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Impact of organic livestock production on animal welfare in Isoko north local government area Delta State, Nigeria

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ABSTRACT

The study investigated the impact of organic livestock production on animal welfare in Isoko North Local Government Area Delta State, Nigeria. Four research questions guided the study, and three null hypotheses were evaluated at 0.05 level of significance. Survey research design was adopted for the study. The population of the study comprised organic livestock producers in Isoko North, LGA, and Delta State. A sample size of 116 organic livestock producers was drawn for the study using a multi-stage sampling procedure. A structured questionnaire was used for data collection. Data analysis was done using Mean and standard deviation to answer the research questions, while ANOVA to test the hypotheses. The findings of the study showed organic livestock production is dominated by males, married people and those who had secondary education with 56.6%, 52.2% and 38.9% respectively. The findings of the study revealed among others that the organic livestock production has positive impact on animal welfare in Isoko North LGA, in Delta State. Based on the findings, it was recommended among others that agricultural extension workers should pay periodic visits to farmers in the study area to create public awareness on the need to engage organic livestock production.

Keywords: *Organic Livestock, Production, Animal Welfare, Agriculture, Delta State*

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INTRODUCTION

Agriculture is one of crucial sectors of the Nigerian economy. Agriculture sector is the source of food production, source of raw materials to agro-allied industries, employment and income generation among households in Nigeria. Okonta, Ajala, Kolawole, Ogunjimi and Adejumo (2023) noted that agriculture is a crucial sector in the Nigerian economy which is a source of safe food for the rapid growing population. Livestock production is an integral part of agriculture in Nigeria. One of the mechanisms for improving animal production and processing is organic livestock production. Organic livestock production is a system of animal rearing that relies on natural inputs. Wolde and Tamir (2016) defined organic livestock production as the practice of rearing animal using biological, cultural and mechanical methods in preference to synthetic materials.

According to Mgbenka, Onwubuya and Ezeano (2015), organic farming is that practices that give preference to the use of off-farm inputs, considering regional conditions of locally adapted systems. In organic livestock production, veterinary drugs (in exception of vaccines), genetically modified breeds, external agro-allied companies feeds, preservatives and other chemicals are not used in rearing animals. According to Atoma et al. (2023), organic animal farming system is a deliberate attempt to make the best use of local natural resources which is environmentally friendly. It is the rearing of animals with the use of any traditional or off-farm inputs. Chander, Subrahmanyeswari, Mukherjee and Kumar (2011) described organic livestock production as a system of animal husbandry through the use of organic and biodegradable inputs from the ecosystem in terms of

animal nutrition, animal housing, animal health and breeding. Furthermore, Chander et al (2011) noted that it deliberately avoids the use of synthetic inputs such as feed additives, drugs and genetically engineered breed. Organic livestock production is environmentally friendly and lead to safe and nutritious meat production.

Welfare is the state of being healthy, well-nourished, physical fitness and productive. Oluwapelumi (2022) noted that animal welfare is a multifaceted concept that has three dimensions which include whether the animal is active and fit (such as good health, and productivity), whether the animal feels well (absence of discomfort) and whether the animal is able to exhibit desirable behaviour (grazing). The author added that ensuring animal welfare could improve their quality, productivity, food safety and financial returns, therefore contributing to food security, improved standard of living and economic growth. Animal welfare is the absence of diseases and discomfort. According to Åkerfeldt, Gunnarsson, Bernes and Blanco-Penedo (2021), animal welfare is the maintenance of physical, social, mental and ecological well-being as well as the absence of diseases. It is the state of being free from nutrition deficiencies, parasite infections and development disorders. Saeed et al., (2023) asserted that the indicators of animal welfare are healthy body conditions and reduced stress-related issues. (2018) defined animal welfare as the physical, psychology and mental well-being of animals.
Animal welfare is ensured by providing balanced diet and water to maintain for healthy living. Garde and Meuret cited in Saeed et al., (2023) maintained that ensuring animal welfare encompasses providing sufficient nutrition, appropriate housing, good healthcare and treatment throughout their lives. However, it appears that there are poor facilities for livestock rearing which tend to contribute poor animal welfare in Isoko North LGA, Delta State, Nigeria. Some animals are unhealthy to exhibit some of their natural behaviours probably due to inadequate attention to their welfare. The use of synthetic rearing livestock could adversely affect the welfare of animal and man who consume the meat. Onunwa, et.al (2022) and Onwumere-Idolor et al (2024) noted that the incessant deterioration in animal and man's health over the past few years have made people become conscious of the quality and safety of the food they consume in South-Eastern and South-South Nigerian States. They added that this worsening health as well as environmental dilapidation could be traced to the continual use of agro-chemicals in both production and processing of livestock. These problems prompted the investigation into impact of organic livestock production on animal welfare in Isoko North Local Government Area Delta State, Nigeria. The specific objectives were to:

1. Describe the socio-economic characteristics of the respondents.
2. Identify the organic livestock production practices of the respondents.
3. Find out Impact of organic livestock production on animal welfare in the study area.
4. Ascertain constraints of organic livestock production in the study area.

