



Climate Change: An Implication on Poultry Production in Kontagora Local Government Area of Niger State

Ibrahim, Kabir Kontagora, Mohammed Zulaihat and Popoola E.O.

Department of Agricultural Education, Federal College of Education, PMB 39, Kontagora,
Niger State
kabir03611@gmail.com

Abstract: *The study assessed the climate change: an implication on poultry production in Kontagora Local Government Area of Niger State. Twenty five (25) poultry farmers were interviewed to elicit relevant information in line with the objectives of the study. Findings revealed that majority (93%) of the respondents are aware of climate change, 78%, 98% and 86% of the respondents agreed that temperature fluctuation, increased in sunshine intensity and global warming has a negative effects on poultry production. 72% of the respondents agreed that prices of feed grains are usually high in hot and dry seasons which may affect cost of production and number of birds to raise for egg and meat production, 73% of the respondents agreed that climate change has effect on feed grain availability, this implies that high temperature and low rainfall are climatic factors that affect general grain harvest, their supply to the market and ultimately cost of poultry production. 94% of the respondents agreed that climate change affects egg and meat production pattern and 95% of the respondents agreed that moist climatic conditions encouraged the distribution and development of diseases. It is recommended that extension agents and other development agencies need to educate the poultry farmers more about the effects posed by climate change on poultry production and intensify awareness campaign to poultry farmers on how to reduce the effects of climate change on poultry production. Training workshops should also be organized among the farmers on how best they can cope with the implication of climate change and improve technology that is simple and compatible with environmental factors that should be developed.*

Keywords: *Climate change, Poultry and Production*

I INTRODUCTION

Poultry plays an important economic, nutritional and socio-cultural role in the livelihood of rural households in many developing countries, including Nigeria. Poultry are birds that include fowl, turkey, duck, goose, ostrich, guinea fowl, etc. which render not only economic services but contribute significantly to human food as a primary supplier of meat, egg, raw materials to industries (feathers, waste products), source of income and employment to people compared to other domestic animals (Demeke, 2004).

Poultry flocks are particularly vulnerable 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. Hence, birds can only tolerate narrow temperature ranges to sustain the peak of their production for human consumption and any unpredictable climatic changes will therefore trigger a series of adjustment and readjustments by livestock and poultry birds in the struggle for survival which may have negative consequence on the viability of poultry production (Amos, 2006).

Climate change has become a global issue. The current world average temperature is 15°C and this is increasing at an alarming rate. The destruction of forest areas, carbon emissions, methane output, industrial activities, an increase in the concentration of harmful greenhouse gases, increase in sea level etc. are continuously contributing to global warming. There is a possibility of increasing world temperature by 3-5°C within the near future resulting in a further increase of sea level by 1.5 meter. The impact of climate change is detrimental for agricultural production. Although world leaders are thinking to find ways to reduce the negative impact of climate change, little progress has been made so far. Production on the other hand, is the process of converting inputs (scarce resources) into output (products) (Olanrewaju et al., 2010). It is the utilization of raw materials to create output in the form of goods or services, which has exchange and utility value (Kotler and Keller, 2006).

The agricultural production including poultry can be threatened by its detrimental effects. Climate change alters global disease distribution, affects poultry feed intake, encourage outbreak of diseases which invariably affects poultry output (egg and meat) and also cost of production (Gray, 2009).

Elijah and Adedapo, (2006) reported that high rainfall and relative humidity provides a conducive environment for breeding of parasites that causes outbreak of diseases which invariably reduces egg production. Poultry production is a major source of protein which has empowered poultry farmers to secure a means of survival and livelihood. Climate change affects poultry production by reducing poultry yield and nutritional quality of feeds, increasing disease and disease-spreading pests, reducing water availability and making it difficult for birds to survive (Spore, 2008).

Farmers are facing a lot of challenges due to climate change and it may not be clear in empirical terms what loss farmers incur but it is known to cause more harm to their production than good. There are many human factors that are responsible for climate change across the globe like poor environmental sanitation, deforestation, bush burning, drilling of boreholes, fuel combustion, and cement manufacture etc. (FAO, 2007).

II METHODOLOGY

The study adopted the descriptive survey design. A random sampling technique was used to select respondents for the study. Fifteen (15) poultry farmers were randomly selected from each ward (Gabas, Yamma, Kudu and Arewa ward) making a total sample of sixty (60) respondents for the study. Data were analyzed using descriptive statistics such as frequencies distribution, and percentages to determine the perception of the respondents on implication of climate change on poultry production in the study area, while Chi-square test of significant was used to test the formulated hypothesis.

III RESULTS AND DISCUSSION

A total number of 60 questionnaires were administered to the respondents with regard to the research study. In analyzing the data, respondents were classified and tabulated for easy interpretation. Also simple percentage and descriptive statistical test were applied.

Table 1: Perception of Respondents According to Level of Awareness on Climatic Change

Variables	Yes	Percentage	No	Percentage
	Frequency	%	Frequency	%
High Temperature	160	88.9	20	11.1
Unfamiliar disease systems	154	85.6	26	14.4
Varying rainfall pattern	172	95.6	8	4.4
High rainfall intensity	125	69.4	55	30.6
Drier air	106	58.9	74	41.1
Prolonged dry season	94	52.2	86	47.8

Table 1 show that change in climate is obvious and needs no second thought. Poultry Farmers were well aware of higher temperature (88.9%), higher rainfall intensity (69.4%), unfamiliar poultry disease symptoms (85.6%), and unpredictable rainfall (95.6%). Result of analysis is in concordance with Elijah and Adedapo (2006) and implies that variations in climate are simple and evident; they revolve around heat and rainfall intensities and deviations.

