A-Goal Initiative

ASSESSMENT OF HEAT STRESS EFFECTS ON POULTRY BIRDS IN THE FEDERAL CAPITAL TERRITORY



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Assessment of Heat Stress Effects on Poultry Birds in the FCT, Abuja



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EXECUTIVE SUMMARY

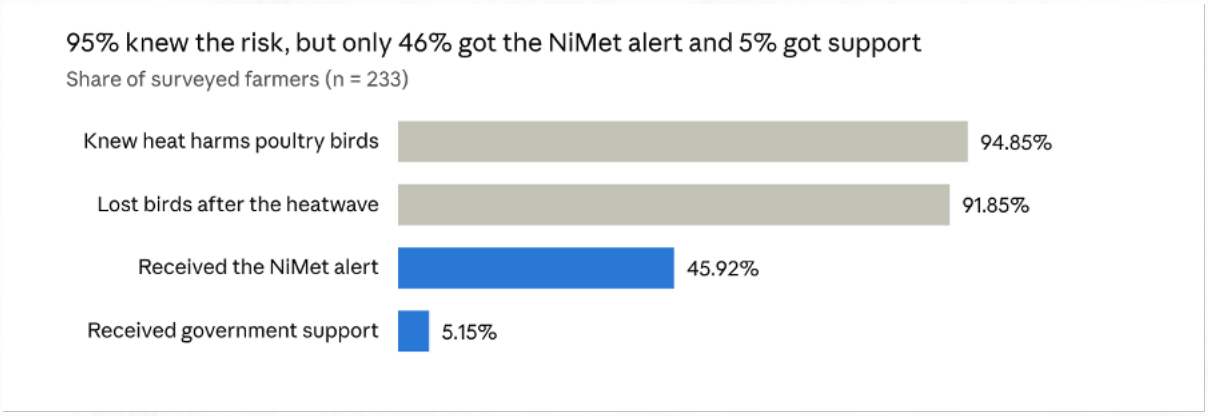
This report presents the findings of a survey of poultry farmers in the Federal Capital Territory (FCT), Abuja, conducted to assess the impact of excessive heat on poultry birds following the heat advisory issued by the Nigerian Meteorological Agency (NiMet) in March 2026. The study was carried out to establish foundational knowledge of the impact of heatwaves on poultry birds in the FCT, as a measure of understanding their impact on human life, and to stimulate wider conversation on mitigation efforts.

A total of 233 poultry farms from five of the six Area Councils responded. The analysis examined awareness of heat stress, the reach of the NiMet alert, bird mortality, farm ventilation and the support farmers need.

Key findings

- **Awareness was high:** 94.85% of respondents knew that excessive heat harms poultry birds.
- **The alert did not reach most farmers:** 54.08% had neither received nor heard of the NiMet Heat Stress Alert.
- **Mortality was widespread:** 91.85% of farmers recorded bird deaths during the heatwave period. Broilers were the most affected, followed by pullets/layers.
- **Losses increased:** Reported losses rose from 5,438 birds within one week of the advisory to 6,337 birds in the second week.
- **The ventilation paradox:** 91.89% of farms reporting adequate ventilation still recorded mortality, compared with 90.91% of farms reporting inadequate ventilation. Field evidence points to a knowledge gap, including the covering of pens with tarpaulins and the treatment of heat stress as a disease with antibiotics.
- **Government support is scarce:** Only 5.15% of farmers received any government support in the last year.
- **Farmers know what they need:** The most requested assistance was financial assistance and subsidies (about 32%), followed by cooling and ventilation infrastructure (24%), technical guidance and extension services (23%) and veterinary support (13%).
- **Climate and land-use context:** Rising heat levels in the FCT may be linked to urban development and deforestation, as mature trees are felled for commercial development without replacement, compounded by the wider effects of climate change.

- **Are young people missing in farming?** Young farmers aged 18 to 24 were not found during the survey.



The support received by about 5% of the farmers was in the form of technical guidance from experts in the relevant departments of the FCT Administration and the Area Councils.

Taken together, the findings show that heat stress is a serious threat to poultry production in the FCT, particularly for smallholder farmers with limited infrastructure and institutional support. The impact also reaches beyond the farm: fewer birds and lower egg production mean scarcer, costlier eggs, which narrows access to an affordable source of nutrition for vulnerable children. These findings should also be read against the wider context of climate change and the loss of tree cover through deforestation in the FCT, both of which may be contributing to rising heat levels (see Section 9).

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INTRODUCTION

Heat stress is one of the main environmental challenges facing Nigerian poultry production. Rising temperatures reduce feed intake, egg production and survival rates, particularly at the peak of the dry season.

In March 2026, the Nigerian Meteorological Agency (NiMet) issued a public heat stress advisory warning households and businesses of exceptionally high temperatures in several parts of Nigeria, including the FCT.

Poultry birds are especially vulnerable to extreme heat because they cannot effectively regulate their body temperature. Heat can cause dehydration, reduced productivity, greater susceptibility to disease and death.

These conditions are occurring against the background of climate change and the loss of tree cover through deforestation in the FCT, which may be contributing to rising heat levels (see Section 9).
This survey was conducted to assess:

- Farmers' awareness of heat stress.
- Exposure to the NiMet advisory.
- The extent of poultry mortality.
- The preparedness of farms to mitigate the impact of heat.
- Support needs and intervention gaps.

Objectives of the Survey

The overall objective of this study is to establish foundational knowledge of the impact of heatwaves on poultry birds in the FCT, as a measure of understanding their impact on human life, and to stimulate wider conversation on mitigation efforts.

