary group formed a treatment, replicated into three of three animals. They were housed in an open sided building with 1.2m cemented dwarf wall. The building was partitioned into pens of $6m^2$ representing a replicate. Both feed and water were provided and libitum in a concrete feed bunk and water trough. Dry mash feed was made wet by adding water, thoroughly mixed with the grass each morning before feeding. Feeding was between 7.30 – 8.30 hrs. Good hygiene was maintained throughout the experiment. Antibiotic and vitamin drugs were administered as prophylactic measures.

***Experimental Design*:** The experimental design adopted was completely randomized design (CRD). There were five treatments. Treatment one which was the control animals were fed a basal diet. Treatment two, three, four and five groups of animals were fed the basal diet in addition to 5, 10, 15 and 20% of their daily ration respectively as chopped guinea grass, mixed thoroughly with the daily basal ration. Each treatment of nine animals was replicated three times with three pigs, per replicate.

Data Collection and Analysis: Data on body weight and feed intake were recorded. Pigs were weighted on weekly basis. Feed intake was determined on daily basis, by subtracting the leftover feed every morning from the amount fed the previous day ad recorded. At the end of the week the total feed intake for the week was divided by 7 to determine the average daily feed intake. Data on body weight and feed intake were used to calculate the feed: grain ratio. All data collected or calculated were subjected to analysis of variance (ANOVA) according to Steel and Torrie (1981). Means that were significantly different were separated by Least Significant Difference (LSD).

RESULTS AND DISCUSSION

Basal diet used in this study (table 1) contained nutrients similar for those reported for the tropics by Olomu and Oboh (1995). The protein content of the fresh guinea grass used (5.85%) table 2 shows disparity between (7.9%) reported by Babayemi (2007).

Table 1. Proximate Composition of Fresh Guinea Grass

Parameters	%
Dry matter	25.65
Crude protein	5.85
Crude fibre	40.40
Ether extract	4.50
Ash	6.50

This is expected as the nutritive value (nutrients content) of forages is affected by the soil, age of the forage, season and level of lignifications among others. Inclusion of *pannicum maximum* in grower pig diets influenced body weight and feed intake significantly and ability of the pigs to convert feed to meat. Pigs that fed5% grass significantly had better final body weight (33 kg) and weight gain (14.67kg) than the control (30 and 10.83kg) respectively. Within the groups that fed grass, as the level of grass was increased above 5% their body weight progressively deteriorated. Similar trend was observed in feed intake. It was negatively affected beyond 5% grass inclusion. There was increase in feed intake which did not support body weight. The efficiency of conversion of feed into muscle was best achieved with 5%

Table 2. Ingredients and Nutrients Composition of Basal Diet

Ingredients	Composition (%)
Cassava tuber meal	20
Soya bean meal	10
Fish meal	1.3
Palm kernel cake	30
Brewers dried grains	35
Bone	3
Salt (nail)	0.25
Lysine	0.10
Methionine	0.10
Mineral/vitamin Premix*	0.25
Total	**100**
Calculated Composition (%)	
Crude protein	17.58
Digestible energy (kcal/kg)	2726
Calcium	1.16
Phosphorus	0.91
Lysine	1.04
Methionine	0.50

**Premix to supply per kg: Vitamin A (10,000iu; Vitamin D3 (1500iu); Vitamin E. (4.8iu); Vitamin K (2 mg); riboflavin (3mg); panthotemic acid (6mg); niacin (15mg); choline (3mg); Vitamin B_{12} (0.08mg); folic acid (4mg); manganese (64mg); zinc (0.5mg); iodine (1.0mg); cobalt (125mg); copper (10mg); iron (20mg); flavomycin (100mg); spiramycin (5mg); OL-methionine (50gm); Lysine (120gm); selenium (0.16gm) and butylated-hydroxy-toluene (5 gm).*

Table 3. Effect of Diets Supplemented with Guinea Grass on Grower Pigs.

