



A Preliminary Study on Poultry Production and the Effects of Boko Haram Insurgency in Maiduguri

¹Sheikh, A. M., ^{*2}Onyiche, E. T., ³Chul, S. A., ³Yunus, H. and ³Aji, A. M.

¹Veterinary Teaching Hospital, University of Maiduguri, Maiduguri, Nigeria

²Department of Veterinary Parasitology and Entomology University of Maiduguri, Maiduguri, Nigeria

³Department of Animal Health and Production Mohamet Lawan College of Agriculture Maiduguri, Nigeria

* Author for Correspondence: et.onyiche@unimaid.edu.ng

ABSTRACT

This study was conducted to investigate poultry farming and the impact of insurgency on poultry production in Maiduguri Metropolitan Council, Borno State, Nigeria. A total of 170 poultry farmers were randomly selected from the areas and a structured questionnaire was administered to each farmer through scheduled interviews. The results of this study showed that a larger percentage of poultry farmers were male (59.4%) and the majority of the respondents were educated (72.9%). A significant proportion of the respondents ($p=0.037$) were full-time farmers (38.8%), and the percentage of married people was 58.8%. The majority of respondents (57.1%) had between 0 and 5 years of experience in poultry farming with majority of farmers preferring the keeping of broiler chickens (52.9%). In addition, deep litter rearing (72.4%) was the most common production system. Before the insurgency, most of the flock size was in the range of 100-200 birds but during the Boko Haram insurgency they ranged from 50-59 birds signifying a decrease in the production output attributed in parts to disruption of economic activities due to the unrest. In conclusion, due to insurgency, in Maiduguri, poultry farming has been negatively affected resulting in decline in production. We therefore recommend that the government, non-governmental organisations and wealthy individuals support farmers with financial resources to revive the poultry industry in the study area

Keywords: Boko haram insurgency; Poultry Production; Poultry farmers

INTRODUCTION

The importance of Nigerian livestock production to Nigeria's socio-economic growth cannot be overestimated. Keeping animals, particularly poultry, is a significant risk-reduction approach for vulnerable households who depend on quality meat and eggs. The poultry business is quickly expanding across Sub-saharan Africa, and it has the potential to provide several economic and health advantages to these countries and populations (Khaemba *et al.*, 2022). Globally, the animal protein industry is expanding and the sector is predicted to be one of the fastest increasing farming activities in the future years. Consumers in the developing world are turning away from basic foods in exchange for higher commodities such as dairy, eggs and meat (Adeyonu *et al.*, 2022).

Since 2009, the north-eastern Nigeria has been plagued by an unpleasant reality known as the Boko Haram insurgency. This insurgency has a wide range of consequences that affect many elements of society (Beatrice, 2015). Boko Haram's insecurity in Maiduguri and its surroundings has harmed the livelihoods of tens of thousands of people who rely on farming, threatening food security (Abubakar *et al.*, 2017).

The environmental impact of the Boko Haram insurgency has affected the Nigerian poultry business in the country's north-

eastern region (Abadie *et al.*, 2008). According to the Joint Humanitarian Action Plan, the affected states in Nigeria include Borno, Yobe and Adamawa (Adagba *et al.*, 2012). According to Adegba (2013), the insurgency has caused major population displacement in Borno State and has kept many farmers away from their traditional agricultural activities, which are their main source of income.

Past studies have examined the impact of Boko Haram activities on the agricultural sectors with its antecedent effects on food security (Awodola and Oboshi, 2015; Mohammed and Ahmed, 2015; Bukar, 2016). Specifically, livestock and aquaculture production has been negatively impacted (Bukar, 2016; Jelilov *et al.*, 2018). Regarding poultry farming, there is paucity of information on the effects of insurgency and terrorist related violence on its production.