The specific objectives of the survey were to:

- Assess awareness of heat stress among poultry farmers.
- Determine the reach of the NiMet Heat Stress Alert.
- Evaluate poultry mortality associated with excessive heat.
- Identify the most affected bird categories.

- Examine the relationship between farm ventilation and bird mortality.
- Assess the institutional support available to poultry farmers.
- Identify the priority interventions farmers require.

METHODOLOGY

This study was designed as a rapid-response, mixed-methods assessment to document the impact of extreme heat on poultry production in the FCT, Abuja, following the March 2026 NiMet heat stress alert. It documents the scale of bird mortality and the associated human and economic consequences, including effects on egg prices and children's nutrition. The findings are relevant to policymakers, farmers and the wider public, and support advocacy for climate-resilient poultry systems in the FCT and other relevant States.

3.1 Study area

The survey targeted poultry farms across the six Area Councils of the FCT: Abuja Municipal Area Council (AMAC), Bwari, Gwagwalada, Kuje, Kwali and Abaji. Responses were received from all the Area Councils except Abaji.

3.2 Sample size and data collection

A total of 233 poultry farms responded to a structured questionnaire administered virtually through poultry farmers' WhatsApp groups and by field data collectors.

3.3 Data analysis

Data were analysed using Microsoft Excel and Power BI. The analysis combined descriptive statistics, frequency analysis, cross-tabulation, multi-response analysis and categorisation of open-ended responses.

3.4 Data cleaning and preparation

- **Multiple responses.** Questions on bird types kept, bird types affected, assistance needed and communication channels allowed more than one answer. Responses were split and analysed individually, so percentages for these questions are shares of total responses, not of respondents.
- **Numeric validation.** Responses on bird losses were checked for numeric consistency.
- **Missing values.** Blank or incomplete responses were categorised as "No Response" where applicable.

3.5 Limitations

- The findings are drawn from 233 farm owners who responded to the survey. They describe these respondents and may not be representative of all poultry farms in the FCT.
- Respondents ranged from smallholder farmers with a single pen to medium and large farms

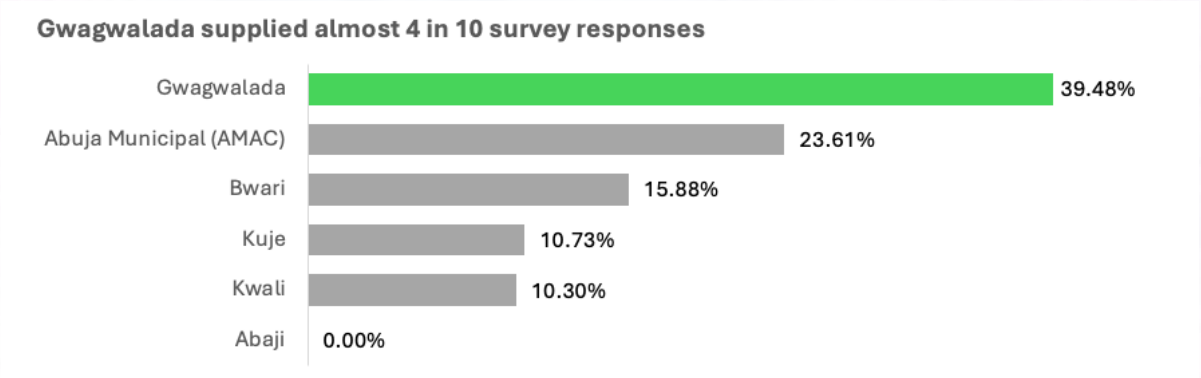
with multiple long pens. The study therefore does not provide insight by farm-size group.

- Abaji Area Council is not represented because of a lack of data on poultry farms in the Council, while Gwagwalada accounts for 39.48% of responses.
- Young farmers aged 18 to 24 were not represented, as it was difficult to find this group among farm owners.
- None of the respondents indicated whether they are persons with disabilities.
- The data do not include flock sizes, so bird losses cannot be expressed as a percentage of flock.
- Ventilation adequacy was reported by farmers rather than independently assessed. The ventilation analysis compares the proportion of farms recording any mortality, not the severity of losses.

DEMOGRAPHIC DATA OF RESPONDENTS

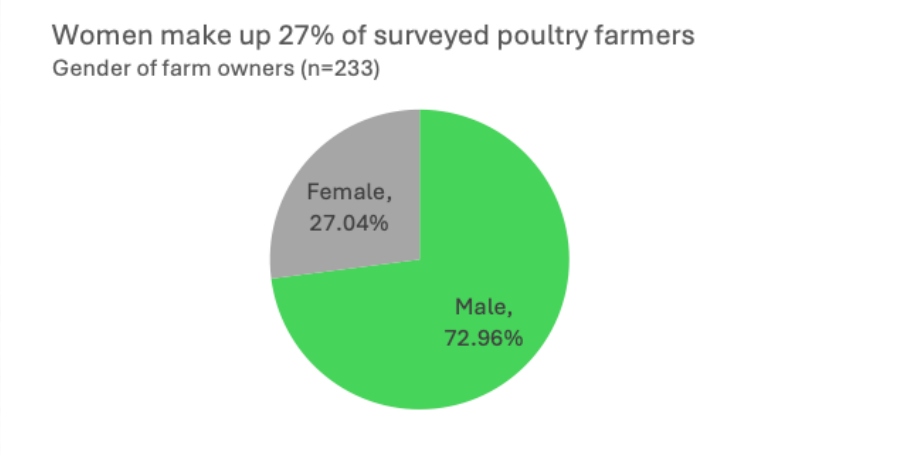
4.1 Respondents by Area Council

Gwagwalada Area Council recorded the largest number of respondents, accounting for almost four in ten.