Research hypotheses

1. There is no significant difference between the socio-economic characteristics of the respondents and their perception of organic livestock production practices of the respondents.
2. There is no significant difference between the socio-economic characteristics of the respondents and their perception of impact of organic livestock production on animal welfare in the study area.
3. There is no significant difference between the socio-economic characteristics of the respondents and their perception of the constraints of organic livestock production in the study area

MATERIALS AND METHODS

Description of the study area

This study was carried out in Isoko North Local Government Area of Delta State which is located in South-South Geo-political zone of Nigeria. The headquarter of the Isoko North LGA is Ozoro, The people of the area are Christians few traditional worshippers. The notable towns in the area are Emevor, Oghara-Iyede, Otor Owhe, Owhelogbo and Ozoro. The area lies within the tropics between longitude 6^0.12'58"E and latitude $5^0$32'18"N. There are tropical climate of the Isoko North LGA is raining season between March and November, while dry season is between December and February. The Isoko North is among the oil producing LGAs of Delta State. The people of the area engage in crop production and livestock rearing using organic and inorganic approaches.

Sampling procedure and method of data collection

The population of the study comprised organic livestock producers in Isoko North, LGA, Delta State. A sample size of 116 organic livestock producers was drawn for the study using a multi-stage sampling procedure. In the first stage, simple random sampling technique without replacement was used to select five towns for the study. In the second stage, purposive sampling technique was used to draw all organic livestock producers for the study. In the third stage, the stratified proportionate sampling technique was used to draw 116 organic livestock producers for the study.

A structured questionnaire was used as the instrument for data collection. The instrument has sections A and B. Section A was structured to collect information on socio-economic characteristics of the respondents such gender, age, marital status, educational level, and years of livestock rearing experience of the respondents. Section B

contained was structured to gather information on organic livestock production practices, impact of organic livestock production on animal welfare and the constraints of organic livestock production in the study area. The instrument contains twenty-two items placed on modified a 4-point Likert rating scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) weighted 4, 3, 2 and 1, respectively. The instrument was validated by three experts and subjected to the test of internal consistency of instrument using Cronbach alpha which yielded a coefficient value of 0.82. Direct method of data collection was used by the researchers and two research assistants who were briefed on the nature of the study. A total of 116 copies of the questionnaire were distributed and 113 copies were successfully retrieved indicating 97% return rate. The copies of the questionnaire that were properly completed and retrieved were used for data analysis.

Method of data analysis

The socio-economic characteristics of the respondents were analyzed using frequency and percentage. Mean and standard deviation were used to answer the research questions and the null hypotheses were tested using ANOVA. The decision rule for the research questions is that mean ratings of 2.50 and above was taken as agreement and any mean rating that falls below 2.50 was taken to indicate disagreement. In taking decisions on the null hypotheses, if p-value is equal or greater than the level of significance 0.05, the null hypothesis was accepted. On the other hand, if the p-value is less than 0.05 level of significance, the null hypothesis was rejected. The data analysis was done using SPSS version 27.

RESULTS AND DISCUSSION

The socio-economic profiles of the respondents which is presented in (Table 1) shows the gender distribution of the respondents where majorities (56.6%) of the livestock producers are males, while their female counterparts accounted for 43.4%. This agreed with the finding of Oladeji, Ajadi, Oyesola and Sangotegbe (2015) which revealed that 63.4% of the respondents involved in organic farming were males, while 36.6% were females. The nature of organic livestock production requires physical strengths which could account for males dominant. This is contrary to the finding of Mbah, Ikenyirimba, Bassey and Ifenkwe (2022) who reported that there were more females (65.0%), than males (35.0%) engagement in organic farming.

The age of the livestock producers showed that majority (59.3%) are within the age of 30-60 years, followed by those with the age range of below 29 years who recorded 31.9% and those between 61 years and above constituted 8.8% respectively. This is in line with the finding of Sani (2020) reported that majority of organic farmers had an average age of 44 years which shows that they are active and can be able to make wise decisions. This indicated that majority of the respondents are in their youth age, and they are required to be active and productive in organic livestock production.

