

Influence of Climate Variation on Household Poultry Production in South-South, Nigeria

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Abstract

The study examined the influence of temporal climate variations on household poultry production in the South-South, Nigeria. The study used frequency counts, percentages and likert scale technique to examine the data collected. The sample size was 111 poultry households. Primary data were collected using questionnaire and interview schedule, secondary information were sought from journals, poultry bulletins, textbooks, magazines. Findings revealed that 100% of the respondents are aware of climate variations on household poultry production as 30 (27.1%) of the respondents noticed climate variation in their farms through its effect on egg and meat production, 21 (18.2%) observed that bad weather especially high relative humidity encourages the development of pests and diseases while 28 (25.2%) accepted that high temperatures cause birds to feed less and drink more water. Consequently, 32(28.8%) of the respondents observed that climate variation caused reduction in household farm income. As a measure to mitigate the effects of climate variation, 20 (18.8%) of the farmers adopted the strategy of proper roofing and ventilation, 19(17.2%) adopted the strategy of rearing birds at different season, 8(7.2%) adopted the method of better feed and feed management, 13(11.7%) adopted proper hygiene and medication, 6(5.4%) adopted accurate stocking density and 4(3.6%) adopted to stocking birds once a year.

Keywords: Influence, climate Variation, Poultry Production, South-South, Nigeria.

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INTRODUCTION

Climate variation is a temporal change in the mean of climatic parameters (temperature, rainfall, relative humidity, soil moisture, sunshine, wind and other parameters) due to change in the composition of atmospheric gases. Climate variation is a global issue because it does not only affect the developing countries but it is also affecting the developed world with flooding, earthquakes, cyclones, tornadoes and wild fires (Spore, 2015).

Elijah and Adedapo (2006) reported that the level of performance of poultry does not only depend on inherited capacity but also largely upon the environment. They pointed out that climate variation has effect on poultry feed intake and encourages outbreak of poultry diseases which may invariably reduce meat and egg production. FAO (2010) observed that the variability in climate elements pose a risk to farmers because of the uncertainty surrounding the farm system planning and management of household animals. It therefore calls for measures to be investigated so as to be incorporated into the farm plan in order to reduce the risk and uncertainty surrounding such farm plans.

The term 'Poultry' is applied to birds of several species like fowls or chickens, turkey, quails, swan, pigeons, guinea fowl pea fowl and pheasants that have been domesticated to produce and grow in captivity and render products of economic value such as meat, eggs, manure and other by-products (Jagdish, 2013). Household Poultry farming refers to a small poultry unit reared at the family level which contributes directly to the socioeconomic well being of the family. Poultry are farmed in great numbers with chickens being the most numerous especially in the South-South region of Nigeria. Meremikwu (2015) observed that the indigenous household chickens are very important in a subsistence economy where they provide major income to even the poorest household the world over. Alade and Ademola (2013) noted that Poultry production is a major source of protein which has empowered poultry farmers in the developing economies so as to secure means of survival and livelihood.

Spore (2014) forecasted that between 2005 and 2030 the demand for meat and milk consumption will grow by 2.8 and 2.3 % per year. Global demand for animal protein will double by 2040 under the combined effect of population growth, urbanization and changing consumption patterns with developing countries accounting for more than 50% of the growth in 30 years. NLDC (2000) and Udoro, Akpan and Okon (2017) opined that the average Nigerian diet contains only about 7gm/caput/day of animal protein as against the recommended intake of 28gm/caput/day for normal health. In spite of the large number of poultry farmers in Nigeria, there is still insufficient supply of protein products such as eggs and poultry meat to meet the protein consumption need of the nation. It is suspected that variations in climatic conditions may partly be responsible.

