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Survey of Waste Management Practices of Small-Scale Pig Farms in Mbaise, Imo State, Nigeria

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Abstract

Animal manure can provide nutrients for crop and fish production and input for biogas production but, if managed inappropriately, can also have a negative impact on the environment. The objective of this survey was to provide information about pig production and waste management practices in Mbaise, Imo State in order to identify and prioritize research needs for future improvements in pig manure management. A survey was conducted by in-depth interviews on 35 pig farms in Mbaise, Imo State. A large proportion (94.29%) of the total manure produced was discharged in open space. Of the 35 householders interviewed, 24(68.57%) believed that animal waste caused serious damage to the environment. Farmers interviewed had little or no expertise in handling liquid manure, composting solid manure. The survey implied that more information to farmers, as well as stronger regulation of manure management, is needed in Imo State.

Keywords:Waste management, solid manure, pig farms, environment

Introduction

Livestock manure represents a valuable resource which, if used appropriately, can replace significant amounts of mineral fertilizers (Chau, 1998). On the other hand, animal manure is not only a source of valuable plant nutrients but can also be a source of air pollution and a threat to aquifers and surface water (Burton and Turner, 2003) unless managed carefully in order to minimize nutrient losses. Animal production, especially commercial pig production, is increasing rapidly in Nigeria and tends to be concentrated on larger production units, which also implies changes in animal production technology (feeding, housing etc.). This trend increases the risk of air, water and soil pollution (Gerber *et al.*, 2005). Livestock manure contains many microorganisms, protozoa, and viruses that may pose a risk to human and animal health. Highly contagious and pathogenic viral diseases such as foot and mouth disease, classical swine fever and Aujeszky's Disease, may spread through animal effluents into waterways and, when one farm is infected with one of these diseases, may cause downstream farms to be exposed to a considerable risk of infection.

This study also collected additional information to provide a comprehensive picture of conditions for pig production and pig manure management in Imo State, Nigeria, in order to identify future research needs.

Materials and Methods

The study was conducted in three Local Government areas of Mbaise in Imo State, Nigeria, namely: Ahiazu, Aboh, and Ezinihitte. Mbaise is one of the 27 local government areas of Imo State and is located Owerri agro-ecological zones of Imo State. The selection of towns was based on their pig population. Mbaise is located at 5.5379°N latitude 7.2869°E longitude and an average altitude of 159.34 meters above sea level. The area receives a bimodal rainfall with a long rainy season occurring from April to October and an annual rainfall of 15000 mm – 2,200 mm and an average temperature of 29.39°C. Imo State Agricultural Development Project (ADP) first-quarter annual report 2008 reported that major livestock enterprises of economic importance in Imo state include poultry, sheep, goat, cattle, bee keeping and pig rearing (Okoli *et al.*, 2009). The map of the study area is described in figure 1.

In achieving the research project objectives different data collection techniques (questionnaire interview, field visit, and discussion) were employed. An informal diagnostic survey was carried out during which the smallholder pig farms in the study area were identified from the registered list of pig farmers in Mbaise LGAs and their operators informed on the nature and purpose of the study. Based on the result of the survey, 35 farms were purposively chosen for the study, based on the willingness of their operators to participate in the study. The 35 selected farms were made up of 11-small, 9 medium, and 15 large-sized farms. In the present study, small size farms were those that stocked less than 50 pigs, medium-sized had between 50 and 100 pigs, while large-sized had above 100 pigs. The three farms were identified as treatment SF, MF, and LF, respectively.

The data were collected using structured and semi-structured questionnaire. The questionnaire was translated into local language and pre-tested before the actual data collection process to prove the appropriateness and clarity of the questions. The questions were re-framed in such a way that pig farmers can understand and respond easily. The questionnaire was administered to the pig farms and based on the questionnaire interview; data on waste management was gathered.

Data collected were analyzed by analysis of variance (ANOVA), Chi-square and descriptive statistics of statistical package for social sciences (SPSS, 2006).