The marital status showed that majority, 52.2% of the livestock producers are married, 23.9% are widowed, 12.4% are single and 11.5% are divorced. This affirmed the findings of Mbah, Ikenyirimba, Bassey and Ifenkwe (2022) which indicated a majority (61.7%) of the respondents engage in organic farming were married; while 20.0% were single, 11.7% were widowed, 3.3% separated and 3.3% divorced. The married livestock producers receive the support of their partners in organic animal rearing.

Educational background showed that majority (38.9) of livestock producers had secondary education, 28.3% had primary education, 18.6% had non-formal education and 14.2% had higher education. This is agreement with the findings of Oladeji, Ajadi, Oyesola and Sangotegbe (2015) which showed that 50.8% of the respondents involved in organic farming had formal education ranging from primary education to higher institution, while 35.1% had no formal education and the remaining 14.2% had adult education.

It was also revealed that majorities (47.8%) of the livestock producers had 10 to 30 years' experience of organic livestock production, (28.3%) had 31 years and above experience of organic livestock production, while (23.9%) had 10 years and below experience of organic livestock production. The finding agreed with the finding of Garba, Jobe, Adeola and Muhammad (2021) which revealed that the duration of livestock rearing experience of the majority (47.8%) of the respondents were between 15 and 35 years.

Results in (Table 2) showed that the mean scores of the respondents for all the items with the exception of 6 are above the cut off mean of 2.50 and this indicated agreement with the statements. The cluster mean of 2.67 is above the cut off mean of 2.50 and this shows that organic livestock production is practiced in Isoko North LGA, in Delta State.

Table 3 indicated that the mean scores for all the items are above the cut off mean of 2.50 and this indicated agreement with the statements. The cluster mean of 2.68 is above the cut off mean of 2.50 and this shows that organic livestock production has a positive impact on animal welfare in Isoko North LGA, in Delta State. This agrees with the finding of Åkerfeldt, Gunnarsson, Bernes and Blanco-Penedo (2021) which showed that organic livestock production has positive impact on animal health and welfare. This also affirmed the findings of Wagner, Brinkmann, Bergschmidt, Renziehausen and March (2021) which revealed that organic livestock rearing has a positive impact on animal welfare.

As shown in (Table 4), the mean scores for all the items are above the cut off mean of 2.50 and this indicated agreement with the statements. The cluster mean of 2.62 is above the cut off mean of 2.50 and this shows that organic livestock production has many challenges in Isoko

Table 1: Socio-economic characteristics

Socio-economic Characteristics	Frequency	Percentage %
Gender		
Male	64	56.6
Female	49	43.4
Age		
below 29 years	36	31.9
30-60 years	67	59.3
61 years and above	10	8.8
Marital Status		
Single	14	12.4
Married	59	52.2
Divorced	13	11.5
Widowed	27	23.9
Educational Certificate		
Non-formal education	21	18.6
Primary education	32	28.3
Secondary education	44	38.9
Higher education	16	14.2
Years of Organic Livestock Production		
Below 10 years	27	23.9
10 to 30 years	54	47.8
31 years and above	32	28.3

(Field survey, 2024)

Table 2: Mean and standard deviation scores on the organic livestock production practices.

S/N	ITEMS	X	Sd	Remarks
1	Use only natural feeds in rearing animals	2.75	1.07	Agree
2	Avoid the use of antibiotics or growth hormones in rearing livestock	2.64	1.11	Agree
3	Disengage from the use of genetically modified breeds of livestock	2.57	1.10	Agree
4	Free movement of animals for feeding	2.72	1.01	Agree
5	Traditional/natural treatment of sick animals	2.69	1.06	Agree
6	Vaccinate animal only during disease outbreak	2.43	1.05	Disagree
7	Access to fresh drinking water	2.68	1.05	Agree
	Mean of means	2.67	1.07	Agree

(Field survey, 2024)

Table 3: Mean and Standard Deviation Scores on the Impact of Organic Livestock Production on Animal Welfare.