The perceived threats and weaknesses of poultry production with regards to climate variability have not received much attention among the poultry farmers in the South-South region of Nigeria. Most researches on climate change and its effects on agricultural livestock or poultry production are related to temperate regions with only few research works in the tropical regions. Molua and Lambi (2007) agreed that research on the effect of climate variability on poultry production were focused on developed nations like the United states, Canada, Europe and the Australia with very few articles on the developing countries. Oniah et al (2016) observed that climate variations greatly influenced yam production in Cross River State, Nigeria. The question is, do changes in climate patterns influence household poultry production as well in the South-South states of Nigeria? The lack of climatic variation information and its influence on poultry production to household poultry farmers, policy makers and other agricultural stakeholders in this region necessitated the background of this research. This work examined the influence of climate variation on household poultry production in the South-South region of Nigeria.

METHODOLOGY

Study Area

The study area in is the South-South region of Nigeria. It is located in the Niger Delta and comprises of six States of Cross River, Akwa Ibom, Rivers, Delta, Edo and Beyelsa. The region lies between Latitudes 40 2'' and 60 2'' North of the Equator and Longitudes 50 1'' and 70 2'' East of the Greenwich meridian. It is situated in the mangrove swamp forest and the tropical rainforest which promote the growth of both cash and arable crops like oil-palm, Rubber, cocoa, oranges, guava, plantain, banana, rice, yam, cassava, potato, coco-yam, maize and vegetables. Rearing of animals like poultry, sheep and goat are commonly practiced by household farmers.

Sampling Procedures

The study adopted the random sampling technique to select household poultry farmers from the three (3) states of the region, (Cross River, Akwa Ibom and Rivers states). Four (4) major towns from Cross River, (Calabar, Akamkpa, Ikom and Ogoja) were selected. Two major towns from Akwa Ibom State (Uyo and Ikot Ikpene), while three major towns were selected from Rivers state (Portharcout, Ikwerre and Okrika). Random samplings of 111 household poultry farmers were selected to form the sample size of respondents for the study.

Table 1: Sampling procedures indicating States, Towns and the number of respondents

States	Towns	No of household poultry farmers
Cross River	Calabar	20
	Akamkpa	7
	Ikom	15
	Ogoja	10
Akwa Ibom	Uyo	20
	Ikot Ekpene	9
Rivers	Portharcout	18
	Ikwerre	5
	Okrika	7
Total		111

Source: field survey, 2017.

Sources of Data Collection

Data for this study was obtained from both primary and secondary data. Primary data were collected with the help of questionnaire on the socio-economic characteristics of poultry farmers such as sex, age, house hold size, and educational level, types of poultry birds reared, number of years in poultry farming and number of birds kept. Other information includes farmer's perception on the effect of climate variables on household poultry production and measures employed to reduce the effect of climatic variation in poultry production. Secondary information were collected from Journals, poultry bulletins, textbooks, magazines and News lines

Analytical Techniques

The socio-economic characteristics of poultry farmers such as sex, age, house hold size, educational level, types of poultry birds reared, number of years in poultry farming, number of birds kept and sources of finance were determined using frequency count and percentages. The Linkert scale technique was used to determine the perceptions of the poultry farmers on the effect of climatic variables on poultry production in the study area. This was achieved using the 4 point linkert scale technique as;

Very severe	(Vs) = 4
Severe	(S) = 3
Moderately severe	(Ms) = 2
Not severe	(Ns) = 1

This was done by adding $4+3+2+1= 10/4 = 2.50$. Accordingly any variable with 2.50 or greater than 2.50 was a constraint while any with less than 2.50 was considered as not a constraint.

RESULTS AND DISCUSSION**Table 2:** Socio-economic characteristics of household poultry farmers in the study area.