4.2 Gender of farm owners

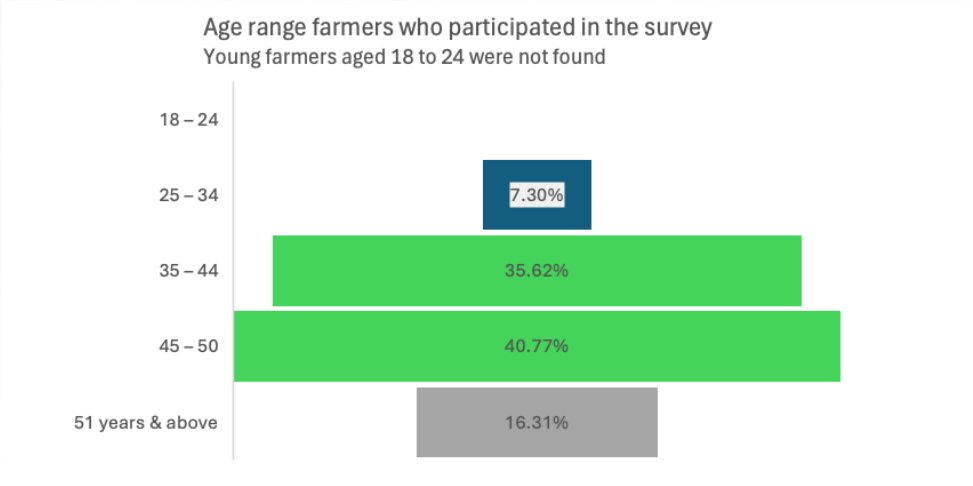
Most respondents are male (73%), while women make up just over a quarter of respondents.





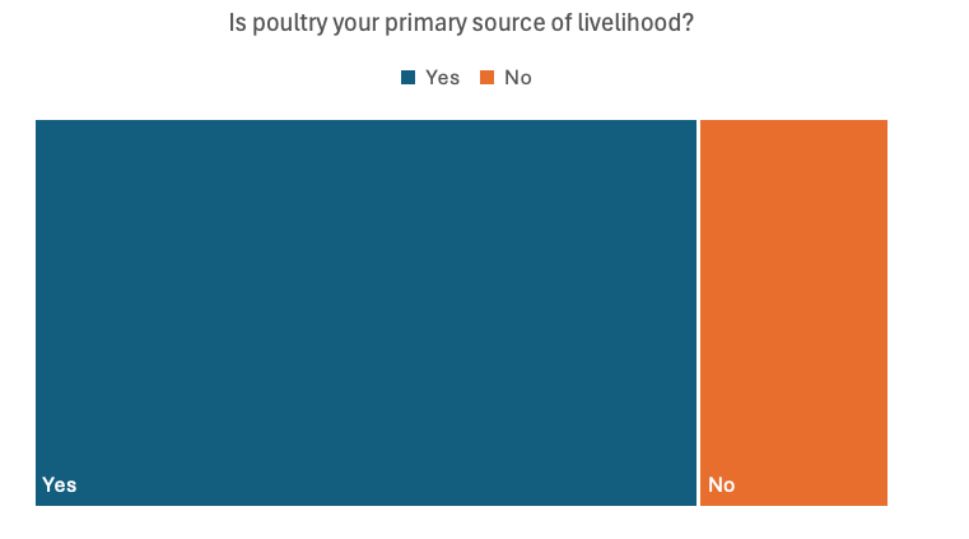
A-Goal's Field Data Collector with a female poultry farmer

4.3 Age of respondents



Poultry farming in the sample is concentrated among farmers aged 35 to 50, who together make up 76.39% of respondents. *Young farmers aged 18 to 24 were not represented. They were not found during the data collection period.*

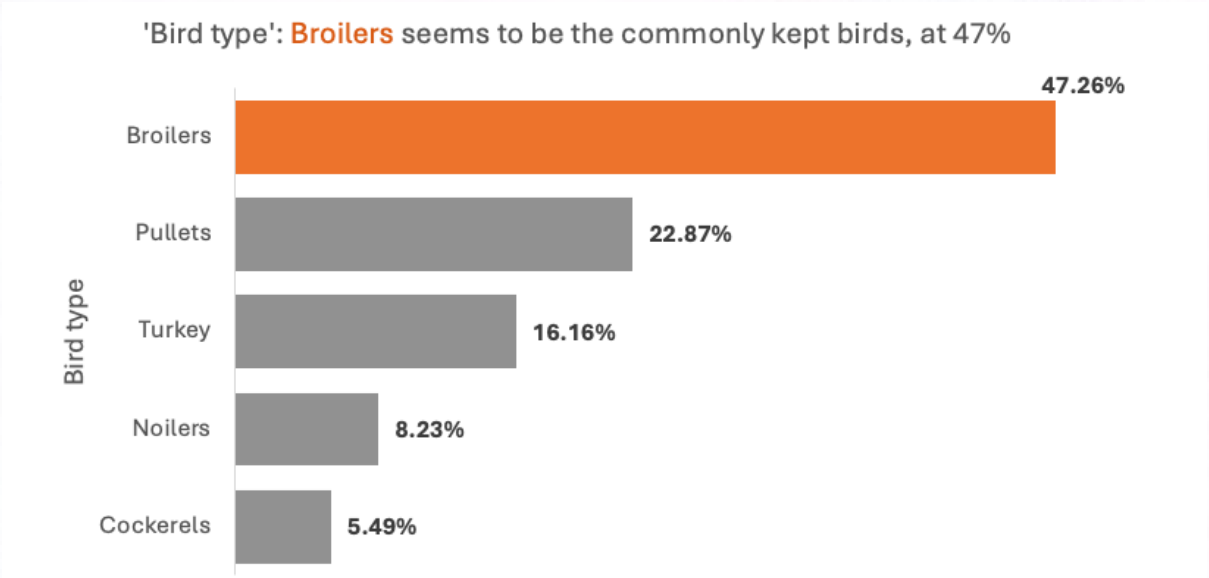
4.4 Poultry farming as primary source of income



Poultry is the main source of livelihood for most respondents, which means heat-related losses threaten household income directly.

