



Poultry farmers' perception on climate change in Ido Local Government Area of Oyo State, Nigeria



Amusat A. S.¹, Atanda A. O.² and Omowon A. A.³

¹Institute of Agricultural Research and Training, Obafemi Awolowo University, P. M. B. 5029, Moor Plantation, Ibadan, Nigeria.

²Department of Animal Science, Ahmadu Bello University, Zaria, Nigeria.

³Department of Animal Health Technology, School of Animal and Fisheries Technology, Oyo State College of Agriculture, Igboora, Nigeria.

Article History

Received 27 April, 2019
Received in revised form 22 July, 2019
Accepted 25 July, 2019

Keywords:

Poultry,
Climate change,
Perception,
Adaptability measures.

Article Type:

Full Length Research Article

ABSTRACT

This study examined poultry farmers' perception of climate change in Ido Local Government Area of Oyo State. A multi-stage sampling procedure was used to select 120 respondents for the study. Data collection was done through the use of interview schedule and was analyzed using both descriptive (frequencies and percentages) and inferential statistics (Chi square). The results obtained show that mean age of respondents was 41.2 years, majority were male (55.6%) and had tertiary education (49.4%). The most popular sources of information to farmers on climate change were television (1.72) and radio (1.61). Regular vaccination of birds was the most adaptability measure used by respondents and the greatest challenge to climate change on poultry was insufficient capital. Majority of the respondents (58.9%) had high level of perception of climate change. There was a significant relationship between respondents' age ($x^2 = 43.46$; $p = 0.05$), educational level ($x^2 = 36.35$; $p = 0.05$), experience ($x^2 = 19.27$; $p = 0.05$) and their perception of climate change. It was concluded that age, education and farming experience played significance roles in poultry farmers' perception of climate change. It was recommended that poultry farmers need more information on adaptability measure and financial support to mitigate climate change effects.

©2019 Blue Pen Journals Ltd. All rights reserved

INTRODUCTION

Livestock or farm animals are vital to man as they serve as an asset and play an important role in the economy of Nigeria. Poultry, cattle, goats, sheep and pigs among others are examples of farm animals which serve as food for man. Among these farm animals, poultry forms the largest in terms of population, which was estimated at 140 million birds (Empress Watch, 2006). Poultry plays an important economic, nutritional and socio-cultural role in the livelihood of poor rural households in many

developing countries, including Nigeria (Adesiji et al., 2013). Poultry include fowl, turkey, duck, goose, ostrich, guinea, etc. which render not only economic services but contribute significantly to human food as a primary supplier of meat, egg, raw materials to industries, source of income and employment to people compared to other domestic animals (Avila, 1985; Demeke, 2004). They are raised with relatively low capital investment and readily available household labour (Obayelu and Adeniyi, 2006).

An important factor known over the world to affect poultry birds and agricultural production in general is climate change. Climate change is a variation in weather condition that lasts over an extended period of time (IPCC, 2007). According to the source, it is seen as the

*Corresponding author. E-mail: niyiamusat2000@yahoo.co.uk. Tel: +234-8023469575.

greatest environmental threat to mankind in the current century which affects both human and environmental systems worldwide. The relationship between climate change and livestock production has shown that there is an impact, and this threatens poultry production (Uzokwe and Bakare, 2013). They observed that despite technological advancements such as improved varieties and genetically modified livestock organism, climate is still a key factor in agricultural productivity. The environmental conditions affecting the performance, health productivity of a chicken include temperature, relative humidity, light, sunshine prevailing at a given time, housing system and ventilation (Obayelu and Adeniyi, 2006).

Poultry birds are especially susceptible to climate change because there is a range of thermal conditions within which animals are able to maintain a relatively stable body temperature in their behavioural and physiological activities (Adesiji et al., 2013). Similarly, climate change affects poultry by altering global disease distribution, affects poultry feed intake, encourages outbreak of diseases which invariably affects egg and meat produced, and also cost of production (Guis et al., 2011). High rainfall and high relative humidity are also known to create a favourable environment for breeding of parasites that cause outbreak of diseases that reduce egg production (Obayelu and Adeniyi, 2006).

The residual effect of climate change on poultry is considered by poultry farmers as a major concern that needs immediate attention. This therefore calls for the need of poultry farmers to emphasize more on how to reduce the effect of climate change in poultry production. In order to manage the effect of climate change, it is important that poultry farmers have access to reliable information sources. The major goal of every farming activity is a sustainable production of quality food with little or no effect on the environment. This cannot be achieved without specific mitigating strategies to reduce the climatic factors that hinder the expansion of poultry production, hence the need to determine the perception of poultry farmers towards climate change.