S/N	Variables	Parameter	No of respondent	Percentages
1	Sex	Male	76	68.5
		Female	35	31.5
		Total	111	100%
2.	Age(years)	1 -20	2	1.8
		21-30	50	45.1
		31-40	30	27.0
		41-50	24	21.6
		Above50	5	4.5
		Total	111	100%
3.	House-hold size	1-5	15	13.5
		4-10	40	36.0
		>10	56	50.5
		Total	111	100%
4.	Educational level	No formal education	5	4.5
		Primary school	25	22.5
		Secondary school	29	26.1
		Total	111	100
5.	Type of poultry birds reared	Broiler only	50	45.0
		Layers only	4	3.6
		Broiler and layer	57	51.4
		Total	111	100%
6.	Years in keeping poultry birds	1-10	53	47.7
		11-20	36	32.4
		21-30	15	13.5
		>30	7	6.4
		Total	111	100%
7.	Sources of finance	Personal savings	74	66.67
		From relatives	10	9.01
		Cooperatives	15	13.51
		Bank loan	12	10.81
		Total	111	100%
8.	Number of birds kept	1-50	26	23.4
		51-100	39	35.1
		101-150	22	19.8
		151-200	13	11.7
		>200	11	10
		Total	111	100%

Source : Field survey, 2017

Table 2 reveals that 76 (68.5%) of the household poultry farmers in the study area were males while 35 (31.5%) were females. This implies that both males and females in the study area are engaged in keeping household birds, though the males are higher. The Age distribution shows that 50 (45.1%) falls within the age bracket of 21-30, 30(27%) are within 31-40years, 24(21.6%) falls within the age of 41-50 years, 5(4.5%) are above 50 years while 2(1.8%) are between one to twenty years of age. This finding reveals that about 94% of the household poultry farmers are within the ages of 21-50. This implies that more of the respondents are in their active years in poultry keeping hence they may have the ability to supply the required labour needed in the household poultry production. The household size distribution shows that 56(50.5%) of the respondents have a house hold of more than seven 10, 40 (36%) have a house hold size of between 4-6, while 15(13.5) have household size of between 1-5 persons. The variable of educational level shows that 52(46.9%) had tertiary education, 29 (26.1%) had secondary education, 25(22.5%) had primary education while 5(4.5%) had no-formal education. This implies that majority of the respondents have some forms of formal education suggesting that they could cautiously observed challenges of climate variations in their poultry keeping. The variable on the type of birds reared shows that (51.4%) of the respondents reared both broilers and layers while (45.0%) reared only broilers or cockerel, and (3.6%) reared layers only. This implies that both layers and broilers are largely reared by the poultry farmers in the area.

On years of keeping birds, those between 1-10 years had 53(47.7%) respondents, 11-20 had 36(32.4%) respondents, 21-30 had 15(13.5) respondents while greater than thirty (>30) had 7(6.3%) respondents. This reveals that majority of the poultry farmers have good years of experience in keeping poultry in the area and so may have good observation of climate variation influence on their household poultry production. On sources of finance reveals that 74(66.7%) of the respondents funded their poultry farms through personal savings, 10(9%) funded their farms through found raised from relatives, 15(13.5%) through cooperatives associations and 12(10.8) through bank loans. This shows that most of the poultry farmers reared their birds from personal savings. The variable on the number of birds kept shows that 26(23.4%) kept between 1- 50 birds, 39(35.1%) kept between 51- 100 birds, 22(19.8%) kept between 101- 150 birds, 13(11.7%) kept between 151- 200 birds while 11(10%) kept more than 200 birds. This finding reveals that about 90% of the livestock farmers in the area are small scale poultry household.

Table 3: Observed climatic effects on household poultry production in the study area

S/N Variables	Yes	No	Total
1. Do you observe any climate variation in your poultry farm?	111	0	111
2. Does climate variation have any effect on your poultry farm?	111	0	111

Source: field survey, 2017.

Result from table 3 reveals that all the respondents in the study area observed that there is variation in climate factors which invariably affect their poultry farms. This finding is in line with the position of Spore (2015) who opined that variation of climate elements and their effects on poultry farms is a global issue affecting both the developing and the developed world.

