Appraisal of the structure and facilities available in selected pig farm houses in Ondo State

F R Falayi

(*Department of Agricultural Engineering, Federal University of Technology, Akure Ondo State, Nigeria*)

Abstract: A study was carried out to evaluate various pig housing units in six selected local government areas of Ondo State, specifically for their structural deficiencies and their effects on animal health. Five pig farmers were visited in each of the local governments. Questionnaires were administered and on the spot assessments of the housing systems and facilities and state of health of the animals were carried out. The data obtained were coded accordingly and were subjected to appropriate statistical analysis. It was observed that intensive system of housing is mostly practised and it constituted about 60%, semi- intensive housing method were about 17% and 23% were the extensive system type. The level of pig rearing is very low in the state; about 23% of the total number of farms kept between 11 and 20 pigs while less than 4% kept above 100 pigs. Furthermore, twelve farms kept exotic breed and nine farms kept local or indigenous breed, that is, 40% and 30% respectively. Majority of the farms visited were infested with diseases that were identified as skin diseases, worm and swine fever. There were also losses due to high piglet mortality rate. The housing units were not properly constructed and had leaking roof due to weak construction materials used and the pattern of nailing. Floors were not cemented and there were inadequate provision of wallowing and feeding troughs. It is concluded that the problems encountered by the pig farmers in the study area was directly linked with structurally inadequate housing unit and it is therefore recommended that the housing units should be properly constructed with new corrugated zinc, well cemented floor and there should be adequate provision of wallowing units and feeding troughs. Farmers are advised to make use the services of professionals such as agricultural engineers who specialises in farm structure for the design and construction of their farm structures.

Key words: pig, housing, wallowing, diseases, skin

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1 Introduction

There are various systems of housing and management of pigs which include free range system, semi-intensive and the intensive system. Pigs have been known for their high prolificacy coupled with early maturity. Tokach M D et al.[1] reported that pigs have shorter gestation period of 114 to 115 days compared with goat, sheep and cow that have 145, 150 and 284 days respectively. In addition, they noted that pigs have high feed conversion rate and are relatively easy to manage. According to the report by Pond W C T et al.[2], pig is a polyestros animal, very prolific, and capable of being mated at eight months of age and thereafter every six months and with up to 12 piglets in each litter. This is of paramount importance because the ability of sows to farrow large litters coupled with frequency of farrowing will determine the size of the housing system and the economic profitability of any pig enterprise. Pond W C T et al.[2] also observed that this can be achieved through early weaning and taking advantage of the pig ability to reach market weight early under good management and housing.

Pigs can be raised in areas where good supplies of

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Corresponding author: Dr. F R Falayi, Engr., Department of Agricultural Engineering, Federal University of Technology, P.M.B 704 Akure Ondo State, Nigeria. Email: folayanrichard@yahoo.com.

concentrate feeds are available and where the conditions might be considered optimum for their production. llori J O[3] reported that the performance of the indigenous pig on different protein levels showed that the local pigs have the ability of better performance than their European counterpart on a diet relatively lower in protein quality.

Under the intensive pig management system, Sorenson D[4] pointed out that pig houses are of three main types: farrowing, breeding and growers houses. He stated that the advantages of good housing system include improved feeding efficiency, reduced production cost and efficient control of diseases and parasites. Standard pig houses should make for proper ventilation, favourable temperature and humidity and adequate stock density. The construction design should facilitate easy cleaning, disinfecting and dung removal. It must enable a labour saving feeding method. There is no standard design of pig housing which will fit all conditions[5]. The design will depend on the climate and the particular pig enterprise (breeding or fattening) and also on locally available materials. He also reported that, in countries that have cold winter period and hot summer, the housing should allow free ventilation during the hot months. He noted that it is desirable to insulate the floor so that the pigs do not get chilled from lying on cold concrete. David S and Peters J[6] emphasized that the design of piggery must include feed trough and wallowing trough. The floor should be gently sloped towards the door so that water and urine can flow away easily and dung area should be attached to each pen.

