



Original Research Article

Management of Poultry Waste in Edo State: A Case Study of Etsako District

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ABSTRACT

Poultry business is one of the popular and fast-growing Agro businesses in Nigeria. Unfortunately, the practice of proper poultry waste management has often been neglected. This study focuses on the need to contain environmental pollution arising from such poultry wastes. The study adopted a cross sectional survey wherein 36 poultry farmers were randomly selected from the three local government areas that make up Etsako district of Edo State Nigeria. Following the distribution of thirty-six validated questionnaires, thirty-three were completed and returned. The data obtained was tabulated and expressed in percentages for analysis. It was shown that majority of the poultry farmers (93.30%) had never received any formal training on poultry waste management. It was also discovered that all the respondents neither know how to nor treat poultry wastes before disposal. Consequent upon the findings, this paper recommends that proper mechanism be put in place for the collection of such wastes for appropriate recycling for use as more ecofriendly source of fertilizers for improving crop yield in place of chemical fertilizers used by farmers which are not just costly but portends destruction on the ecosystem.

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1. INTRODUCTION

Waste management has remained a major concern in developing countries (Garima and Singh, 2016; Dennis and Enrigue, 2018). The lack of sustained awareness programmes in respect of waste management has been documented as the cause of waste management policies in these countries (Twumasi, 2017). This may be connected to urbanization and increased industrial and agricultural activities with less corresponding efforts on managing wastes associated with such processes. Generally, wastes may be categorized according to their sources. Common categories are: agricultural, animal by-products, biodegradable, biomedical, electronic, buncy, business, and mechanical wastes. Wastes may exist in solid, liquid or gaseous forms.

There has been a significant improvement in solid waste management in major cities of Nigeria as every state has established a mechanism for waste management (Adewole, 2009). Like other States, waste management is under the purview of Edo State Management Board. In urban areas, the activities of the waste management boards in respective states are often felt more than in the rural communities where the rural dwellers often cast wastes indiscriminately.

Of great concern are such wastes that can cause severe health hazards. Among this category of wastes is poultry wastes. This paper focuses on management of poultry wastes, a subcategory of agricultural wastes (Idris et al., 2014; Adane, 2018).

The poultry industry has become one of the largest and fastest growing agro-based industries worldwide, and is one of the most developed animal industries in Nigeria, (Bolan et al., 2010; Oyebanjo and Otunaiya, 2011; Ekenma, 2015). The growth of the poultry industry was triggered by the consideration of its high content of energy and protein, rapid turnover rate and short incubation period of 21 days which are advantages of poultry over other livestock (Oyebanjo and Otunaiya, 2011). However, accumulation of waste in large volumes is one of the major challenges facing the poultry industry (Ogundiran et al., 2015). These wastes include manure and litter; and they can cause serious environmental pollution when disposed improperly or if not well managed (Fadeji et al., 2008). For environmental and economical sustainable management, technologies should be adopted to check the ugly situation (Bolan et al., 2010).

Efficient management of poultry litter and subsequent conversion to wealth has not garnered proper attention from the Nigeria government and appropriate authority so as to harness the potentials and opportunity lying therein. Hence this study attempts to expose the Edo people and Nigerians, especially the rural communities to the profitable management of poultry and methods of transmitting its wastes into wealth. It is important to note that poultry waste may be useful for wealth creation in one way or the other.

The poultry industry is fast growing and environmental pollution arising from its wastes in Edo State is a serious concern. In the light of the foregoing, it is important to develop and implement a sustainable mechanism for managing the said wastes as well as explore avenues for creating wealth from same. In the same vein, this paper also considered the high cost of inorganic fertilizers widely used in crop farming and their potential adverse effect on environmental and human health, and how poultry wastes may be used to ameliorate this problem.

The aim of this paper is to understudy poultry practices in Edo State with emphasis on the Etsako district so as to identify the underlying potentials of poultry wastes transformation. This paper is considered beneficial to both prospective and practicing poultry farmers in Edo State and Nigeria in that it discusses how such ventures can increase profitability and guarantee a safer environment for human health. Also discussed is how the wastes from poultry may be channeled towards increasing crop yield through soil reinvigoration as well as the possibility of transforming waste into wealth (Stanley, 2018).