S/N	ITEMS	X	Sd	Remarks
8	Readily accessible to fresh water keep animal healthy	2.81	1.01	Agree
9	Herbs are used to treat diseases of animals to keep them physical fit for their activities	2.56	0.98	Agree
10	Traditional medicines is useful in treating injuries sustained by animals for quick recovery	2.75	1.08	Agree
11	Animal are fed with only organic materials to improve their well-being	2.61	1.05	Agree
12	Animal graze on grasses that are not exposed to synthetic materials to keep them healthy	2.72	1.00	Agree
13	Animal are provided shelter that protect from excessive sun and rain to make them confortable	2.69	1.02	Agree
14	Nature breeds are procured to maintain healthy living	2.64	1.09	Agree
	Mean of means	2.68	1.03	Agree

(Field survey, 2024)

North LGA, in Delta State. This agreed with the findings of Chander, Subrahmanyeswari, Mukherjee and Kumar (2011) which revealed that the challenges of organic livestock production were lack of knowledge, small farms, and problems in livestock feeding, sanitary regulations, traceability, disease, lack of training and certification facilities. This upheld the findings of Tikon, David, Gadu and Apeh (2023) which revealed that the constraints/challenges faced by organic farmers include the high cost of organic farming, low technical know-how, unavailability of organic inputs, consumers yet to appreciate the difference between the production of the two farming systems, poor storage facilities, poor market outlet and inadequate information.

HO_1: There is no significant difference between the socio-

Table 4: Mean and standard deviation scores on the constraints of organic livestock production.

S/N	ITEMS	X	Sd	Remarks
15	Low level of awareness of organic livestock production	2.57	1.10	Agree
16	Inadequate support for the marketing of the organic products	2.64	1.02	Agree
17	Low technical know-how	2.71	1.05	Agree
18	Absence of appropriate agriculture policy that encourage organic livestock production	2.52	1.11	Agree
19	Limited traditional animal rearing inputs	2.77	1.08	Agree
20	Limited access to credit	2.54	1.00	Agree
21	High labour intensive	2.63	1.06	Agree
22	Inadequate extension services	2.59	1.05	Agree
	Mean of means	2.62	1.06	Agree

(Field survey, 2024)

Table 5: Analysis of variance on significant difference between the socio-economic characteristics of the respondents and their perception of organic livestock production practices.

	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	3265.143	5	675	4.221	0.081
Within Groups	54213.421	287			
Total	56198.411	289			

Table 6: Analysis of Variance on Significant Difference between the Socio-Economic Characteristics of the Respondents and their Perception of the Impact of Organic Livestock Production on Animal Welfare.

	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	4315.734	5	601	3.908	0.103
Within Groups	51082.613	203			
Total	50354.227	205			

(Field survey, 2024)

Table 7: Analysis of Variance on Significant Difference between the Socio-Economic Characteristics of the Respondents and their Perception of the Constraints of Organic Livestock Production.

	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	3714.231	5	705	4.563	0.135
Within Groups	43019.214	395			
Total	42012.823	397			

economic characteristics of the respondents and their perception of organic livestock production practices the respondents.

Table 5 indicated that the F-ratio (df: 5/113) is 4.221 and the p-value (0.081) is greater that the stipulated 0.05 level of significance. Thus, the null hypothesis was accepted. Therefore, there is no significant difference between the socio-economic characteristics of the respondents and their perception of organic livestock production practices the respondents.

HO_2: There is no significant difference between the socio-economic characteristics of the respondents and their perception of impact of organic livestock production on animal welfare in the study area.

As show in (Table 6), the F-ratio (df: 5/113) is 3.908 and the p-value (0.103) is greater that the stipulated 0.05 level of significance. Thus, the null hypothesis was accepted. Therefore, there is no significant difference between the socio-economic characteristics of the respondents and their perception of impact of organic livestock production on animal welfare in the study area.

HO_3: There is no significant difference between the socio-economic characteristics of the respondents and their perception of the constraints of organic livestock production in the study area.

As shown in (Table 7), the F-ratio (df: 5/113) is 4.563 and the p-value (0.135) is greater that the stipulated 0.05 level of significance. Thus, the null hypothesis was accepted. Therefore, there is no significant difference between the socio-economic characteristics of the respondents and their perception of the constraints of organic livestock

production in the study area.

Conclusion

Based on the findings, it is concluded that organic livestock production is very crucial in enhancing animal welfare in Isoko North Local Government Area of Delta State, Nigeria. Many organic livestock producers are faced with many constraints such as low level of awareness of organic livestock production, inadequate support for the marketing of organic products, low technical know-how, absence of appropriate agriculture policy that encourage organic livestock production, limited traditional animal rearing inputs, limited access to credit and high labour intensive.

Recommendations

Based on the findings, the following recommendations were made:

1. Extension agencies should pay periodic visits to farmers in the study area to create public awareness of the need to engage organic livestock production
2. Organic livestock producers should be granted access to credit without collateral or heavy demand.
3. Delta State Ministry of Agriculture should organic periodic workshops for livestock producers to improve their low technical know-how on the organic rearing methods.
4. Relevant regulatory bodies should assess and certify organic livestock products to enable the producers to have access to market where they can sell at premium prices.

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