The Boko Haram conflict has harmed many poultry farmers in Maiduguri, resulting in deaths, acute poverty, decreased egg output, decreased quality meat production, unemployment, increased buying costs, and dangerous conditions. On the other hand, poultry drug marketers indicated that pharmaceutical input supplies had shut down operations in the northeast. Before the insurgency, poultry

drug marketers had more liberty in their dealings with pharmaceutical wholesalers, and the medications could be obtained in Maiduguri. The buyer would pay just 60% of the entire cost to suppliers and the remainder is settled once after the product was sold. During the conflict, drugs were obtained either from Kano or Lagos, and the whole purchase price must be paid upfront before delivery. It is pertinent that the impact of insurgency on poultry production in the study region needs to be quantified. Consequently, the outcomes of this study will be valuable to poultry farmers, researchers and insurgency recovery workers. Therefore, this study was carried out to determine the impact of the Boko Haram conflict on poultry production in Maiduguri, Borno State, Nigeria.

MATERIALS AND METHOD

Study Area

Maiduguri the capital of Borno State, located in the Sahel Savanna region of north-eastern Nigeria at latitude 11°05' North and longitude 13°05' East and at about 350m above sea level has an annual mean rainfall and temperature of about 630mm and 32°C respectively (Udoh, 2003).

Data Collection and Sampling Technique

Data were gathered from primary sources using closed-ended questionnaires. For distribution, two hundred (200) copies were printed. We obtained 181 of them, of which exactly one hundred and seventy (170) were considered eligible for further study. The farmers were chosen at random from the four wards of the Maiduguri Metropolitan Council (MMC). The four (4) wards are Shehuri North, Shehuri South, Gwange and Maisandari ward. There were forty (40) respondents each from London-ciki and Gwange wards,

Table 1: Association between demographic characteristics of the respondents and the effects of insurgency on poultry production

Variables	Frequency (%)	Response		Chi-square	P-value
		Yes	No		
Sex					
Male	101 (59.40)	80 (79.21)	21 (20.79)	1.50	0.274
Female	69 (40.60)	49 (71.01)	20 (28.98)		
Educational status					
Educated	124 (72.90)	101 (81.45)	23 (18.55)	7.77	0.008
Not educated	46 (27.10)	28 (60.86)	18 (39.13)		
Occupation					
Farmer (full-time)	66 (38.80)	47 (71.21)	19 (28.79)	8.49	0.037
Civil servant	31 (18.20)	21 (67.74)	10 (32.26)		
Business	38 (22.40)	28 (73.68)	10 (26.32)		
Self employed	35 (20.60)	33 (94.29)	2 (5.71)		
Marital status					
Married	100 (58.80)	88 (88.0)	12 (12.0)	23.86	0.000
Single	52 (30.60)	32 (61.54)	20 (38.46)		
Widowed	13 (7.60)	8 (61.54)	5 (38.46)		
Divorced	5 (2.90)	1 (20.00)	4 (80.00)		

Association between Management/husbandry Systems and the Effects of Insurgency on Production

The research reveals that most of the respondents 97 (57.1%) have poultry production experience between 0-5 years, while those with over 11 years' experience were the least accounting for 26 (15.3%) ($\chi^2 = 2.22$; $p = 0.329$) (Table 2). Also, the majority of the respondents preferred keeping broilers 90 (52.9%) while only 9 (5.3%) reared all the poultry

forty-five (45) each from Shehuri North and Bulumkutu-Abuja respectively, making a total of 170 respondents.

Data Analysis

The data collected were analysed using simple descriptive statistics including frequency distribution and percentages. Inferential statistics using Pearson's chi-square test was carried out to determine the association between the different variables and the effects of insurgency on poultry production. P-values <0.05 were considered statistically significant.

Ethical Statement

Oral consent was duly sorted from all the participants and all respondents agreed to take part in the study.