2. MATERIALS AND METHODS

2.1. Study Area

The study area is Etsako district. Etsako district has three Local Government Areas; Etsako East, Etsako Central and Etsako West. Etsako is located in the Northern part of Edo state. According to the result of National Population census 2006, Etsako East has population of 147335, Etsako Central 94,228 while Etsako West has a population of 198,975 (NBS, 2007; NPC, 2008). Figure 1 shows the map of Edo State with the Etsako district marked in light yellow.



Figure 1: Map of Edo State (Nwankwo (2017))

2.2. Data collection

Simple random sampling technique was employed in this study. The respondents were selected at random across the three local government areas which made up the Etsako district. The study population comprises thirty six (36) poultry farmers. To obtain a sample that effectively represents the population twelve (12) poultry farmers were selected from each of the three local government areas. The target population was all the poultry farmers who operate within Etsako district. The major source of data used is primary and obtained through a well-structured questionnaire. Other methods for data collection were: direct observation and informal interview. To validate the content of the questionnaire, assistance of expert was secured from two senior academics in the field of natural science. Their advice was duly adhered to especially in ensuring that all vital elements as captured by the aim and objectives of the study were included in the questionnaire.

2.3. Research Design

The study is a cross sectional survey designed to identify the various methods of poultry waste management employed by poultry farmers in Edo State.

3. RESULTS AND DISCUSSION

3.1. Basic Statistics of Sample Data

Basic statistics of respondents are presented in Figure 2-4 covering the age distribution, gender and level of education. Percentage age distribution of respondents is presented in Figure 2. The chart shows that majority of the poultry farmers are between the ages of 31 and 40 years accounting for 30.3% of the sample size. Farmers within the age bracket of 51-60 years accounted for 27.30% of the population. The most active age group of farmers in the poultry business is placed at 31 - 60 years which is within the labour population age range of 15 – 64 years (NBS, 2017). Figure 3 shows gender of respondents. Majority (72.7%) of respondents were male as against females which accounted for 27.3% of the population. The gender distribution is consistent with the data on employment in the Agricultural sector with 74.5% and 25.5% for male and female respectively (NBS, 2017). Figure 3 shows educational level of respondents. As shown in Figure 3, graduates with first degrees or above accounted for 39.4% while 27.30% of the population have diplomas. Secondary

school certificate holders represented 24.2%, whereas primary school leavers accounted for 9.10% of the population of farmers. It may be submitted that the level of education plays a key role in the practice of poultry farming in the district.