Table 2: Poultry Farmers Sources of Information on Climate Change

Variables	Yes	Percentage	No	Percentage
	Frequency	%	Frequency	%
Radio	159	88.3	21	11.7
Television	72	40.0	108	60.0
Extension Agents	20	11.1	160	88.9
Friends & Family	160	88.9	20	11.1
Print	67	37.2	113	62.8
Internet	10	5.6	170	94.4
Other Poultry Farmers	154	85.6	26	14.4

As shown in table 2, poultry farmers are not well informed about how well to mitigate the effects of climate change. Majority of them get their information from radio, family and friends. This supports the findings of Hassan, (2008) that radio is a potent source of information to farmers and their families. However, radio air agricultural programs that are more crops inclined, than livestock specific. Also, family and friends are not to be trusted with professional information, even information from other poultry farmers could be more of trial and error sourced.

Table 3: Poultry Farmers' Perception of the Effects of Climate Change on Poultry Production

Variables	SA	A	U	D	SD
Increased feed intake	29.4	50.0	5.0	5.6	10.0
High feeding cost	72.2	15.6	2.8	6.7	2.8
Feed wastage	14.4	25.0	5.6	27.8	27.2
High maintenance cost	22.2	34.4	11.7	27.2	4.4
Higher disease outbreak	25.6	44.4	7.8	13.9	8.3
Smaller poultry product	22.2	51.1	6.7	3.3	16.7
Other Poultry Farmers	19.4	22.2	19.4	26.1	12.8

From all indications, table 3 implies that climate change increases the production cost of poultry keepers. The value of poultry products were reduced as a result of incessant ill health and profit is consequently reduced. This is in support of Spore, (2008) which asserts that climate change will cause increase in diseases and disease pests. Research survey reports the production of thin egg shells, small egg sizes and bird life weight, agreeing with (Demeke, 2004) that, this threatens protein production and utilization as well as the achievement of food security.

Table 4: Poultry Farmers' Perceived Effects of Climate Change on Poultry Disease Distribution

Variables	Yes	Percentage	No	Percentage
	Frequency	%	Frequency	%
Does climate change have effect on the distribution of poultry diseases?	75	90.4	8	9.6
Are there more poultry diseases now than in the past due climate change?	65	78.3	18	21.7
Moist climatic conditions encourage the distribution and development of diseases?	79	95.2	4	48.20
Has climate change led to the development of new poultry diseases?	57	96.7	26	31.3

From the results in table 4, majority (90%) of the respondents reported that climate change has effect on distribution of poultry diseases, close to three quarter (78%) of the respondents claimed that there are more poultry diseases than in the past as a result of effect of climate change. It further revealed that majority (95%) of the respondents agreed that moist climatic conditions encouraged the distribution and development of diseases and (68%) of the respondents also confirmed that climate change has led to the development of new poultry diseases in the study area. High rainfall and relative humidity provides a conducive environment for breeding of parasites that causes outbreak of diseases which invariably reduces egg and meat production (Elijah and Adedapo, 2006).

Variables	Yes	Percentage	No	Percentage
	Frequency	%	Frequency	%
Change in feed formulation	135	75.0	45	25.0
Well ventilated housing	156	86.7	24	13.3
Tree planting around pens	105	58.3	75	41.7
Chemotherapy	32	17.7	148	82.2
More space per bird	150	83.3	30	16.7
More water served	170	94.4	10	5.6
Better hygiene	162	90.0	18	10.0
Less heat supply	102	65.0	63	35.0

Table 5: Measures for Controlling Effects of Climate Change on Poultry Production

Table 5 shows that poultry farmers change feed formulation, use well ventilated housing system, increase space per bird, provide water and ensure better hygiene. These are common measures in climate change mitigation among poultry farmers as also concluded by Olanrewaju et al. (2010). Respondents were of the opinion that the use of concrete made roofing slabs will prevent heat, though costly, they expected it to last longer. Giving more spacing per average bird will prevent generation of heat from birds and well ventilated housing will stabilize the relative humidity which will reduce the outbreak of pests and diseases.

Table 6: Relationship between Socio-Economic Characteristics of Respondents and Perceived Effect of Climate

Change on Poultry Production Variables	N	X	SD	R	Significant	Decision
Socio-Economic Characteristics	83	1.2	0.53	0.454**	0.001	H ₀
Perceived Effect	83	1.24	0.49	0.454**	0.001	Rejected

The result of chi-square analysis in table 4.3.1 shows that there is a significant relationship between respondents' socio-economic characteristics and perception of poultry farmers on effects of climate change on poultry production since $p > 0.05$ ($r = 0.454$, $p=0.001$). The r^2 value of 0.454 shows a good relationship between socio-economic characteristics and perception of poultry farmers on effects of climate change on poultry production. This implies that socio-economic characteristics influence the perception of the poultry farmers on the effect of climate change on poultry production in the study area. This may be explained on the basis of the fact that majority of the men and women, the young and old, the literate and illiterate as well as people that practice different systems of poultry farming are aware of climate change in the study area.

IV CONCLUSION

Egg and meat production pattern are affected by climate change because periods of high temperature and sunshine intensity makes the birds to drink more water and reduce feed intake which many at times results to high mortality of the chickens, low egg production and low feed conversion ability of the birds to meat, hence, low meat production (ICAR, 2010). Climatic changes influence the emergence of new poultry diseases and increased its distribution. There is dire need to intensify awareness campaign to poultry farmers on how to reduce the effects of climate change on poultry production. Extension agents and other development agencies need to educate the poultry farmers more about the effects posed by climate change on poultry production.

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