4.5 Birds kept by farmers

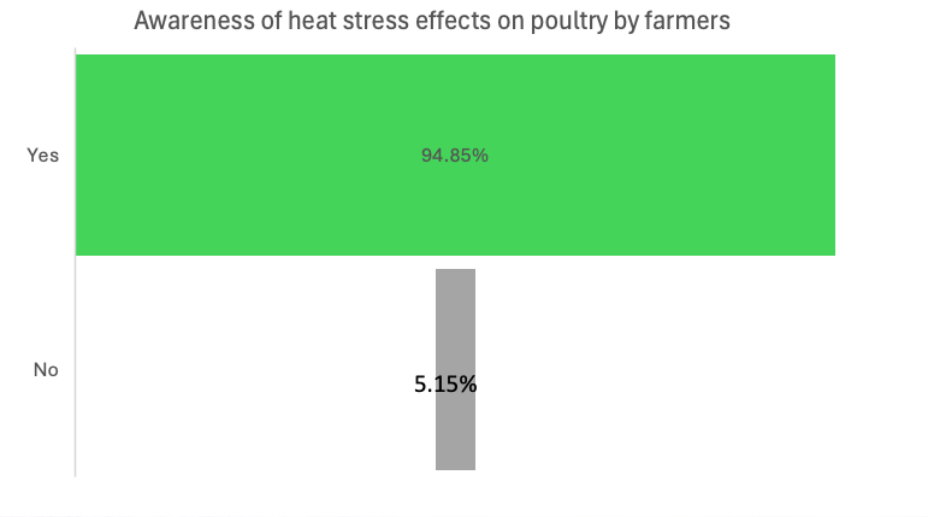
Broilers are the most kept birds across the Area Councils surveyed.



FINDINGS

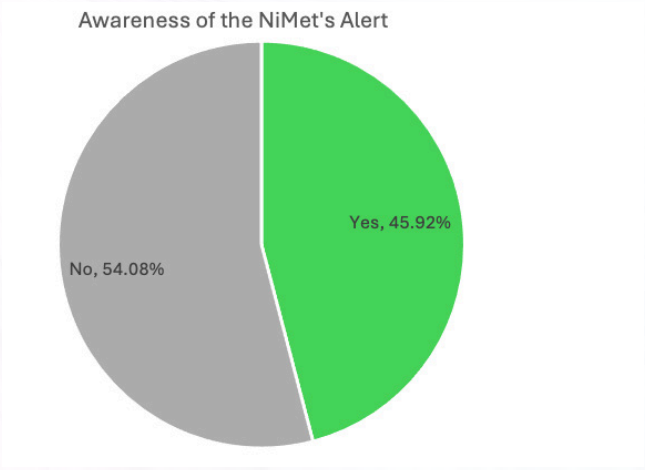
5.1 Awareness of heat stress effects on poultry

Farmers show a very high level of awareness of how heat affects poultry birds.



Key insight: Significant bird mortality was reported despite this high awareness. Awareness alone is not sufficient without practical know-how and mitigation measures.

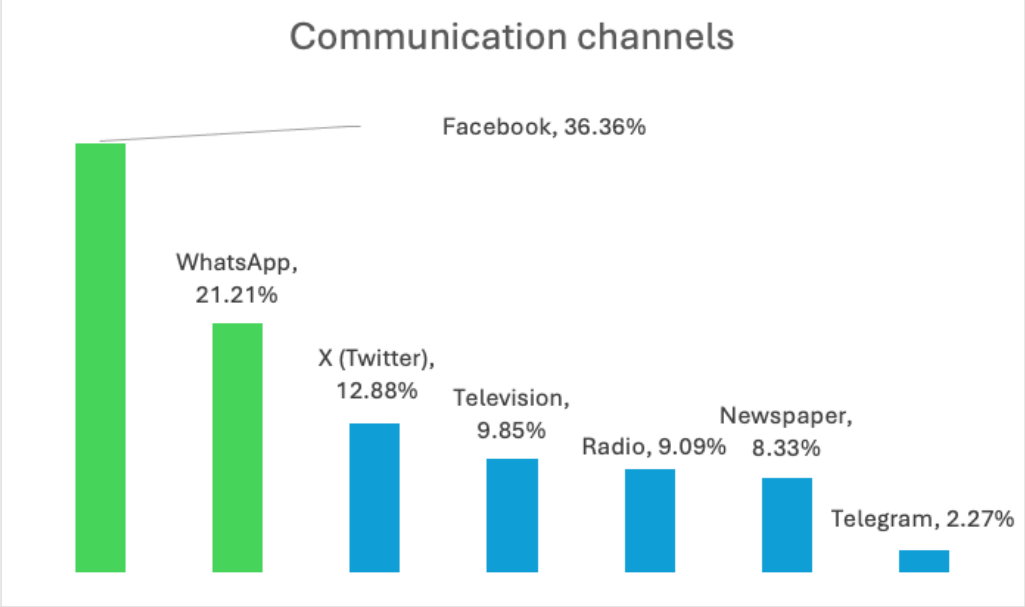
5.2 Awareness of the NiMet Heat Stress Alert



More than half of respondents did not receive the alert issued by NiMet, so the early warning did not reach most of the farmers it was meant to protect.