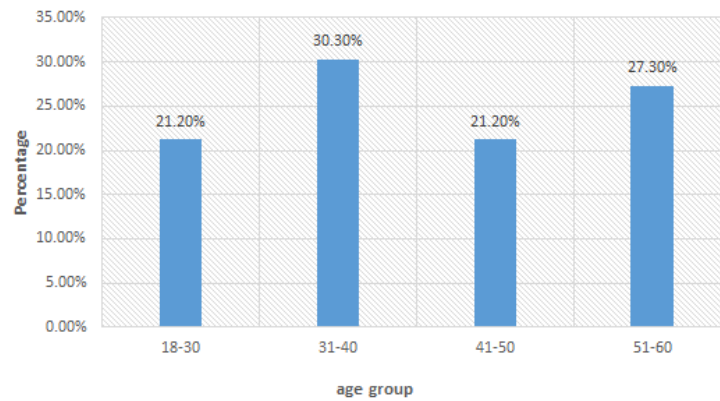


Figure 2: Age distribution of respondents

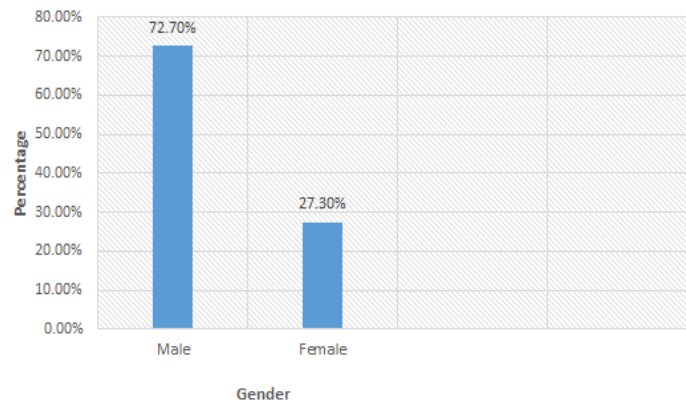


Figure 3: Gender distribution of respondents

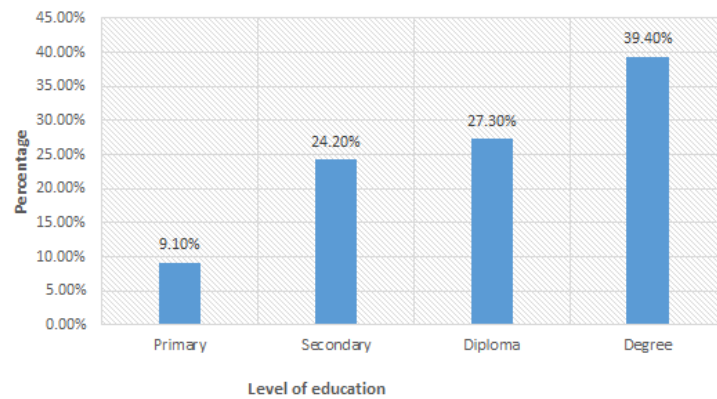


Figure 4: Education distribution of respondents

3.2. Impact of Training on Poultry Waste Management

Data on farmers training on poultry waste management is presented in Figure 5. The data showed that a vast majority (93.9%) of the respondents in the area have had no formal training on poultry waste management while only a fraction (6.10%) have had formal training on poultry waste management. This gap in the knowledge of poultry waste management may be attributed to the poor awareness programmes across the district as evidenced by the data provided in Figure 6 which shows the percentage distribution of opinions of poultry farmers on government services related to Environmental Health in Edo State. In Figure 6, 94.0% of the respondents had agreed that government extension services with respect to poultry waste management and environmental health in Edo State are poor whereas only 3.0% had stated that the services are fairly good. With respect to Figure 6, it may be submitted that the poultry farmers in the Etsako district are not properly guided by government authorities on poultry waste management. The submission is in agreement with the findings that animal waste management across Nigeria is poor due to poor extension services (Abiola and Olaogun, 2016; Ogunlade et al., 2017)

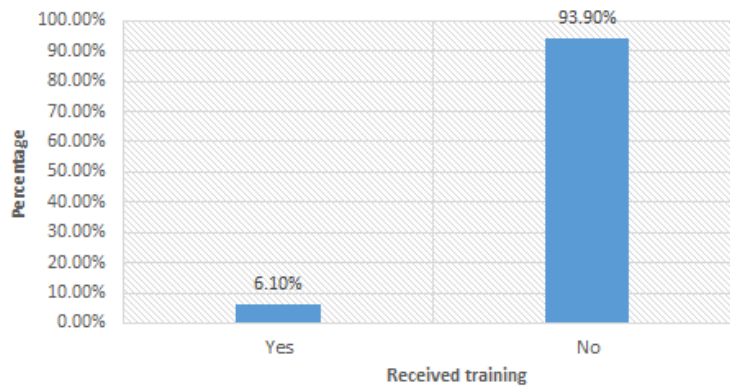


Figure 5: Training of farmers on poultry waste management

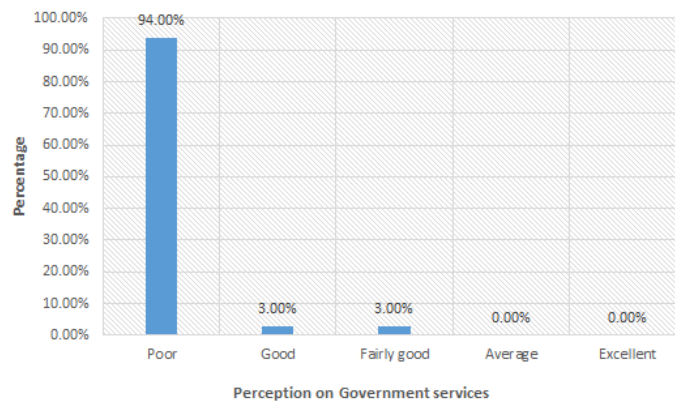


Figure 6: Percentage distribution of respondents' opinions on government services related to environmental health in Edo State.