Parameters	Levels of Guinea Grass (%)					
	T_1(O)	T_2(5)	T_3(10)	T_4(15)	T_5(20)	SEM
Initial body weight (kg)	19.17	18.33	19.40	19.33	19.20	1.05
Av. final body weight(kg)	30.00^{b}	33.00^{a}	29.00^{b}	27.00^{c}	26.00^{d}	1.50
Av. weight gain (kg)	10.83^{b}	14.67^{a}	9.60^{b}	7.67^{c}	6.80^{d}	0.80
Av. daily weight gain (g)	180.50^{b}	244.50^{a}	160.0^{c}	127.83^{d}	113.33^{d}	4.11
Total feed intake (kg)	38.01^{b}	41.11^{a}	43.05^{c}	44.09^{e}	46.13^{cd}	2.14
Av. daily feed intake (g)	633.50^{d}	685.17^{c}	717.50^{bc}	734.83^{ab}	768.83^{a}	10.11
Feed: gain ratio	3.51^{d}	2.80^{e}	4.48^{c}	5.75^{b}	6.78^{a}	0.40

abcd: means along the same column with different superscripts are significantly different (P<0.05).

grass. In the body weight examined, the control group significantly ($p<0.05$) performed better than other groups except 5 and 10% dietary grass groups. Better performance of pigs fed 5% grass may be attributable to extra protein, energy and vitamins which might have been supplied by the fresh green grass. Green forage crops contain carotene (precursor of vitamin A). They are also rich in other vital vitamins in their green form. Vitamins are cofactors in metabolic processes during which energy in form of ATP (Adenosin triphosphate) is formed. Adequate metabolic energy favours protein deposition and hence muscle development is accelerated. Esionu (2002) had stressed the importance of green forages whether grass, legume or browse plants for pigs. In the same vein, Kroismayr (2007) maintained that pigs require lignocellulose but not above 2.5% especially for older pigs. Poor growth with increased feed intake as the level of grass was increased especially for 15 and 20% grass, may be due to high fibre. There is negative correlation between fibre and energy, and low energy could lead to increase in feed intake. Increased feed intakes suppose to be associated with growth, but it was not so in this case because fibre is known to be poorly utilized by monogastric animals. Certain minerals (zn, cu, fe etc) are masked by fibre and protein digestibility is negatively influenced by fibre. In conclusion, though guinea grass shows a promising future in pig diets, its inclusion should not exceed 5%.

REFERENCES

AOAC. 1990. The Official Methods of Analysis. Association of Official Analytical Chemists. 15th ed. Washington DC.

Babayemi, O. J. 2007. In vitro fermentation characteristics and acceptability by West African dwarf goats of some dry season forages. *Afr. J. Biotech.,* 6(10): 1260 – 1265.

Ekenyem, B. U. 2004. Non-ruminant livestock responses to varying dietary inclusion level of *Ipomoea asarifolia* leaf meal. Ph.D. Thesis, Dept. of Animal Sci. Imo State University, Owerri, Nigeria.

Ekenyem, B. U. 2006. An assessment of *Ipomoea asarifolia* leaf meal as feed ingredient in Grower pig diet. *Pakistan J. Nutr.,*5(1): 39-42.

Esionu, B. O., Iheukwumere, F. C., Emenalom, O. O., Uchegbu, M. C. and Etuk, E. B. 2002. Performance, nutrient utilization and organ characteristics of broilers fed *Microdesmus puberula* leaf meal. *Livest. Res. Rural Dev.,* 4(6): 45 – 49.

Kroismayr, A. 2008. Lignocellulose-fresh wood as dietary fibre. Pig Progress, 4(24): 33 – 35.

Madubuike, F. N. and Ekenyem, B. U. 2001. Non-Ruminant Livestock Production in the Tropics. Gust-Chicks Graphic Centre, Owerri, Nigeria. 196.

Maynard, L. A., Loosli, J. K., Hintz, H. F. and Warner, R. G. 1981. Animal Nutrition 7th ed. Tata McGraw-Hill Pub. Co. New Delhi.

Olayemi, T. B., Farimi, G. O., Togun, V. A., Adedeji, O. S. and Ademola, A. O. 2006. Performance and hematological characteristics of weaner pigs fed wild sunflower (*Tithonia diversifolia* Hems A. Gray) leaf meal.

Olomu, J. M. and Oboh, S. O. 1995. Pig Production in Nigeria. Principles and Practice. 1st ed. Jachem Pub. Benin, Nigeria.

Rodriguez, L., Peniche, I. and Preston, T. R. 2006. Digestibility and nitrogen balance in growing pigs fed a diet of sugar cane juice and fresh leaves of new cocoyam (*Xanthosoma sagiffifolium*) as partial or complete replacement for soybean protein. Workshop on forages for pigs and rabbits. Mekarn-Cel Agrid, Santander-Sur, Columbia. 1-7.

Steel, R. G. D. and Torrie, J. N. 1980. Principles and Procedures of Statistics. A Biochemical Approach 2nd ed. McGraw-Hill Book Co. NY

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