The study considered the following specific objectives: identify the personal characteristics of poultry farmers in the study area; identify the sources of information of poultry farmers to climate change; ascertain the adaptability measures utilized by poultry farmers to climate change; determine poultry farmers' perception of climate change in the study area; and identify the climate change challenges associated with poultry farming in the study area.

METHODOLOGY

The study was carried out in Ido Local Government Area of Oyo State. Ido, which has a land area of about 989 square kilometers, lies between latitudes 9° 4' N and

longitudes 2°3' E and 5°15' E. It has a population of about 103, 261 persons (NPC, 2006). Farming, both crop cultivation and animal rearing, is the dominant occupation in the area. The population of the study consisted of poultry farmers under the All Farmers' Association of Nigeria (AFAN) in the local government. A multi-stage sampling procedure was used to select respondents for this study. Purposive sampling technique was used to select 4 wards (Bako, Akufo, Bakatari and Oke-odo) out of the 12 wards based on high poultry production in the wards. The selected wards have 280 farmers altogether with Bako, Akufo, Bakatari and Oke-odo having 64, 72, 68 and 76 poultry farmers respectively. Simple random sampling technique was used to select 20, 23, 22 and 25 poultry farmers respectively from Bako, Akufo, Bakatari and Oke-odo making a total of 90 farmers which formed the respondents for the study. Interview schedule was used to elicit information from the respondents. Source of information was measured on a three-point scale of Always (2), Occasionally (1) and Never (0). The mean score for each source was generated and used to rank them in order of their significance. Adaptability measure to climate change was measured on a two point scale of Yes (1) and No (0). The mean scores for the adaptability measures were generated and used to rank them in order of their significance. Perception of climate change: this was measured using a Likert-scale of SA (5), A (4), U (3), D (2), SD (1) for positive statements and the scores reversed for negative statements. The mean score was generated and used to categorize the respondents into high and low risk perception. Constraint was measured on a three-point scale of major constraint (2), minor constraint (1) and not a constraint (0). The mean score for each constraint was generated and used to rank them in order of their significance.

RESULTS AND DISCUSSION

Personal characteristics of the respondents

Table 1 shows that most (43.3%) of the poultry farmers were within the ages of 40-49 years (mean = 41.2). This indicates that most of them are still young, active and expected to possess the needed energy to be productive in their poultry enterprise. More than half (55.6%) were male, which means men are more involved in poultry farming in the study area. This corroborates Uzokwe and Bakare (2013), who opined that poultry production is dominated by male. Also, most (49.4%) were single, which may be in response to the clarion call by government for youths and unemployed graduates in the country to embrace farming. About half (49.4%) had tertiary education, while only 4.6% had no formal education. This indicates a fairly good level of literacy and it is expected to translate to a better understanding of the effects of climate change on

Table 1. Distribution of respondents by personal characteristics.

Variable	Frequency	Percentage
Age		
≤ 29	11	12.2
30-39	25	27.8
40-49	39	43.3
50-59	14	15.6
≥60	1	1.1
Sex		
Male	50	55.6
Female	40	44.4
Marital status		
Single	44	49.4
Married	41	46.1
Divorced	1	1.1
Widowed	3	3.4
Education		
Non-formal	4	4.6
Primary	17	19.5
Secondary	23	26.4
Tertiary	43	49.4
Occupation		
Farming	46	56.8
Trading	20	24.7
Civil servant	9	11.1
Artisans	6	7.4
Household size		
1-4	38	43.2
5-8	34	38.6
7-9	11	12.5
10 and above	5	5.7
Farming experience		
1-3	33	37.1
4-6	32	36
7-9	14	15.7
10-12	10	11.2
Flock size		
1-500	58	67.4
501-1000	24	27.9
1001-1500	4	4.7

Source: Field survey, 2018.

poultry birds. This according to Uzokwe and Bakare (2013) is expected to enhance their adaptability to climate change. Majority (73.1%) had farming experience of between 1 – 6 years (mean = 4.9) and 67.4% possessed a flock size of between 1 – 500 birds. This implies that most of them are young in the poultry business but may still possess the requisite knowledge about climate change effects on poultry birds.

Sources of information on climate change

Result in Table 2 shows the different sources of information available to the respondents on climate change in the study area. The result shows that the most popular information sources to the respondents were television (1.72) and radio (1.61), as they ranked 1st and 2nd, respectively. Television and radio are mass media that are capable of reaching many people at a time because they have wider reach. Radio particularly is considered the most dominant mass medium in Africa (United Nations, 2005). Relatives/friends, which is an interpersonal means of communication was ranked 3rd (mean = 1.58). Olaitan (2010) similarly found interpersonal communication which takes place on a daily basis among families, relatives and friends to be an important source of information.