How poultry farmers dispose poultry wastes is presented in Figure 7. It is shown that 57.60% of the farmers dispose poultry wastes by using as manure on crops to improve yield. 33.30% either give it out to those requesting for it or sell it. 6.10% of the farmers bury it while 3% discard it as refuse. It is clearly evident that

those respondents who dispose poultry waste as refuse did not understand that such wastes could be used to improve fertility of farmlands.

The awareness as to the translation of poultry wastes to wealth is presented in Figure 8. It is shown that 75.8% of the population were aware they could turn poultry litter to wealth, while 24.2% did not have such knowledge. Notwithstanding the positive indications in the data collected via questionnaire as to the use of poultry wastes to generate wealth, discussions with some of the farmers on how they could realize the generation of wealth from the wastes showed that the concept of wealth generation is misunderstood. Majority of the poultry farmers who sell their poultry litters or use it as manure on their crops had believed that wealth generation meant selling the waste or the saves realized from using the poultry litters in the place of chemical fertilizers. None had any idea on other areas of wealth generation such as biogas production.

Data on the use of protective wears like gowns, hand gloves, and nose mask during operations in the poultry are presented in Figure 9. 84.8% of respondents had agreed that it is not always convenient for poultry farmers to use such protective wears during operation. While 9.10% sometimes use protective wears, only 6.10% always use protective wears. The result reflects the gross inadequacy in occupational education on poultry waste management. The percentage distribution of farmers who treat poultry litter before disposal is presented in Figure 10. As shown in Figure 10, none of the respondents treated poultry wastes before disposal. The implication is that majority of the poultry farmers in this zone either do not have requisite knowledge on the subject of poultry waste treatment prior to disposal or do not regard the treatment of the said wastes as an important environmental pollution control process.