5.3 Channels through which farmers received the NiMet alert

For the 46% who received the alert, Facebook was the main channel, followed by WhatsApp. Social media platforms together account for about 73% of responses, against about 27% for radio, television and newspapers. Telegram was rarely used.



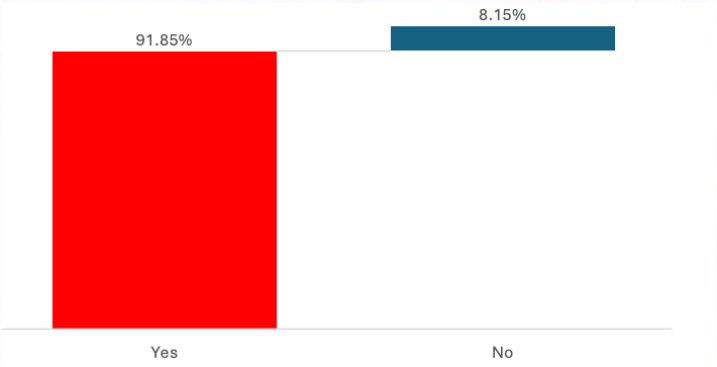
Facebook and WhatsApp were the most effective channels, as nearly 6 in 10 farmers received the NiMet alert through them.

In September 2026, NiMet launched its Weather Tracker to reach more Nigerians with localized weather information, early warning signals, and agricultural insights. The agency had launched a similar initiative in the past.

5.4. Impact of Heat Stress on Poultry

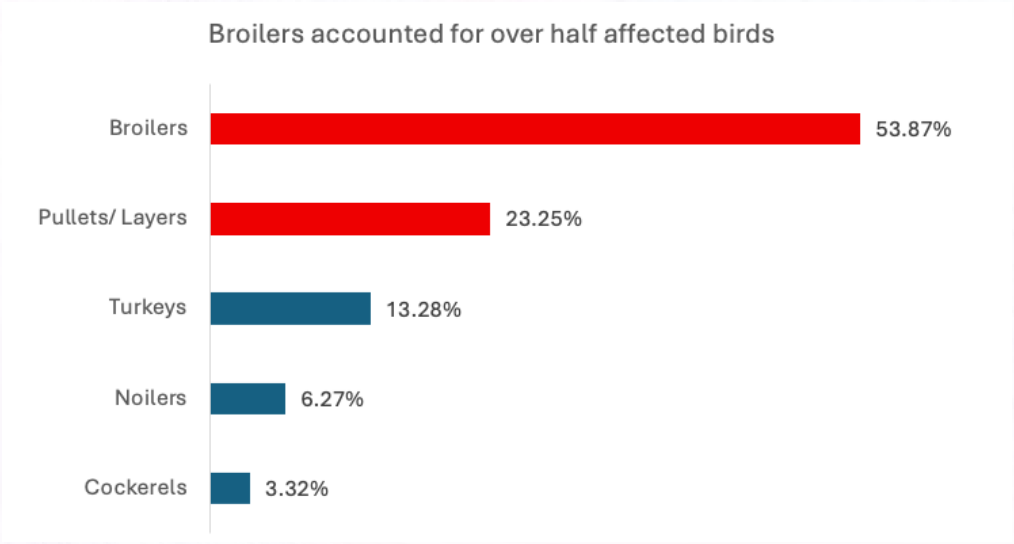
5.4.1 Farms that recorded bird mortality during the heatwave

Did you record any bird mortality?



A very large majority of poultry farmers, about 92%, lost birds following the heatwave.

5.4.2 Types of birds most affected



Interpretation and insights: Broilers and layers were the most vulnerable categories during the heatwave. This corresponds with Section 4.5, where broilers (47%) and layers (about 23%) are the most kept birds.

Broilers are more resilient than layers, which is why they are often reared at higher stocking densities. However, such close clustering can worsen the effects of harsh weather conditions. Although broilers were generally the more severely affected, the financial losses from layer mortality may be equal to or greater than those from broiler mortality, because raising pullets to maturity and maintaining them through the laying stage requires a greater investment than raising broilers for meat.

5.4.3 Number of birds lost in the two weeks after NiMet's alert

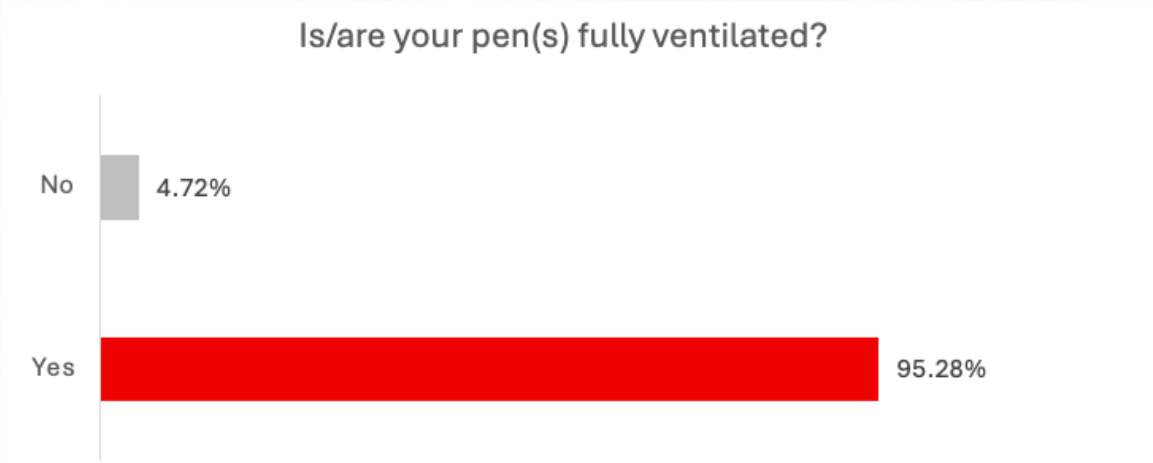
Period after the advisory	Total birds lost	Average loss per farm
In week one	5,438	23
In week two	6,337	27