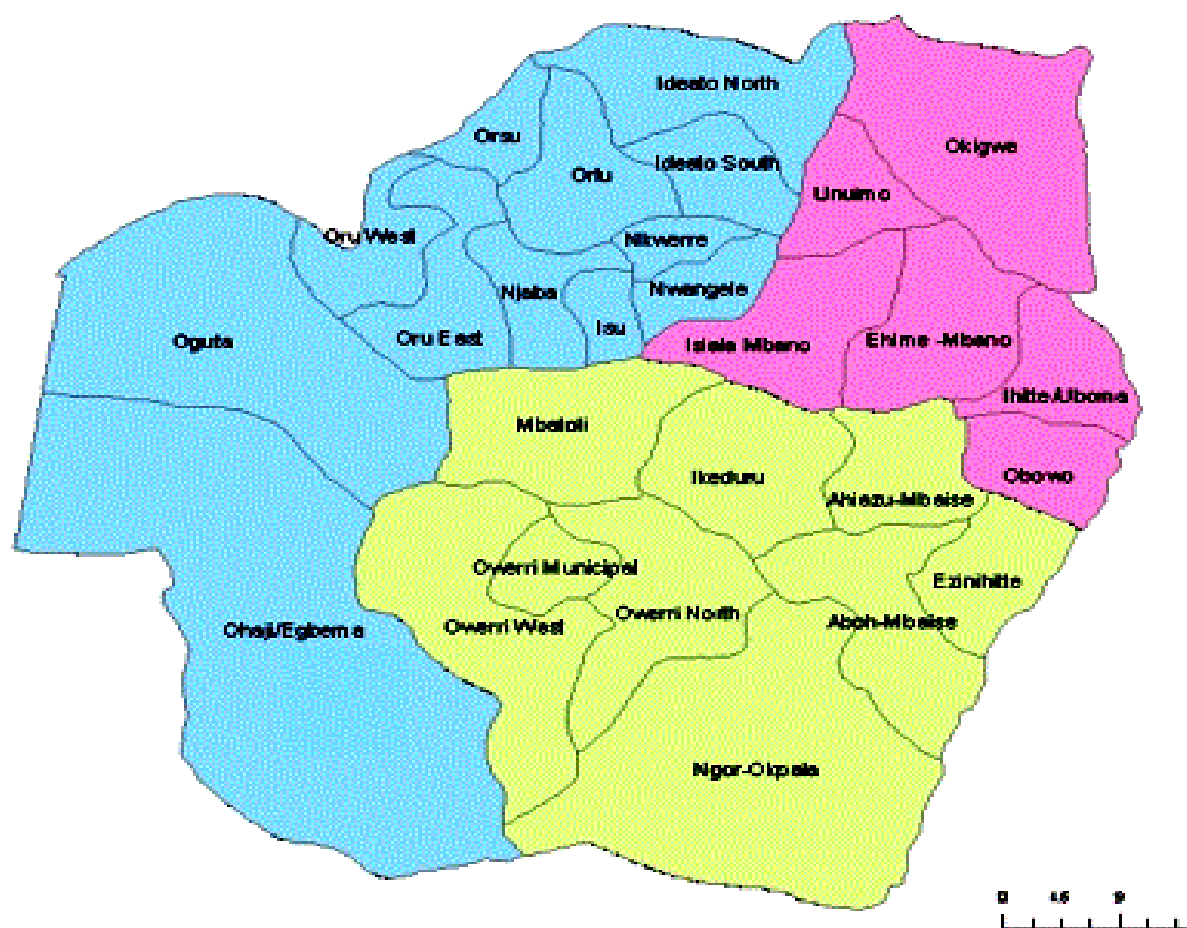


Fig. 1: Map of Imo state showing the study areas

Source: http://www.nigeriagallery.com/Nigeria/States_Nigeria/Imo/Imo_State.html

Results and Discussion

Waste management practices of smallholder pig farms in Mbaise Imo State made use of different mediums to dispose of their waste but the most common is the open dumping in which the farmers can also make use of the waste from the pigs for their agricultural crops. Important practices for disposal of dead pigs revealed by respondents were burying (85.71%), and others (14.29%) (Table 1).