RESULTS

Association between demographic characteristics of the respondents and the effects of insurgency on poultry production

The result revealed that the demographic biodata of the respondents showed a greater number of males 101 (59.4%) compared to females 69 (40.6%) ($\chi^2 = 1.50$; $p = 0.274$) (Table 1). Also, the number of educated respondents 124 (72.9%) was higher compared with those not educated 46 (27.1%) ($\chi^2 = 7.77$; $p = 0.008$). It was also observed that civil servants 31 (18.2%) were the least of the respondents while the majority of those involved in poultry production were full-time farmers 66 (38.8%) ($\chi^2 = 8.49$; $p = 0.037$) (Table 1). Most of the poultry keepers were married 100 (58.8%), followed by single 52 (30.6%) while divorcees were the least 5 (2.9%) ($\chi^2 = 23.86$; $p = 0.000$).

types. Additionally, deep litter system 123 (72.4%) was the most widely used production system, compared with free-range 26 (15.3%) and battery cage 18 (10.6%) ($\chi^2 = 16.29$; $p = 0.03$). The study also revealed that few number of respondents 3 (1.8%) adopted both deep litter and battery cage system of poultry management ($\chi^2 = 19.88$; $p = 0.00$) (Table 2). Furthermore, before the insurgency, the bulk of the flock size was within the range of 100-200 birds 59 (34.7%) while only a few respondents 8 (4.7%) had a flock size above

1000 birds ($\chi^2= 8.61$; $p = 0.035$). On the other hand, the current flock size during the insurgency was highest for birds 50-99 range with a frequency of 87 (51.2%) while only 1 (0.6%) of the respondents had birds above 1000 ($\chi^2= 8.61$; p

$= 0.035$) (Table 2). Finally, commercial feed 84 (49.4%) was the most widely used by poultry farmers while locally formulated, 28 (16.5%) was the least adopted by the respondents.

Table 2: Association between management/husbandry systems and the effects of insurgency on poultry production

Variable	Frequency (%)	Response		Chi-square	P-value
		Yes	No		
Years in poultry production					
0-5	97 (57.10)	76 (78.35)	21 (21.65)	2.22	0.329
6-10	47 (27.60)	32 (68.09)	15 (31.91)		
>11	26 (15.30)	21 (80.77)	5 (19.23)		
Types of poultry					
Broiler	90 (52.90)	71 (78.89)	19 (21.11)	16.29	0.03
Layer	18 (10.60)	10 (55.56)	8 (44.44)		
Cockerel	28 (16.50)	16 (57.14)	12 (42.85)		
All of the above	9 (5.30)	9 (100.0)	0 (0.00)		
Both broiler and layer	25 (14.70)	23 (92.0)	2 (8.00)		
Poultry management system					
Deep litter system	123 (72.40)	102 (82.93)	21 (17.07)	19.88	0.00
Battery cage system	18 (10.60)	7 (38.89)	11 (61.11)		
Free range	26 (15.30)	19 (73.08)	7 (26.9)		
Both deep litter and battery cage	3 (1.80)	1 (33.3)	2 (66.6)		
Flock size prior to insurgency					
50-99	58 (34.10)	44 (75.86)	14 (24.14)	8.61	0.035
100-200	59 (34.70)	51 (86.44)	8 (13.56)		
500-1000	45 (26.50)	30 (66.67)	15 (33.33)		
>1000	8 (4.70)	4 (50.00)	4 (50.00)		
Current flock size					
50-99	87 (51.20)	62 (71.26)	25 (28.73)	2.37	0.500
100-200	59 (34.70)	48 (81.36)	11 (18.64)		
500-1000	23 (13.50)	18 (78.26)	5 (21.74)		
>1000	1 (0.60)	1 (100.00)	0 (0.00)		
Type of feed					
Commercial feed	84 (49.40)	59 (70.23)	25 (29.76)	2.24	0.512
Locally formulated	28 (16.50)	22 (78.57)	6 (21.43)		
Both	58 (34.1)	48 (82.76)	10 (17.24)		

DISCUSSION

The world is becoming an evil jungle with terrorism accounting for the significant destruction of lives and properties with economic consequences. Nigerian poultry farmers under the auspices of the Poultry Association of Nigeria (PAN) have raised concern over the activities of Boko Haram insurgents stating that it is taking a toll on sales of poultry products in Northern Nigeria. Oduntan (2014) explained that insurgency has adversely impact retail sales in the North as nightlife has become non-existent. It was during this time that Northerners usually buy eggs in very large quantities from tea sellers.

