

PERCEIVED CLIMATE CHANGE EFFECTS OF POULTRY FARMERS IN SABON GARI LOCAL GOVERNMENT AREA, KADUNA STATE

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Abstract

This study examined the perceived effects of climate change among poultry farmers in SabonGari Local Government Area (LGA), Kaduna State, Nigeria. SabonGari lies within the Guinea Savannah ecological zone, characterized by dry and semi-arid conditions with marked wet and dry seasons. Data were obtained from 125 poultry farmers selected through purposive and random sampling across three wards (Samaru, Dogarawa, and Basawa). A structured questionnaire was administered, and descriptive statistics were employed for data analysis. Findings revealed that 46.4% of respondents perceived high to very high increases in temperature, while 38.4% reported high rainfall variability. About 33.6% perceived water scarcity as high or very high, and 46.4% recognized droughts as significant threats. Disease outbreaks were reported as a serious climate-induced risk by 40.8% of respondents, while 46.4% noted that climate change adversely affected feed quality. These perceptions align with recent scientific evidence of temperature variability, rainfall fluctuation, water scarcity, and increased disease risks in poultry systems within the area. The study recommends climate-smart interventions such as improved housing systems, efficient water management, adoption of resilient feed sources, and enhanced biosecurity practices to mitigate climate change impacts on poultry production.

Keywords: Poultry farmers, climate change, SabonGari, Guinea Savannah, perception

Description of Problem

Poultry production is one of the fastest-growing livestock enterprises in Nigeria, providing meat, eggs, and income to millions of households (1). However, poultry farming is increasingly threatened by climate change, which affects feed availability, water resources, disease dynamics, and production efficiency (2). The Intergovernmental Panel on Climate Change (3) noted that Africa's livestock systems are particularly vulnerable due to their heavy reliance on climate-sensitive natural resources.

SabonGari LGA in Kaduna State is a major poultry-producing hub, particularly for broilers, due to its proximity to Zaria's research and market institutions. Yet, the area is highly exposed to climatic extremes such as erratic rainfall, rising temperatures, and recurrent droughts (4). These climate-induced stresses have been linked to reduced productivity, increased mortality, and economic losses among poultry farmers (5). Although several studies have documented the biological effects of

climate change on poultry, less is known about farmers' perceptions and adaptive responses in SabonGari. Understanding these perceptions is critical for designing effective adaptation strategies that are locally relevant (6). This study therefore assessed the perceived effects of climate change among poultry farmers in SabonGari LGA, Kaduna State.

Methodology

Study Area

The study was conducted in SabonGari LGA of Kaduna State, Nigeria, located between latitudes 11°03'N and 11°15'N and longitudes 7°30'E and 7°45'E. The area lies within the Guinea Savannah ecological zone, characterized by distinct wet and dry seasons, semi-arid conditions, and predominantly grassland vegetation interspersed with shrubs and scattered trees (4).

Sampling Procedure and Sample Size

SabonGari was purposively selected due to its concentration of commercial and smallholder poultry farms. From the 12 wards in the LGA, three (Samaru, Dogarawa, and Basawa) were randomly selected. Using (7) formula, a sample size of 125 poultry farmers were determined and proportionately drawn from the selected wards.

Data Collection and analysis

Primary data were collected through a structured questionnaire administered by trained enumerators under researcher supervision. The instrument captured perceptions of climate change, and observed impacts on poultry production. Data were analyzed using descriptive statistics.

Results and Discussion

Table 1 shows the Perceived awareness of Poultry farmers to climate change effects. 46.4% of farmers perceived high or very high temperature increases, consistent with (8), who reported up to 2.3°C temperature differences across SabonGari due to microclimatic variations. Heat stress has been shown to reduce broiler weight gain by 22% (2).

Rainfall Variability: 38.4% perceived high rainfall variability, aligning with (9) watershed study that revealed 30% higher rainfall variability in degraded areas. This impacts maize yields and consequently feed supply (IAR, 2023).

Water Scarcity: 33.6% reported high or very high scarcity, consistent with (11) findings of a 1.5 m/year groundwater decline. Adoption of rainwater harvesting and nipple drinkers reduced water use by 30% (NAPRI, 2023).

Droughts: Nearly half (46.4%) perceived drought as a significant effect. (12) reported feed price spikes of 55% during the 2021 drought, affecting smallholders most severely.

Disease Outbreaks: About 40.8% perceived disease risks as high or very high. This match (13) report of year-round Newcastle disease

vectors in SabonGari, with biosecurity reducing risks by 62% (14).

Poor Feed Quality: 46.4% linked climate variability with poor feed quality. (10) found lysine deficiency in drought-stressed maize, while PAN (2024) reported that 38% of farms now supplement with black soldier fly larvae.

Table 1: Perceived awareness of Poultry farmers to climate change effects

Perceived awareness	Freq. (n=125)	%
Increased temperature		
Very high	37	29.60
High	21	16.80
Moderate	17	13.60
Low	25	20.00
No change	25	20.00
Rainfall Variability		
Very high	24	19.20
High	24	19.20
Moderate	17	13.60
Low	30	24.00
No change	30	24.00
Water scarcity		
Very high	25	20.00
High	17	13.60
Moderate	31	24.80
Low	28	22.40
No change	24	19.20
Droughts		
Very high	32	25.60
High	26	20.80
Moderate	20	16.00
Low	26	20.80
No change	21	16.80
Disease Outbreak		
Very high	32	25.60
High	19	15.20
Moderate	17	13.60
Low	23	18.40
No change	34	27.20
Poor feed quality		
Very high	31	24.80
High	27	21.60
Moderate	35	28.00
Low	16	12.80
No change	16	12.80

Conclusion and Application

The study revealed that poultry farmers in SabonGari LGA are increasingly aware of the impacts of climate change on their production systems. Farmers identified rising temperatures, rainfall variability, water scarcity, droughts, disease outbreaks, and poor feed quality as major challenges. These perceptions were validated by recent scientific studies, suggesting strong convergence between experiential knowledge and empirical evidence. Hence,

- i. Poultry farmers are encouraged to adopt improved poultry housing designs with adequate ventilation and cooling systems.
- ii. Adopt rainwater harvesting, efficient drinker systems, and water recycling technologies.
- iii. Use alternative feed sources such as black soldier fly larvae, pigeon pea, and drought-tolerant crops.
- iv. Strengthen biosecurity measures to mitigate climate-related disease outbreaks.
- v. Government to Provide subsidies and credit facilities for smallholder farmers to adopt adaptive technologies
- vi. Awareness of climate-smart agriculture through farmer field schools and demonstration farms.

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