Reported losses rose from 5,438 birds in the first week after the alert to 6,337 birds in the second week, showing that losses continued to increase beyond the first week of the advisory.

5.5. Ventilation and Mortality

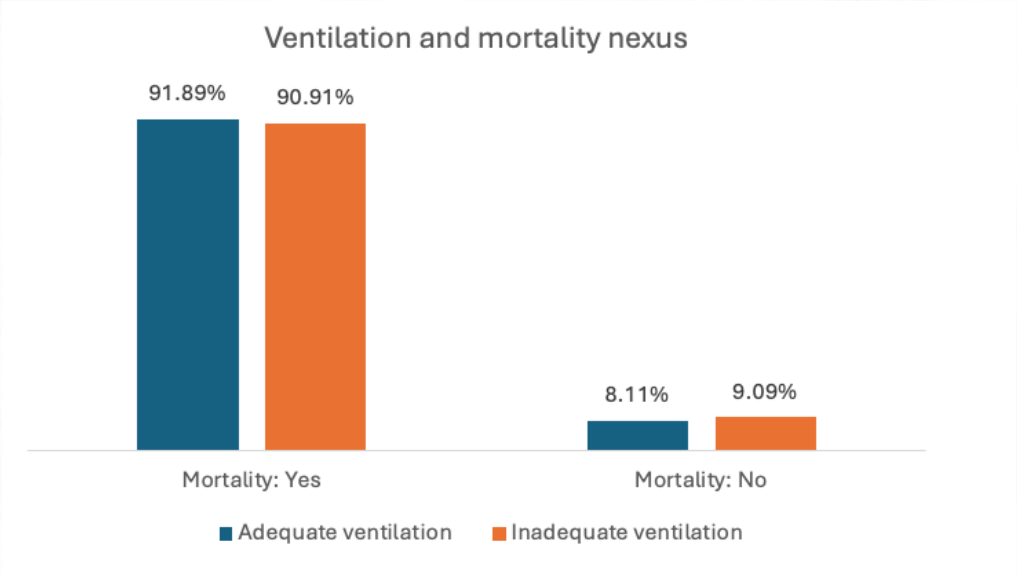
5.5.1 Adequacy of poultry ventilation

Almost all farm owners reported that their poultry houses have adequate ventilation.



5.5.2 Relationship between ventilation and mortality

Mortality was similarly high regardless of ventilation status.



Ventilation status	Share of farms recording mortality
Adequate ventilation	91.89%
Inadequate ventilation	90.91%

91.89% of farms with adequate ventilation recorded mortality, against 90.91% of farms with inadequate ventilation. This suggests a knowledge gap in what constitutes effective ventilation in poultry farming.

5.5.3 Understanding the knowledge gap: Expert opinion

The findings of this research were reviewed in a small experts' group session of veterinary scholars and practitioners. Their conclusion, set out below, reveals a troubling knowledge gap among farmers.

What many farmers regard as "adequate ventilation" includes covering pens with tarpaulins during the hottest hours of the day. "This is not ventilation." It traps heat and humidity and worsens heat stress for the flock, and it may help explain why 95.28% of farms reported adequate ventilation yet this offered no protection.

Ventilation during heat stress means high-capacity, continuous and well-distributed airflow that removes heat and moisture, increases air speed at bird level and stabilises the internal environment. It is among the most critical interventions for preventing heat-related mortality, protecting egg production and safeguarding bird welfare. The goal is a balanced-speed "wind-chill effect" that removes heat directly from the birds' bodies, rather than simply blocking the pens. Effective cooling usually combines several measures, including:

- **Roof overhangs:** roof extensions or open vegetation to shade the side walls from direct sunlight without blocking the wind.
- **Ridge vents:** a functional ridge vent in the roof, allowing hot air to escape naturally from the top of the pen.
- **Misting and fogging lines:** in open-sided or naturally ventilated pens where cooling pads are not available, high-pressure misting lines release a fine mist that evaporates before it reaches the litter, cooling the air mid-flight.
- **Stocking density and management adjustments:** in closed-sided pens, reduce stocking density by spacing the birds; in open-sided pens, use circulation fans and proper air distribution to prevent clustering, which reduces localised heat build-up and suffocation. In both settings, provide unrestricted access to cool drinking water and minimise bird handling during hot periods to reduce metabolic heat.
- **Power and equipment reliability:** full ventilation depends on a reliable power supply and fully functional airflow equipment. Solar energy would be the most suitable option in terms of affordability and outcomes. Alarm systems and routine fan maintenance are critical.

The use of antibiotics: Beyond a basic lack of awareness of heat stress management, many smallholder farmers misdiagnose environmental heat as an infectious disease. In one notable case, a farmer in Gwagwalada Area Council who suffered high bird mortality told data collectors it was caused by an "unknown sickness", which they had tried, unsuccessfully, to treat with antibiotics.