Whereas the need for an improved management practice and housing techniques for pig in Nigeria cannot be over emphasized, little attention has been paid to this. This study hence was aimed at evaluating the pig housing units in some selected local government areas of Ondo State with the aim of establishing base line data on the input for standard pig housing unit for the south-West humid part of Nigeria in place of turn-key project of temperate countries that are implemented in tropical countries like Nigeria

2 Materials and methods

2.1 Sampling, data collection and analysis

The study was carried out in six local government areas of Ondo State of Nigeria namely; Akure-North, Akure-south, Ondo-East, Ondo-West, Odigbo and Owo Local Governments Area. The farms from which data were collected were randomly selected in the local government areas of Ondo State. A total of five farms were selected in each local government. Questionnaires were administered to different farmers in each of the local governments' area regardless of the farmers' age, sex, role, obligation and social status. The farms were visited and on-the-spot assessments were made. The structural adequacies of the housing systems were noted. Oral interviews were conducted for illiterate farmers. The study was done between the months of November 2009 and January 2010 which were considered to be critical for the pigs.

The questionnaires were designed to cover the general information about their farm, scope of pig rearing, housing and problems associated with farms and the structural adequacy of the housing system.

The data obtained from the output of the questionnaires were analyzed. They were ranked and presented in descriptive and non-descriptive forms and subjected to frequency counts, mean, ranges, ANOVA and simple and multiple regressions.

3 Results and discussion

3.1 Number and distribution of pigs

The population distribution of pigs raised per farm and the distribution of pigs raised in the five sampled farms per local government area are shown in Table 1. Farms that had range of pigs between 11 and 20 constituted the largest percentage of about 23%. Only one farm had more than 100 pigs which implied that the level of pig rearing in the State is very low. Among the six local governments' areas, the largest percentage of the pigs reared in Akure-South constituted about 80% followed by Odigbo, Akure-North, Ondo West, Owo and Ondo East with about 7%, 4%, 3%, and 2%, respectively. Table 2 shows the distribution of breeds of pigs reared on the farms visited. The exotic breeds constituted the largest percentage of 40% of the total breed, this was followed by the local breeds (30%), cross breed (about 23%), while farms that practised combination of breeds of pigs was about 3%.

Table 1 Range of pigs per farm/ local government.

Range of pigs	Number of farms	Percentage/%
0-10	5	16.67
11-20	7	23.33
21-30	6	20
31-40	2	6.67
41-50	3	10
51-60	3	10
61-70	2	6.67
71-80	1	3.33
81-90	0	0
91-100	0	0
100 and above	1	3.33
Total	30	100

Table 1a Distribution of pigs per local government area

Local govt.	Number of pigs	Percentage/%
Akure-North	222	4.38
Akure-South	4 079	80.49
Ondo-West	185	3.65
Ondo-East	92	1.82
Ono	152	2.99
Odigbo	338	6.67
Total	5 068	100

Table 2 Distribution of breed of pigs

Breeds	Number of farms	Percentage/%
Local	9	30.00
Cross	7	23.33
Exotic	12	40.00
Local/Cross	1	3.33
Exotic/Cross	1	3.33
Total	30	100

3.2 Housing systems and their effects on pig health.

Table 3 shows the distribution of the average number of piglets' born/sow/year. About thirty four percent of the farms were found to have about eighteen piglets per year. In general, the litter size is within the acceptable range but Alaku G and Steinbach J[7] observed that it may also be dependent on the age of the sows.

Table 3 also shows the average number of pig reared/sow/year. The average number of about eight piglets weaned per year was observed on thirty four percent of the farms. About thirteen piglets were recorded on twenty four percent of the farms, eighteen were recorded on about twenty one percent and also zero to five were recorded on twenty one percent of the farms. The average number of piglets reared/sow/year was relatively low; this was attributed to high mortality rate that occurred between the period of birth and weaning. This has been due to diseases brought about by structural inadequacies. Some of the farms visited were characterized by uncemented floor, leaking roof resulting from nailing pattern and construction material and inadequate provision of wallowing unit. Table 4 shows the different forms of housing systems provided by each of the farms, sixty percent of the farms provided intensive form of housing though some of the houses were not adequate for the pigs and in some, there was no provision for wallowing facility. About twenty three percent of the farms provided extensive form of housing and about seventeen percent of the farms provided semi-intensive form of housing.