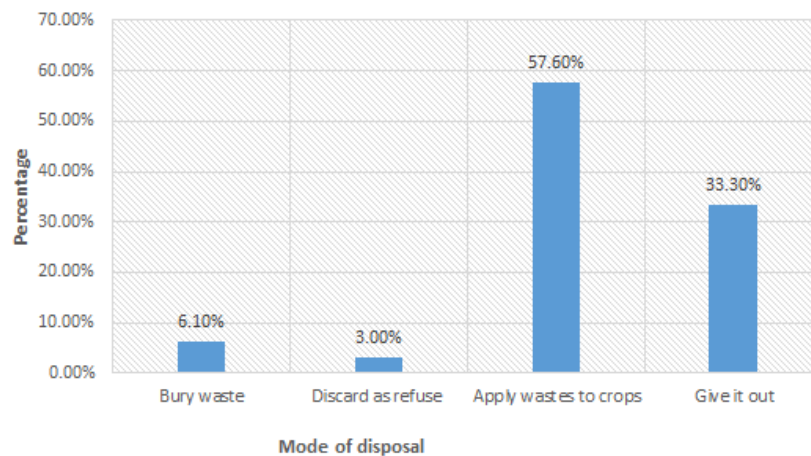


Figure 7. Utilization of poultry wastes by poultry farmers

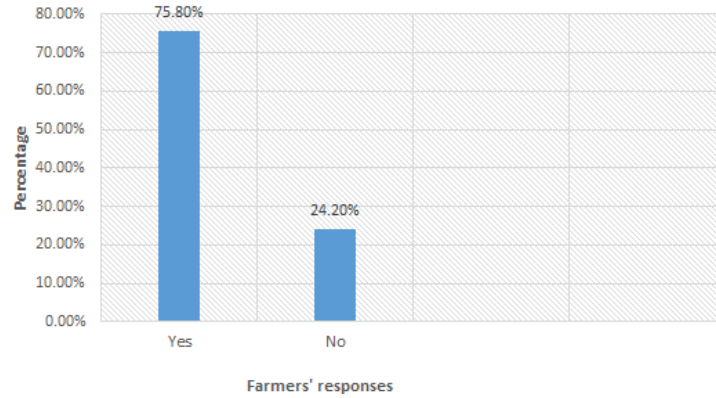


Figure 8: Awareness of farmers on translation of poultry wastes to wealth

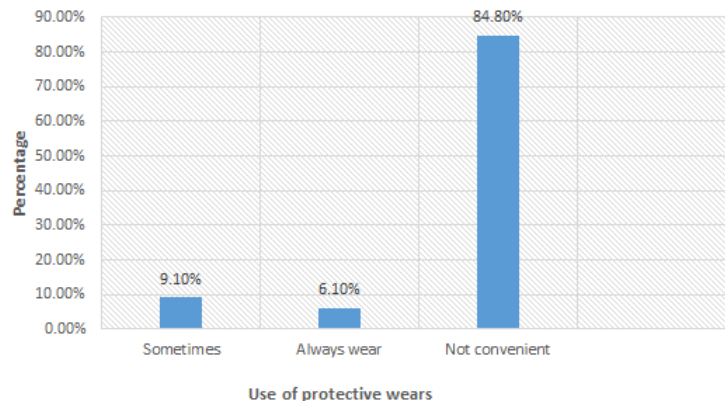


Figure 9. Utilization of protective wears during poultry operations

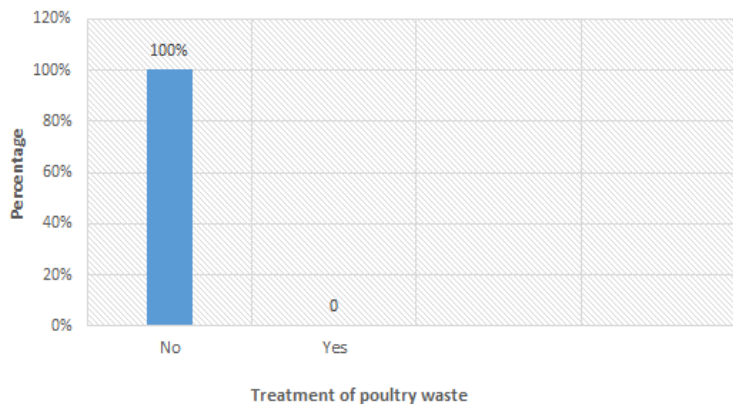


Figure 10: Poultry litter treatment prior to disposal

Figure 11 shows the percentage distribution of quantity of poultry wastes generated in the poultry farms of the respondents on a weekly basis. As shown in Figure 11, 87.9% of the respondents generated 10-25kg of poultry and 9.1% of the respondent generated 20-50kg, while 3% of the respondent generate 60-75kg of waste weekly. Figure 12 shows the statistics frequency of visitation made by the local government environment department to the respective poultry farms in the district. 87.9% of the sampled population says the local government appropriate authority never pays visit to their farms. 6.1% agrees the authority

visits their farm quarterly. Respondents who agree that the local government environmental department visits their farms once yearly and unexpectedly are 3.0% each. Figure 13 shows the percentage distribution of awareness of farmers as to the effects of poultry waste on environmental pollution. 69.7% of the farmers were aware that poultry waste could cause environmental pollution; 24.2% agreed that poultry wastes do not cause environmental pollution, while 6.1% are not sure whether or not poultry wastes could contribute to environmental pollution.