This points to a critical gap in extension services and farmer education. Antibiotics act against bacterial infections and are ineffective against environmental heat stress. Using them during a heatwave does not save the birds; it raises production costs and contributes to the rise of antimicrobial resistance (AMR). The correct response is immediate environmental management through full ventilation to lower temperatures, alongside supportive care with vitamin supplements such as Vitamin C and electrolytes to help birds recover from metabolic strain and reduce physiological stress.

5.6. Government Support and Farmer Needs

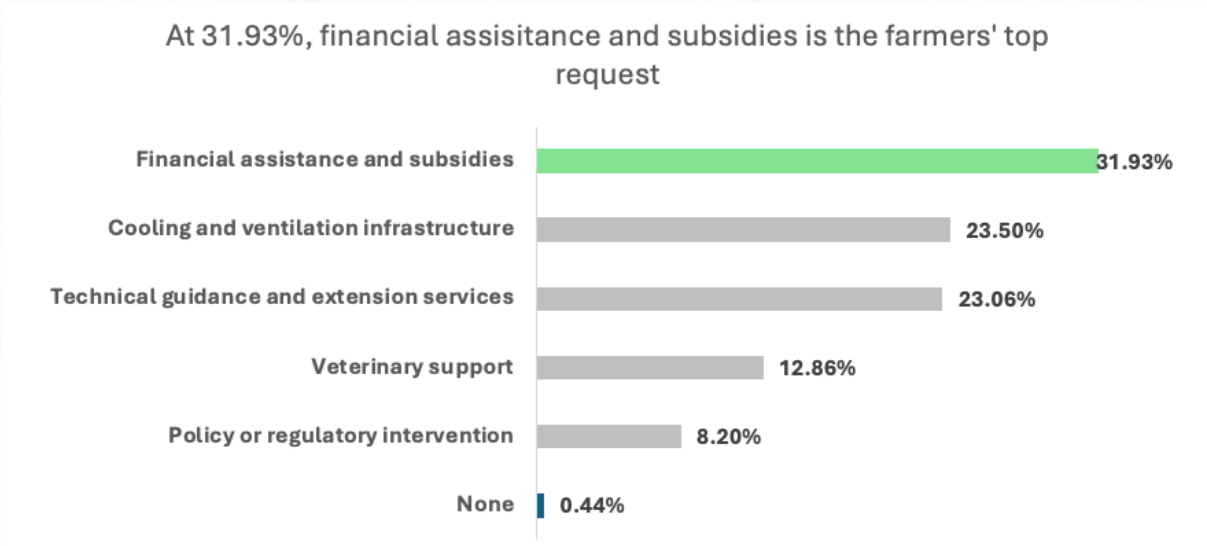
5.6.1 Receipt of government support

Only 5.15% of farms had received any government support in the last year, whether from



a Local Council, State or Federal Government, which signals a very large support gap. The support was largely technical in nature.

5.6.2 Type of assistance needed



"Financial assistance and subsidies" was the most requested support, selected by about 32% of responses. Cooling and ventilation infrastructure and technical guidance and extension services were selected by 47% combined. Only two respondents said they needed no assistance.

5.6.3 Analysis of open comments from respondents

Theme	Percentage
Need for government support, enlightenment and easy access to veterinary services	75.00%
Need for drastic measures to address heat issues	10.71%
Training of poultry farmers	7.14%
General comments on the research	7.14%
Total comments	**100%**

Interpretation: Open comments place the strongest emphasis on government support in the form of enlightenment, financial assistance, subsidies and easier access to veterinary services at the local level.

5.7 Implications

The impact of urbanisation and deforestation is being felt in the Federal Capital Territory.

- Rising heat levels in the FCT may be a direct consequence of urban development and of deforestation for private commercial purposes, without deliberate efforts to replace the

trees through tree-planting programmes. Trees and shrubs aged 20, 40 and over 50 years are regularly being felled to clear land for estate development, shopping malls and car sales lots in the FCT. Public infrastructure development has also contributed to tree loss, but to a far lesser extent than the felling of trees for these commercial purposes. This has implications for local heat levels, which are compounded by the wider effects of climate change.

When a severe heatwave hits a poultry operation, bird mortality is the most immediate and financially devastating consequence. Its true cost extends well beyond the birds that die, setting off a chain reaction that affects farm solvency, market supply, consumer prices, nutrition and wider food security.

- **Loss of investment capital.** When a bird dies of heat exhaustion, the farmer loses everything invested in it: the day-old chick, weeks of expensive commercial feed, vaccines and veterinary care. Birds that die before reaching market age or completing their laying cycle yield no return, so thousands of naira in inputs are wasted.
- **Layer flock devastation.** Layers need four to six months of investment before they begin producing steady income. High mortality in a layer pen wipes out future revenue and leaves the farmer with outstanding operational debts.
- **Price spikes and children's nutrition.** Mass mortality shrinks the supply of poultry products, and the resulting scarcity pushes prices sharply upward. The 2026 peak heatwaves coincided with Ramadan, a period of naturally higher market demand, and in several markets across the FCT the price of a crate of eggs rose to as much as N8,000. Eggs are an accessible source of complete protein and micronutrients, so price spikes put them out of reach of many low-income households and vulnerable children who rely on them to meet their daily nutritional needs.
- **Misdirected spending.** Desperate to stop an "unknown sickness", farmers often spend more on antibiotics, which have no therapeutic value against environmental heat stress. The spending wastes time, delays life-saving measures such as tunnel ventilation and anti-stress supplements, and adds a direct financial loss to an already strained farmer.