The high number of male folks involved in poultry farming in comparison to females in Maiduguri corroborates the findings from a similar study in Adamawa state (Augustine *et al.*, 2019). This implies that males are mostly dependent on poultry farming to cater for the needs of their families. Also, the high number of educated persons involved in poultry farming gives further credence that agriculture is lucrative and is becoming a viable option that Nigerians are depending upon as a source of income. Majority of respondents with formal education were holders of Diploma, Degrees, and other certificates, an observation that has been previously noted in a similar study reported elsewhere (Augustine *et al.*, 2019).

Interestingly, of those involved in poultry production in the study area, the vast majority were full-time farmers compared

with other categories of persons (civil servant, business and self-employed) who probably keep poultry to augment their income. Married persons and perhaps households were more involved in poultry production. In a similar study conducted in Maiduguri Metropolis on respondents affected by the Boko Haram insurgency, it was observed that larger households were mostly involved in poultry keeping, they do so perhaps to provide resources to improve standard of living for their families (Augustine *et al.*, 2019).

Based on the scale of production, most of the poultry farmers are smallholder farmers with flock sizes of 1 - 200 birds. This agrees with the findings of Ja'afar-Furo and Gabdo (2010), who reported that a greater proportion (70%) of poultry farmers in Adamawa State, owned poultry farms with flock size of 50 – 249 birds. Therefore, it revealed that smallholder poultry farming had a significant impact on the socio-economic well-being of the farmers. Family labor is known to be the major type of labor used in managing these birds. This might be linked to the small nature of the poultry farms consisting of few birds that can be managed using family labor and due to inadequacy of funds and resources to hire services. This outcome agrees with the findings of Ja'afar-Furo *et al.*, (2007), who reported that 75.63% of poultry farmers in Adamawa State are backyard poultry farmers that intensively housed their birds. Furthermore, the insurgency has no doubt affecting production levels as the average flock

size has decreased. Flock size ranging from 100 - 200 birds was the most predominant number of birds kept by the poultry farmers before the insurgency, but currently, the figure of 50-99 birds which is comparatively lower appears to predominate. Furthermore, we also observed that there was comparatively decrease in the number of flock owners keeping over 500 birds. This observation has a negative consequence on the socio-economic indices of the study area. Chickens were the most dominant species of poultry birds commonly reared in Maiduguri metropolis which agrees with previous reports (Owosibo *et al.*, 2007; Augustine *et al.*, 2019).

Most of the farmers in the study area fed their poultry with commercial feeds. This may be due to the inability to formulate and compound local feeds. This may suggest deficiency in the requisite skills required to compound poultry feeds. This is in line with the findings of Ja'afar-Furo and Gabdo (2010), who reported that most farmers in Adamawa State depend on the use of commercial poultry feeds. Therefore, it is necessary to teach farmers the knowledge on how to formulate poultry feed.

Conclusion

Findings from this study confirmed that the Boko Haram insurgency has impacted negatively on poultry production in Maiduguri, Borno State, Nigeria. Furthermore, the results showed that the majority of the farmers preferred keeping broiler chickens, with the deep litter system being the most widely adopted production system. Before the insurgency, the bulk of the flock size was within the range of 100-200 birds. On the other hand, the current flock size during the insurgency is within the range of 50-99 birds which indicates a decline in production. We therefore recommend that the government, non-governmental organizations and wealthy individuals support farmers with financial resources to revive the poultry industry in the study area. Improved security in the region could restore people's confidence and encourage greater investment in poultry farming.

Conflict of Interest

The authors declare that they have no conflict of interest.

Authors' Contributions

AMS and TEO contributed to the designing, analysis of data and drafting of the manuscript. ASC, HY and MAA participated in data collection. All authors read and approved the manuscript for publication.

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