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SHORT NOTE [NOTA CORTA]

DETERMINANTS OF HERD SIZE OF PIGS IN SOUTHERN KADUNA AREA OF KADUNA STATE, NIGERIA

[FACTORES QUE DETERMINAN EL TAMAÑO DE LA PIARA EN KADUNA, NIGERIA]

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SUMMARY

A survey of 200 pig producers in Kaduna State, Nigeria was conducted. Data were collected from the respondents through the use of structured questionnaire. Data generated included the number of pigs owned, total amount spent on pigs in the last 12 months, total number of pigs started with, number of piglets born and survived, total number of pigs sold in the last 12 months, sex ratio of pigs and the total revenue derived from the sales of pigs in the last 12 months. Most variables were related to pig herd size ($P<0.01$). The best predictor of herd size is the investment on pigs which contributed about 40.8% of the variance. Implications for improved/increased pig production in Nigeria are drawn.

Key words: Investment, rural development, pig production.

RESUMEN

Se realize una encuesta entre 200 productores de cerdo en el estado de Kaduna, Nigeria. Se empleo un cuestionario estructurado. La información incluyó el número de cerdos, el costo total en los últimos 12 meses, número de cerdos al inicio, número de cerditos nacidos y sobrevivencia, número de cerdos vendidos en los últimos 12 meses, ganancia obtenida por los cerdos vendidos y la proporción machos:hembras. La mayoría de las variables estuvieron correlacionadas con el tamaño de la piara ($P<0.01$). El mejor predictor del tamaño fue la inversión económica que contribuyó con el 40.8% de la varianza. Se señalan algunas implicaciones para mejorar/incrementar la producción porcina en Nigeria.

Palabras clave: Inversión, desarrollo rural, producción porcina.

INTRODUCTION

Animal protein supply and intake in Nigeria are presently at a very low level compared with what obtains in the developed world (Ladokun *et al*., 2006). Nigeria imports live animals and animal products to the tune of ₦118 million (US $15,222 million) annually (FOS, 2000). This indicates a serious shortage of meat and other animal products. Considering the numerous advantages of pigs, increases in their production can be achieved to quickly decrease the animal protein deficiency in Nigeria (Ajala and Osuhor, 2004). However, in deciding on any planned use for pigs, it is useful to know its distribution and the herd structure. Pig production has since been recommended as an alternative source of cheap, high quality dietary protein for the escalating human population (Okorie, 1978). This is due to the relatively low cost of pig production and fast growth rate (Osaro, 1995); short generation interval and high production potentials; prolific fecundity (Holness, 1991 and Osaro, 1995); high efficient carcass yield (Akinwumi and Ikpi, 1980); and easy adaptation to environmental conditions (Adekunle, 1995). It was based on these numerous advantages of pigs that research on the factors determining the herd size of pigs is necessary. The ripple effects of increased pig production on the nutritional and economic well-being of Nigerians need not be over-emphasized.

MATERIALS AND METHODS

The Study Area

The study area was southern Kaduna, Kaduna State, Nigeria (Figure 1). It was chosen primarily because it has the fifth highest pig population in Nigeria representing about 7.3% of the total pig population (RIM, 1992).

The state is situated between latitude 09º 30'N and longitude 08º 30'E. The study area has two distinctive seasons; a dry season (November-April) and rainy season (May-October).

Data Collection

A structured questionnaire was administrated to pig owners in 2 Local Government Areas (Jama'a and Zango-Kataf) (Figure 1). From a list of all households a random sample of 200 respondents which kept pigs at the time of the study was drawn. Questionnaire administration was done by trained enumerators who visited the respondents. Variables were limited to the last 12 months and included; the number of pigs owned (herd size), total amount spent on pigs, total number of pigs started with, number of piglets born and survived, total number of pigs sold, sex ratio of pigs and the total revenue derived from the sales of pigs.