Adaptability measures of respondents to climate change

The result in Table 3 shows the different adaptability measures utilized by the respondents aimed at preventing the adverse effects of climate change on poultry birds. Regular vaccination of birds (mean = 0.97), regular changing of water (mean = 0.96) and proper sanitation (mean = 0.93), respectively ranked 1st, 2nd and 3rd as the most utilized adaptability measures by the respondents. This highlights that poultry farmers give high priority to adaptability measures that have to do with hygiene management. Thornton and Herrero (2008) likewise submitted that poor hygiene practice is one of the most important climate-related risks confronting poultry farmers in Nigeria. Rearing resistant birds species (mean = 0.91) was also a common adaptability measure to climate change. This is because such birds cannot only survive but also complete their life cycles even when the prevailing environment conditions will not allow others to thrive (Abugu et al., 2013).

Challenges of respondents to climate change

Table 4 shows the different challenges on climate change facing the respondents in the study area. The result shows that the insufficient capital (mean = 1.76) ranked as the most important challenge confronting the respondents in the study area. Capital is paramount as it is needed to purchase inputs such as feed, drugs and vaccines to control diseases. It is also worthy to note that capital is required to scale up poultry farmers' enterprise. Inadequate supply of labour (mean = 1.66) was ranked 2nd. Poultry farmers require capital to hire farm workers to work on his farm. Inadequate information on poultry insurance (mean = 1.51) was ranked 3rd. This finding

Table 2. Distribution of respondents by sources of information on climate change.

S/N	Information sources	Mean	Rank
1	Extension Agents	1.38	5 th
2	Television	1.72	1 st
3	Radio	1.61	2 nd
4	Newspapers	1.27	6 th
5	Internet	1.51	4 th
6	Workshop/seminars	1.16	7 th
7	Journals	1.07	8 th
8	Relatives /friends	1.58	3 rd

Source: Field survey, 2018.

Table 3. Distribution of respondents by adaptability measures to climate change.

S/N	Adaptability measures	Yes	No	Mean	Rank
1	Regular vaccination of birds	87 (96.7)	3 (3.3)	0.97	1 st
2	Rearing different varieties of birds	79 (87.8)	11 (12.2)	0.88	7 th
3	Rearing birds that are resistant to adverse conditions	82 (91.1)	8 (8.9)	0.91	5 th
4	Providing adequate housing system	83 (92.2)	7 (7.8)	0.92	4 th
5	Rearing birds with other livestock	63 (70.0)	27 (30.0)	0.70	10 th
6	Rearing early maturing birds	81 (90.0)	9 (10.0)	0.90	6 th
7	Proper sanitary measures	84 (93.3)	6 (6.7)	0.93	3 rd
8	Regular changing of water in drinking troughs	86 (95.6)	4 (17.8)	0.96	2 nd
9	Adjusting the price of birds	74 (82.2)	16 (17.8)	0.82	8 th
10	Taking of poultry insurance cover	70 (77.8)	20 (22.2)	0.78	9 th

Source: Field survey, 2018. Note: Figures in brackets are in percentage.

Table 4. Distribution of respondents by challenges of climate change.

S/N	Challenges	Mean	Rank
1	Inadequate supply of labour	1.66	2 nd
2	Inadequate information on climate change	1.26	6 th
3	High cost of adaptability measures to climate change	1.33	4 th
4	Lack of awareness on possible coping strategies	1.20	7 th
5	Lack of government support	1.30	5 th
6	Insufficient capital	1.76	1 st
7	Inadequate information on poultry insurance	1.51	3 rd
8	Sharp practices by agricultural insurance agents and staff	1.16	8 th

Source: Field survey, 2018.

aligns with Fawole (2008) who pointed out that increase in agricultural production in Nigeria is dependent on farmers' access to and use of agricultural information.

Perception of respondents on climate change

Table 5 shows that majority (58.9%) of the respondents

had high risk perception of climate change effects on poultry birds, while 41.1% had low perception on climate change. This means that poultry farmers also take cognizance of climate change being a major issue affecting poultry production. They appreciate that variation of climate elements such as temperature, relative humidity and sunshine influence the general performance of bird. According to the ICAR (2010), high

Table 5. Distribution of respondents by level of perception of climate change.

Perception	Frequency	Percentage	Mean	Std. Dev.
Low	37	41.1	80	5.07
High	53	58.9		

Source: Field survey, 2018.

Table 6. Chi-square test between selected respondents' personal characteristics and their perception on climate change.