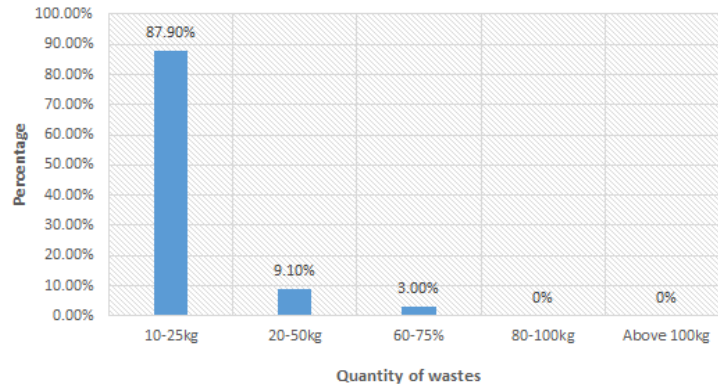


Figure 11: Distribution showing poultry wastes generated weekly by various poultry farmers

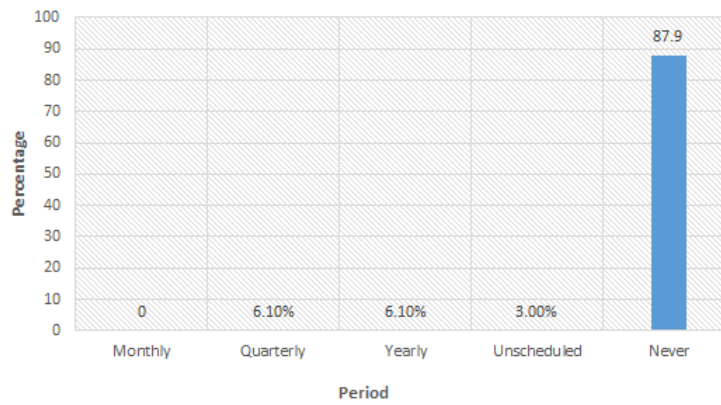


Figure 12: Distribution of government extension visits to various poultry farms

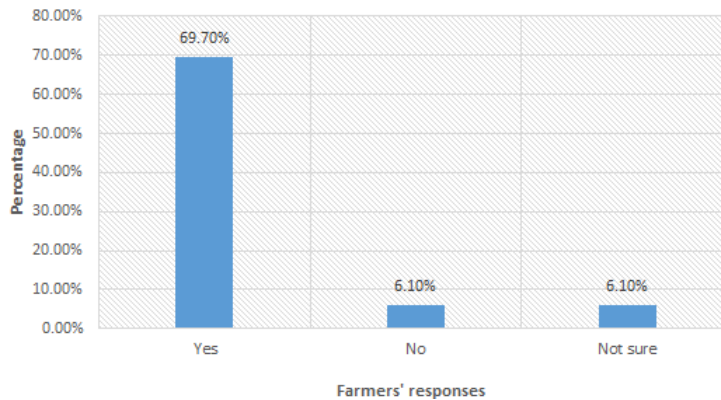


Figure 13: Distribution of awareness that poultry waste can cause environmental pollution

4. CONCLUSION

While poultry farming is a fast growing venture for the educated and the uneducated, it has been established that management of poultry wastes in Etsako district and perhaps in many other zones in Edo State is a growing concern. Generally, poultry farmers in Etsako district had shown inadequate knowledge on the management of poultry wastes irrespective of the level of education of the poultry farm owners. It is submitted that the lack of poultry waste management best practices is hinged on two major factors:

- a) Poor extension services by government agents as shown in the perception of farmers in the district on the performance of government services.
- b) Inadequate or lack of formal training on poultry management among the poultry owners in the district.

Owing to the poor extension services and inspection periodic visits to the poultry farms, poultry farmers used their discretion in managing the large volume of wastes generated. Though the farmers were aware of the harm such wastes could cause to the environment, some farmers disposed the wastes in a manner that did not conform to good waste disposal practices. Consequently, the farmers themselves may not be spared should there be any health hazard arising from the waste collection process since majority of the farmers did not consider it convenient to use protective wears during poultry operations. From the findings so far, we submit that Etsako district entirely lacks poultry waste management system as poultry farmers are responsible for the disposal of wastes. This is of great concern as the poor waste management could create avenues for environmental health challenges among the rural dwellers and other settlers should there be any avian infection outbreak. It is advised that the government should direct its effort towards ensuring that functional extension and inspection services are operational at the three local councils comprising the Etsako district. Community posts should be established in areas where intensive agricultural activities like poultry farming are prominent.

5. CONFLICT OF INTEREST

There is no conflict of interest associated with this work.

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