Table 1: Waste management practices of smallholder pig farms in Mbaise Imo State

Practice	Farm size				Test	
	SF N (%)	MF N (%)	LF N (%)	Total N (%)	X ² -value	F-value
Liquid waste disposal site						
Septic tank	1 (9.09)	1 (11.11)	2 (13.33)	4 (11.43)	1.0544	0.9014
Drainage canal	4 (36.36)	2 (22.22)	6 (40.00)	12 (34.29)	1.0544	0.9014
Opening dumping	6 (54.55)	6 (66.67)	7 (46.67)	19 (54.29)	1.0544	0.9014
Disposal of dead pigs						
Buried	8 (72.73)	8 (88.89)	13 (86.67)	30 (85.71)	1.1785	0.5548
Others	3 (27.27)	1 (11.11)	2 (13.33)	5 (14.29)	1.1785	0.5548

N (%) depicts number or percent of respondents; ^aNumbers with different superscripts along the rows are significantly different at $p < 0.05$

Basically, the respondents encountered some constraints which might serve as a barrier to the growth of their farm in which financial barrier (40.00%) is also a major constraint and other things (51.43%) like absence of land space for expansion ranked the highest as a major constraint. A large proportion (94.29%) of the total manure produced was discharged in open space (Figure II and Plate 1). Of the 35 householders interviewed, 24 (68.57%) believed that animal waste caused serious damage to the environment (Figure III). Farmers interviewed had little or no expertise in handling liquid manure, composting solid manure (Figure IV).

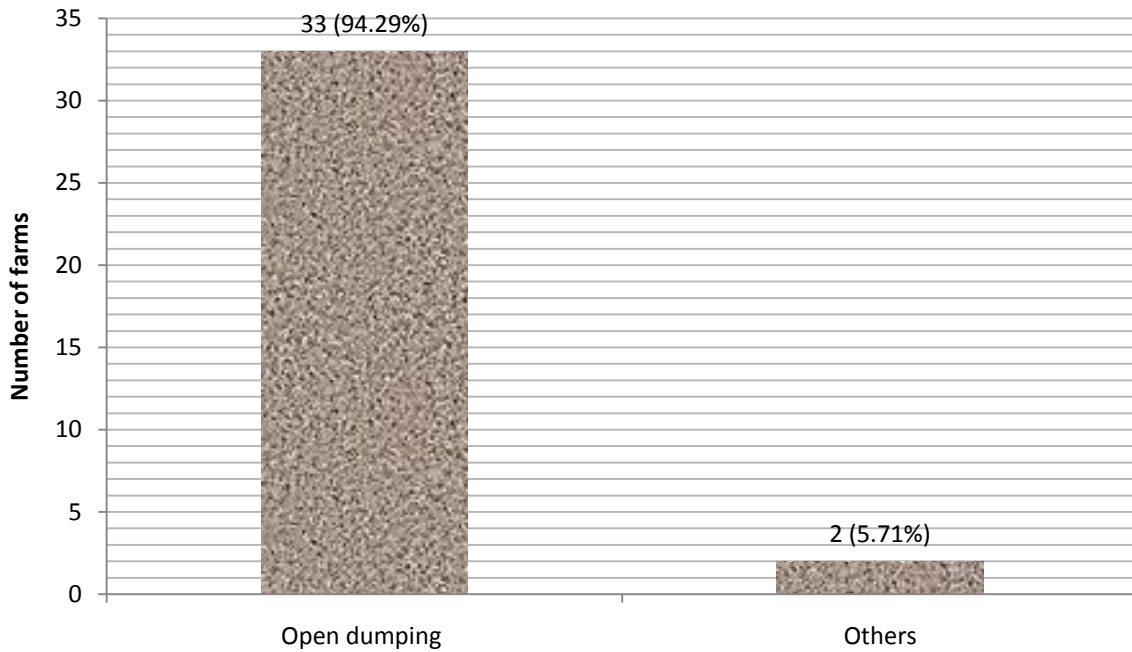
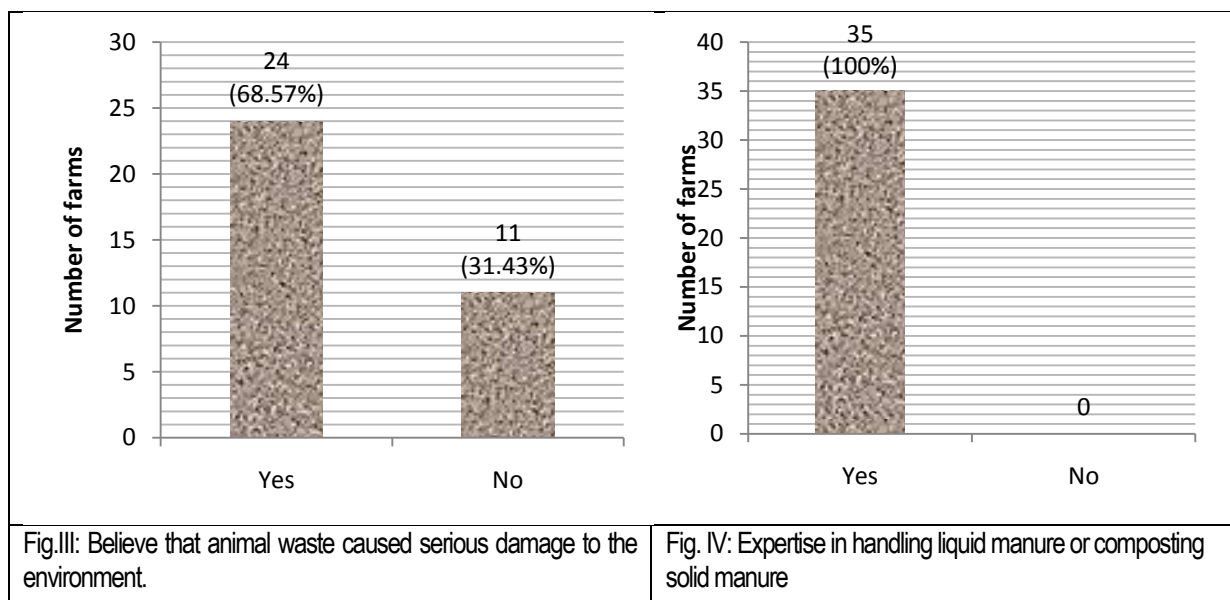