Variables	χ^2	Df	p-value	Remark
Age	43.467	4	0.000	Significant
Sex	1.111	1	0.292	Not significant
Education	36.356	3	0.000	Significant
Farming experience	19.270	3	0.000	Significant

Source: Field survey, 2018.

temperature coupled with high sunshine intensity many at times result in high mortality rate in chickens, reduced egg production, low feed in take or feed conversion and low production.

Relationship between selected personal characteristics of respondents and their perception on climate change

Table 6 shows that age ($\chi^2 = 43.46$; $p = 0.05$), educational level ($\chi^2 = 36.35$; $p = 0.05$), experience ($\chi^2 = 19.27$; $p = 0.05$) had significant relationships with respondents' perception on climate change. This implies that the age of a poultry farmer will affect his perception on climate change due to the fact that young poultry farmers would be curious to know about climate change effects on poultry birds this would thus affect their perception about the concept. Also, a poultry farmer's level of education will influence his perception on climate change in the sense that the higher the level of education, the better his understanding and hence their perception of climate change effects on poultry birds. Poultry farmers' level of education has a direct influence on their ability to adequately keep records and make observations on how climate change influences their poultry production pattern (Adesiji et al., 2013). Similarly, the more experienced a poultry farmer is, the better his ability to observe and understand effects of various climatic elements on poultry production.

CONCLUSION AND RECOMMENDATIONS

Based on the findings from the study, it can be concluded

that majority of the respondents were male, married and had tertiary education. It was also revealed that the major sources of information to respondents on climate change were television and radio. Most of the poultry farmers perceived the effects of climate change on poultry birds to be high and vaccination of birds was the most utilised adaptability measure to climate change. However, respondents were constrained by lack of sufficient capital. It is recommended that more information, training and financial support be provided to poultry farmers in order to mitigate climate change effects.

REFERENCES

- Abugu, R. O., Chah, J. M., Nwobodo, C., Asadu A. N. & Igbokwe, E. M. (2013). Agricultural extension needs of farmers in *Telfairia* production and marketing in Enugu State, Nigeria. *J. Agric. Ext.* 17(1):49-60.
- Adesiji, G. B., Baba, S. T. &, Tyabo, I. S. (2013). Effects of climate change on poultry production in Ondo state, Nigeria. *Russian J. Agric. Socio-Econ. Sci.* 2(14):55-60.
- Avila, M. (1985). Intra and inter-household decision making in the Mangwende and Chivi Communal Areas: Preliminary results, Farming System Research Unit, Harare.
- Demeke, S. (2004). Egg production and performance of local white leghorn hens under intensive and rural household conditions in Ethiopia. *LRRD* 16:2.
- Empress Watch (2006). Highly pathogenic avian influenza spread into Nigeria. Situation update. Pp. 1-9.
- Fawole O. P. (2008). Pineapple farmers' information sources and usage in Nigeria. *Bulgarian J. Agric. Sci.* 14(4):381-389.
- Guis, H., Caminade, C., Calvete, C., Morse., A. P., Tran, A. & Baylis, M. (2011). Modelling the effects of past and future climate on the risk of bluetongue emergence in Eur J. Rural Sociol. Interface (In press). 10.1098/rsif.2011.0255.
- India Council of Agricultural Research, ICAR (2010). 2010-11 Annual Report. Pp 13p.
- IPCC. (2007). The Physical Science Basis. Contribution of working group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Solomon, S. D., Qni, M. Manning (Eds.))

- http://ipcc.wgl.ucar.edu/wg1_report.html.
- Obayelu, A. E. & Adeniyi, A. (2006). The effect of climate on poultry productivity in Ilorin Kwara State, Nigeria. *Int. J. Poul. Sci.* 5(11):1061-1068.
- Olaitan F. O. (2010). Perceived effect of meningitis on rural households' livelihood activities in selected local government areas of Kwara State. An MSc. thesis submitted to the department of Agricultural Extension and Rural Development, University of Ibadan, Ibadan.
- Thornton, P. & Herrero, M. (2008). Climate change, vulnerability and livestock keepers: challenges for poverty alleviation. Proceedings of the Livestock and Global Climate Change Conference, Tunisia.
- United Nation. (2005). Africa renewal : Radio a dominant mass medium in Africa. Retrieved July 23, from http://www.un.org/en/africarenewal/vol19no2/192_pg04.htm.
- Uzokwe U. N. & Bakare E. A. (2013). The Effects of climate variability on poultry production in Ose Local Government Area of Ondo State, Nigeria: Socio-economic characteristics and perceptions of farmers. *Int. J. Agric. Biosci.* 2(1):39-44. www.ijagbio.com.