Table 3 Distribution of average number of piglets (born/sow/year)

Number of piglets	Number of farms	Percentage/%
0-5	5	16.7
6-10	9	30.0
11-15	6	20.0
16-20	10	33.3
Total	30	100

Table 3a Distribution of average number of piglets (reared/sow/year)

Number of piglets	Number of farms	Percentage/%
0-5	6	21.0
6-10	10	34.0
11-15	8	24.0
16-20	6	21.0
Total		100

Table 4 Housing expressed as types of rearing system

Form of housing	Number of farms	Percentage /%
Intensive	18	60.0
Semi-intensive	5	16.7
Extensive	7	23.3
Total	30	100

Table 5 shows the incidence of diseases in the study area. It is observed that skin disease and worm were very common. As mentioned earlier, the high rate of disease incidence could be traced to poor housing system that was common in the study area. There is need for

structural and agricultural engineers in this country to conduct research on livestock farm housing to determine the appropriate type for the local environment. Table 6 shows the farms that provided wallowing unit for pigs. It can be observed that most farms did not make provision for wallowing trough which is one of the most needed facilities for pig husbandry[6]. The facilities/diseases were ranked in order of severity on pig health.

Table 5 Number of farms with various diseases in the study area

L/Govt.	worm disease	skin disease	swine fever	piglesters	Mastitis	raycop-lamesis	Agalacha	Lice	None
AkureN	1	3	3		0	0	0	0	2
AkureS	2	1	0	1	1	1	1	1	1
OndoW	1	1	1	0	0	0	0	0	3
OndoE	2	2	0	0	0	0	0	0	2
Owo	1	2	0	0	0	0	0	0	3
Odigbo	1	1	1	0	0	0	0	0	3

Table 6 Pig farm house facilities and the number of farms having them in the study area

Farms with/without facilities	AkureN	Akure S	OndoW	OndoE	Owo	Odigbo
Wallowing trough	3	1	1	1	1	1
Without wallowing trough	0	1	1	0	1	2
Wallowing in surrounding water	1	2	0	3	0	1
Drinking/ feeding trough	1	1	1	0	1	1

The data were subjected to regression analysis and the results are presented in Figure 1. There is a high correlation between facilities and incidence of diseases (r^2 = 0.738) when a linear curve was fitted. This confirmed that the inadequacy of facilities was largely responsible for the occurrence of diseases and hence for the high mortality rate. However, when similar rankings were carried out for wallowing facility as a single factor, an exponential curve was fitted and a correlation of 0.55 was obtained indicating that, although wallowing trough plays a very important role in pig health, other factors are responsible for the incidence of diseases as shown in Figure 2.

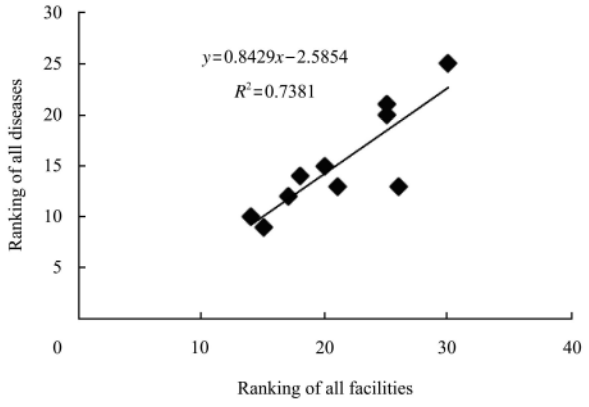

Figure 1 Relationship between incidence of diseases and all facilities

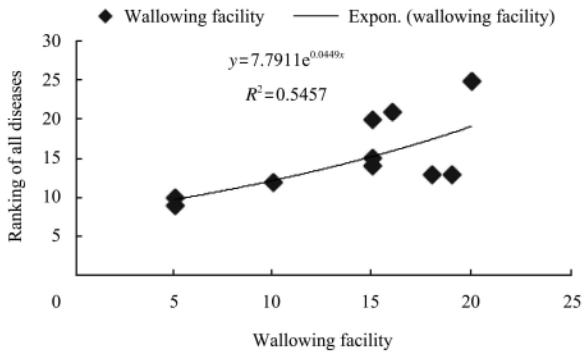

Figure 2 Relationship between incidence of diseases and wallowing facility

4 Conclusions

The housing units for the pigs on most of the farms visited lacked essential facilities which affected their physiology and feeding habits thus resulting in high piglet mortality rate, reduction in litter size and high rate of occurrence of diseases. This problem can be solved by adequate provision of housing units and adequate facilities essential for pig husbandry such as wallowing trough, drinking trough and dung unit in order to avoid deleterious effect on the animal.

The study has highlighted the need for professionalism in the area of design and construction of livestock housing and especially pig houses; this is the

function of structural/agricultural engineers, it is with a hope for greater productivity in Ondo State, in Nigeria and tropics in general.

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