Fig. II: Manual disposal practice of smallholder pig farms in Mbaise, Imo State, Nigeria



Plate 1: Open dumping of pig manure



Conclusion

Based on this survey, the following conclusions can be made:

- Although pig manure is a valuable organic fertilizer for vegetable production, its appropriate use and management require more skill than is currently available to most farmers.
- Markets for the sale and technologies for the treatment of excess manure should be developed to avoid discharge of surplus animal wastes into watersheds.
- The negative impact of untreated pig manure on health and on the environment is well understood by most farmers, but there is no incentive to adopt environmentally friendly technologies due to the lack of regulation or enforcement of regulations.
- The lack of effective extension services on animal waste treatment represents a serious knowledge gap for farmers undertaking commercial-scale pig production. This constraint will only grow more serious as pig production expands if extension services fail to catch up.

Reference

- Chau, L.H.(1998). Bio-digester effluent versus manure, from pigs or cattle, as fertilizer for duckweed (*Lemna spp.*). *Livestock Research for Rural Development*, 10(3) (available at <http://www.cipav.org.co/lrrd/>).
- Burton, C.H. and Turner, C. (2003). *Manure Management: Treatment Strategies for Sustainable Agriculture*, 2nd edition. Silsoe Research Institute, Silsoe, Bedford, UK.
- Gerber, P., Chilonda, P, Franceschini, G. and Menzi, H. (2005). Geographical determinants and environmental implications of livestock production intensification in Asia. *Biores Technol.*, 96: 263–276.
- Okoli, I.C., Alaoma, O.R., Opara, M.N. Uchegbu, M.C., Ezeokeke, C.T., Durunna, C.S., Nnadi, F.N., Iheukwumere, F.C. and Okeudo, N.J. (2009). Socio-cultural characteristics of educated small holder pig farmers and the effects of their feeding practices on the performance of pigs in Imo state, Nigeria. *Report and Opinion*, 1(4): 59 - 65.