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Performance and Economics of Production of Pigs on Varying Feeding Regimens

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Abstract
The study assessed the performance and economics of production of pigs on varying feeding regimens. Thirty (30) weaned pigs of mixed sexes (Large White X Land Race) were randomly distributed to 3 treatments of 10 weaned pigs per treatment in 10 replications in a completely randomized experimental design. Data collected were analyzed by one way analysis of variance (ANOVA) using SAS version 8.2 software and where there were differences in the means, they were separated using Duncan option of the same software. Results showed a significantly ($p>0.05$) higher weight gain (0.35 kg/pig/d) and feed intake (1.06kg/pig/d) of pigs fed on 6% live body weight compared with the similar weight gains (0.28 and 0.23 kg/pig/d) and feed intakes (0.78 and 0.58 kg/pig/d) of those fed on 5 and 4% live body weight respectively. Interestingly, pigs fed on 4% live body weight converted their feeds efficiently ($p>0.05$) better than those on 6 and 5% live body weight. Economics of pig production showed that pigs fed on 4% live body weight recorded the least cost with highest profit and economic efficiency over those fed on 6 and 5% live body weight. This shows that feeding pigs on 4% live body weight is more cost effective with better economic gain than feeding at higher (6 and 5% live body weight) percentage live body weight.

Key words: Feeding regimens, performance, pigs

Introduction

The need to improve on the feeding management of pig is becoming more important due to the voracious and aggressive nature of pig in feed consumption. Also, pigs are noted to efficiently convert feed into pork of high fat content, particularly when fed *ad libitum* on high quality concentrate diet (Afia and Ofor, 2016). High fat deposition in meat has been attributed to the consumption of fat rich foods (Robinson *et al*., 1992). Similarly, consumption of fat rich food, particularly by patients with cardiovascular challenges has been reported to be liable to cardiac arrest and other heart related diseases (Robinson *et al*., 1992). Also, animals fed *ad libium* had been reported to suffer from sudden death syndrome, ascites and leg abnormalities (Saleh *et al*., 2005; Rezaei *et al*., 2006; Ozkan *et al*., 2006; Azamik *et al*., 2010; David and Subalini, 2015). To produce meat desirable for healthy development, there is need to develop a feeding strategy that will enhance raising livestock of good quality lean meat.

Thus, this study aimed to develop a feeding strategy that will enhance good quality pork at least cost of production.

Materials and methods

The study was carried out at the Piggery Unit of Aladenika Livestock Farms located at km 7 Ondo-Ore Road, Ondo, Ondo State. A basal diet was formulated (Table 1) to meet the nutrients requirements for pigs according to the NRC (1998).

Table 1: Gross composition of the diet, g/100g

Ingredients	Composition
Maize	54.20
Soybean meal	16.00
Groundnut cake	9.50
Palm kernel cake	8.00
Wheat offal	9.00
Bone meal	1.50
Limestone	0.50
Lysine	0.15

Methionine	0.15
Premix	0.50
Salt	0.50
Total	100

The basal diet was divided into 3 parts and fed to the animals on the basis of their percentage live body weights of 6, 5 and 4%. A total of thirty (30) weaned pigs of mixed sexes (Large White X Land Race) were randomly distributed to 3 treatments of 10 weaned pigs per treatment in 10 replications in complete randomization. The animals were fed on the basis of their live body weights of 6, 5 and 4% for a period of 84 days and data were collected on daily feed intake and weekly weight gains.

Data collected were analyzed by one way analysis of variance (ANOVA) using SAS version 8.2 software and where the differences in the means were significant, they were separated using Duncan option of the same software.

Results and Discussion

Pigs fed on 6% live body weight recorded a significantly (<0.05) higher weight gain and feed intake compared with those fed on 5 and 4% live body weight, while feed conversion ratio was better (P<0.05) in pigs fed on 4% live body weight than which were similar (p>0.05) values on those fed on 6 and 5% live body weight (Table 2).

Table 2: Performance and economics of production of pigs on varying feeding regimens

	% live body weight				
	6	5	4	SEM	Sig
Performance indices					
Initial live weight, kg/pig	7.21	7.44	7.49	0.83	0.97
Final live weight, kg/pig	36.63^{a}	30.96^{ab}	26.82^{b}	2.26	0.04
Total weight gain, kg/pig	29.42^{a}	23.52^{b}	19.33^{b}	1.48	0.001
Average weight gain, kg/pig	0.35^{a}	0.28^{b}	0.23^{b}	0.02	0.001
Average feed intake, kg/pig	1.06^{a}	0.78^{b}	0.58^{b}	0.07	0.001
Feed conversion ratio	3.02^{b}	2.78^{b}	2.51^{a}	0.09	0.002
Cost and returns					
Purchased price, ₦	2884	2976	2996		
Cost of pen maintenance, ₦	500	500	500		
Depreciation on building, ₦	300	300	300		
Cost of feed, ₦/kg	105.07	105.07	105.07		
Cost of feed, ₦/kg weight gain	316.99	292.97	263.61		
Cost of weight gain, ₦	8603.13	6291.59	4729.20		
Total cost, ₦	12287.13	10067.59	8525.20		
Cost differential, ₦	-	24.02	53.38		
Return on sale/Total revenue, ₦	13716	11572	10172		
Net profit, ₦	1428.87	1504.41	1646.80		
Profit/kg over control group, ₦	-	75.54	217.93		
%Profit over control group	-	5.29	15.25		
Relative cost benefit, %	-	7.58	16.82		
Economic efficiency	0.12	0.15	0.19		
Relative economic efficiency	100	125.00	158.33		

^{ab}Means with different superscripts are significant at p<0.05

The higher feed intake could be responsible for the higher weight gain which could have resulted in high fat deposition or high muscular fat content (Rezaei *et al*., 2006) leading to higher weight gain. In similar vein, the significantly (p<0.05) lower final live weight and weight gain of pigs on 5 and 4% live body weight could be attributed to limited feed intake of those pigs compared with those on 6% live body weight. Feed restriction has

been reported to lower final live weight, decrease growth rate and decrease dressing percentage (Perrier, 1998) and improve feed efficiency (Zhan *et al*., 2007; Rezaei and Hajati, 2010; Hassanien, 2011). The higher economic gain (Table 2) arising from feeding pigs on limited diet as against excess feeding could be ascribed to improve feed conversion efficiency as earlier pointed in the works of Cuddington (2004) and Novele *et al*. (2009).

Conclusion

The result from this study revealed that adopting quantitative feeding restriction strategy at 4% live body weight is economically viable in pig production.

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