Table 4: Effect of climate variation on poultry production

S/N	Observed effect	Frequency	%
i.	Reduction in egg & meat production	30	27.1
ii.	Reduction in feed intake and drinking water	28	25.2
iii.	Outbreak of Pests and diseases	21	18.9
iv.	Reduction in farm Income	32	28.8
	Total	111	100%

Source: field survey, 2017.

The result in table 4 reveals that all the respondents in the study area noticed variation in climatic elements through various effects as 30 (27.1%) of the respondents noticed climate variation in their farms through its effect on reduction on eggs and meat production, 21 (18.2%) observed that bad weather and climate variation encourage the development of pests and diseases while 28 (25.2%) accepted that variation in climatic elements made birds feed less and drink more water. More so, 32(28.8%) of the respondents observed that climatic variation on household poultry production caused reduction in household farm income. This finding is in consonance with the position of FAO (2010) who observed that variations in climate elements in the poultry industry posed a threat and risk as household poultry farmers will face the challenge on how to manage and plan their farm for greater productivity.

Table 5: Perceived climatic constraints on household Poultry Production

Climate variables	Very severe	Severe	Moderately severe	Not severe	Total	Average	Remark
Temperature	82	10	13	6	390	3.5	Critical
Rainfall	7	77	19	8	305	2.7	Critical
Wind speed	13	4	40	54	198	1.8	Not critical
Sunshine	48	46	9	8	356	3.2	Critical
Evaporation	12	7	20	72	181	1.6	Not critical
Humidity	39	47	13	15	327	2.9	Critical

Source: field survey, 2017.

Results from table 5 reveals that temperature, sunshine, relative humidity and rainfall where perceived by the respondents as having critical constraints on household poultry production in the area. This study agrees with the study of Elija and Adedapo (2006) who reported that the level of household poultry performance does not only depends on the inherited capacity of the bird but also largely on the environmental factors.

Table 6: Adaptive and mitigating strategies on climate variation on household poultry production.

Mitigation Strategies	Frequency	%	Ranking
1 Proper roofing and ventilation	35	31.5	1
2 Stocking birds at different season	20	18.0	2
3 Better feed and feed management	19	17.2	3
4 Proper hygiene /medication	13	11.7	4
5 Rearing breed of birds tolerant to weather and climate variation	8	7.2	5
6 Accurate stocking density	6	5.4	6
7 Stocking birds once a year	4	3.6	7
8 Increase the number of birds reared	3	2.7	8
9 Reduce the number of birds reared	2	1.8	9
10 Stop rearing birds bird's	1	0.9	10
Total	111	100%	

Source: field survey, 2017.

Result from table 6 indicates that 35(31.5%) adopted the strategy of proper roofing and ventilation to mitigate the effects of climate variation and it was ranked 1st, 20 (18.8%) adopted the strategy of rearing birds at different season as it is ranked 2nd, 19(17.2%) adopted the method of better feed and feed management as ranked 3rd, 13(11.7%) adopted proper hygiene and medication as ranked 4th, 8(7.2%) preferred rearing resistant birds to weather climate variation as ranked 5th, 6(5.4%) adopted accurate stocking density as ranked 6th, 4(3.6%) adopted to stocking birds once a year as ranked 7th, 3(2.7%) adopted the strategy of increasing the number of birds reared in case of mortality as ranked 8th, while 2(1.8%) and 1((0.9%)) adopted the strategies of reducing the number of birds reared and to stop rearing birds as ranked 9th and 10th respectively.

CONCLUSION

The study concludes that the household poultry farmers are aware of climate variations in household poultry production as the effects were observed on egg and meat production, water and feed intake, pests and diseases outbreak as well as reduction in farmers' income. The farmers adopted the strategies of proper roofing and ventilation, keeping birds at different season, better feed and feed management, proper hygiene and meditation, rearing of resistant birds to weather and climate challenges, accurate stocking density to mitigate the effect of climate variations in household poultry production in the area.

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