RECOMMENDATIONS

1. The Federal Government and FCT Administration

- **Provide urgent response and policy guidance** to mitigate the impact of recurring and increasing heat levels in Nigeria and the FCT, including through climate change adaptation measures.
- Urgent afforestation and tree-planting interventions are also needed. These should include halting all unnecessary tree felling and ending the ongoing aggressive commercial development of public spaces in the FCT, including by car dealerships.

2. FCT Administration, Area Councils and regulatory agencies

- **Set up a multi-agency Community of Practice (CoP) and secretariat.** The FCT Administration should establish and fund a CoP as a statutory inter-agency, inter-sectoral platform for coordination, oversight and accountability on heat stress in poultry systems. Led by the relevant public authorities, including Servicom, it should bring together producers, veterinary practitioners, researchers, climate and meteorological services, industry actors and extension services, so that policy, regulation and technical guidance reflect both scientific evidence and field realities. It should also enable cross-agency data sharing, track heatwave-induced production drops and coordinate swift, unified emergency responses to mass bird mortality.
- Revitalise agricultural extension services and disseminate protocols and early warnings. The CoP should support the development and dissemination of standardised indicators, protocols and early warning programmes for extreme heat, aligned with national livestock, climate adaptation and food security strategies. Area Councils should revitalise extension services as a channel for implementation of protocols, awareness materials and early warning signals, using the channels farmers actually rely on, notably Facebook and WhatsApp (Section 5.3).
- Use the CoP to close the knowledge gap. Deploy extension officers directly to poultry hubs to retrain farmers on climate resilience and heat stress identification. The CoP should strengthen long-term resilience through joint capacity-building, pilot initiatives and peer-to-peer learning.

3. The Federal Government

- **Guided subsidies on climate-smart agriculture equipment.** Introduce and oversee targeted import duty waivers on critical energy and cooling hardware, such as solar-powered tunnel ventilation fans and reliable evaporative cooling pads, to stabilise farm output during heat shocks.
- **Regulated veterinary enforcement.** Use the CoP's regulatory mandate to launch nationwide enforcement and awareness campaigns that curb the misuse of veterinary antibiotics for environmental distress.
- **Integrate nutrition and food security policies.** Design rapid-response social protection measures that stabilise food prices during seasonal spikes, so that low-income households and child-nutrition programmes keep access to affordable protein.
- **Invest in renewable energy**. Align agricultural funding with farmers' priorities and pilot off-grid solar solutions for smallholder poultry clusters, so that automated ventilation systems can run continuously without depending on unstable grid electricity.
- **Address climate and deforestation drivers of heat**. Support national and state-level afforestation programmes and the protection of existing tree cover, and integrate heat risk to poultry and food security into national climate adaptation strategies, so that rising heat is tackled at its source as well as on the farm.

4. Poultry farmers and farm managers

- **Engage with government training programmes.** Take part in state-sponsored training workshops to close the knowledge gap, learn to recognise environmental exhaustion and understand the right response to signs of heat-induced respiratory distress in birds.
- **Move to active airflow management and better pen design.** Shift from passive house management to full ventilation setups and invest in modern poultry infrastructure.

5. Civil society, research institutes and development partners

- **Drive data-driven advocacy.** Conduct regular rapid field surveys during climate anomalies to gather real-time data on poultry mortality and market prices, keeping policymakers informed of emerging food security hotspots.
- **Advocate for tree protection and replacement**. Campaign for the protection of existing trees and for tree-planting programmes in the FCT, and document tree loss from commercial development, so that the links between deforestation, rising heat and food security remain part of public debate.

- **Develop context-specific technical manuals.** Work with veterinary experts to produce simple, local-language factsheets and diagnostic guides that help smallholders tell infectious disease from environmental heat exhaustion.
- **Build partnerships** that support climate adaptation in farming and technology transfer.

CONCLUSION

The convergence of severe, climate-induced heatwaves and a critical knowledge gap is a dual threat to Nigeria's poultry sector and to national food security. The effect on human life is far-reaching.

Climate change and the loss of tree cover through deforestation may be intensifying heat in the FCT, which makes mitigation more urgent. Protecting and replacing trees, alongside climate adaptation measures and the farm-level actions recommended in this report, is therefore part of safeguarding poultry production and human wellbeing. This study provides foundational knowledge of the impact of heatwaves on poultry birds in the FCT, as a measure of understanding their impact on human life, and is intended to stimulate wider conversation on mitigation efforts.

Mass mortality and reduced productivity among the birds do more than devastate farmers' livelihoods. They set off wider economic effects: lost investment, reduced economic activity and employment, and reduced access to nutrition for vulnerable children, as the rise in egg prices in the FCT during the peak of seasonal demand showed.

When temperatures spike, limited technical capacity leads many smallholder farmers to mistake physiological heat stress for an "unknown sickness". That diagnostic error triggers the costly and ineffective use of antibiotics, which fails to save the birds while draining vital farm capital.

Addressing heat stress in poultry requires coordinated, state-led, multi-stakeholder action. By anchoring coordination in an official, government-established platform, as recommended here, public duty bearers can be accountable for deploying resources to close infrastructure deficits, stabilise production and remove the knowledge barriers that are harming the sector.

Pictures from the field

















About Us

A-Goal Initiative is an independent, non-partisan, non-profit organization committed to transforming public sentiment in Nigeria from frustration, apathy, and distrust to active citizenship and constructive engagement.

We achieve this by serving as a centre for public education on governance; amplifying citizens' voices and leveraging public feedback to improve service delivery; and mobilizing citizens to build impactful civic movements that drive positive social and institutional change.

At our core, we believe that an informed and engaged citizenry is essential to achieving responsive governance, promoting accountability, and contributing to building a better Nigeria.

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