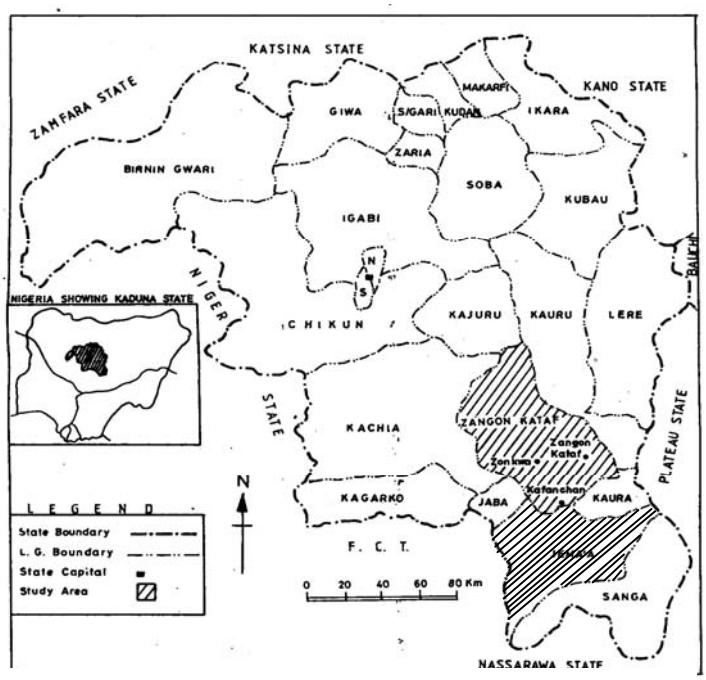

Figure 1. Kaduna State (Nigeria) showing the study area

RESULTS AND DISCUSSION

Table 1 shows the matrix of zero-order relationship obtained using Pearson correlation. Total investment on pig herds over the last 12 months was related to herd size ($P<0.05$). This result implies that the higher the investment on pigs, the larger the herds tend to be. This is due probably to the fact that investment on health, management and feeding of pigs would tend to improve the performance of the herds, hence the higher the expected returns. Table 1 also revealed that, the number of pigs started with, number of piglets born in the last 12 months, the number of piglets that survived, the sex ratio of pigs, the total number of pigs sold in the last 12 months, and the total revenue accruing from the sale of pigs in the last 12 months, are related to herd size ($P<0.01$). Respondents who started with large number of pigs tend to be conscious of the implications of pig management to maintain and improve their herds. Attention to management of pigs will tend to reduce the rate of morbidity and mortality, hence increase pig production. A positive relationship between the number of piglets that survived and the herd size of pigs ($P<0.01$) is not unexpected, as the future herd size of pigs would to some extent depend on the prolificacy of pigs as well as the

morbidity and mortality in piglets. If mortality is high among piglets, there is also the tendency that the herd size will decrease with the off take rate unchanged. Therefore, for the results of this study to be meaningful to the policy makers, researchers and pig producers who are resource-poor, the relative impact of the factors which are related to herd size as well as the variables to be considered for action of increased pig production in Nigeria need be highlighted. Hence, it is necessary to determine from among the variables related to pig herd size the best combination of variables for increased pig production. Such analysis has to be multivariate. Hence a multiple regression analysis was undertaken, with the primarily purpose of specifying the contribution of each of the independent variable in the explanation of the dependent variable.

Table 2 shows the stepwise regression result of predictive variables of pig herd size using the data available. The most predictor of herd size is the investment on pigs which contributes about 40.8% of the variance explained. Thus investment on pigs is one of the most important factors to be considered in an attempt to increase pig production in Nigeria. Therefore investment on housing, feeding, healthcare and management of pigs should be considered crucial. Investigations in the same study area have revealed that the production system is small-scaled, semi-intensive and semi-commercial (Pathiraja *et al*., 1986; Ajala, 2003; Ajala *et al*., 2006).

Table 1. Matrix of zero-order relationships obtained using Pearson correlation.

Variables	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
X_1Investment for the last 12 months	1.000								
X_2Other livestock kept	.161	1.000							
X_3Total number of pigs started with	.180	.221	1.000						
X_4Number of piglets last 12 months	.182	.246	.250	1.000					
X_5Number of piglets survived	.095	.205	.229	.815	1.000				
X_6Sex ratio of pigs	.166	.401	.174	.340	.262	1.000			
X_7Number of pigs sold last 12 months	.161	.277	.160	.357	.204	.434	1.000		
X_8Revenue from pigs sold last 12 months	.153	.166	.137	.360	.245	.213	.347	1.000	
X_9Pig herd size	.156**	.336*	.225*	.361*	.350*	.480*	.222*	.216*	1.000

*Significant at .01 level
**Significant at .05 level.

Table 2. Stepwise regression analysis of predictive variables of pig herd size.

Variables	Multiple R	R^2	Adjusted R^2
Investment for the last 12 months	0.6021	0.3619	0.4080
Other livestock kept	0.6524	0.4528	0.0854
Total pigs started with	0.6745	0.4562	0.0046
No. piglets survived	0.6854	0.4866	0.0251
Total pigs sold last 12 months	0.7174	0.5221	0.0437
Sex ratio of pigs	0.9470	0.8942	0.3680

CONCLUSION

Effort should be made to organize pig producers into production cooperatives so that they can pool their resources together in order to increase and improve pig production and also attract government attention through the provision of essential production inputs such as drugs and feeds at subsidized rate. Government should also provide access to soft loans from financial institution to pig producers (individually and cooperatively) in order to increase their scale of production.

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