



Characterization of Backyard Broiler Production in Serenje, Zambia

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ABSTRACT

Considering the importance of backyard broiler production in Zambia, this study aimed to characterize this practice in the Serenje district (Zambia). A structured questionnaire was administered to 55 households. Results revealed a male predominance (56.36%) in broiler ownership, with most (69.09%) falling within the 30 to 50 years age group. Most (72.73%) had received at least secondary education. Notably, broiler producers primarily depended on farming (41.82%) and formal employment (32.73%) for income. Marketing channels predominantly involved direct sales to consumers (78.18%), minimizing intermediary involvement. The study highlighted the seasonal demand for broilers. Broiler consumption was common (90.91%) among producers, with most (85.45%) consuming broiler meat up to twice a week. Biosecurity practices varied, and mortality management predominantly involved burning or burial (67.27%). While most (96.36%) farmers practiced vaccinations, disease outbreaks persisted (92.73%), with limited consultation of veterinarians (67.27%). Access to information on broiler production primarily relied on agricultural agencies and organizations (49.09%). Common challenges included feed costs (94.55%), diseases (92.73%), and price fluctuations (87.27%). This study provides valuable insights into the dynamics of backyard broiler production in an urban setting, shedding light on its potential impacts on public health and the overall poultry industry.

INTRODUCTION

Backyard poultry production is a growing activity worldwide, as it is a valuable resource for improving the socio-economic well-being and nutritional conditions of individuals at the household level, offering cost-effective protein sources, and creating job opportunities (Ozdemir, 2020; Kumar *et al.*, 2021). Several reasons have been advanced for the rise in the popularity of this farming type. Some of the reasons are that backyard poultry production provides a rich source of protein in the form of meat or eggs and income (Elkhoraibi *et al.*, 2014; Correia-Gomes & Sparks 2020).

In Zambia, backyard broiler production is one main backyard poultry farming practices in urban areas. The poultry sector creates over 50,000 permanent and 30,000 seasonal jobs (Mwansa, 2013). Statistically, Zambia has an estimated broiler population of 5 486 506 broilers, of which about 4 743 192 (86.45%) are produced by households and not commercial establishments (Livestock Census Report, 2023). People in cities and major towns of Zambia consume broiler meat from chain stores and supermarkets as they are available. Chain stores and supermarkets buy most of their broilers from commercial establishments where management and diseases are well monitored. They can be traced in



case of health issues. However, in small towns, which are the majority, people buy broilers and broiler meat from households that raise these chickens in their backyards (McKee & Sanni, 2018). Authorities seldom register these, and their management and health practices are unknown

Although there are beneficial aspects to urban backyard poultry farming, it is considered a public health risk and a potential source of disease outbreaks for commercial poultry due to its interactions with other livestock and birds (Elkhoraihi et al., 2014; Mainali & Houston 2017; Nicholson et al., 2020). Backyard poultry production has been highly linked to disease outbreaks such as Newcastle and avian Influenza (Pedersen et al., 2004). While both are zoonotic diseases, Newcastle disease holds minimal zoonotic significance. The primary public health concern with avian influenza lies not in its immediate transmission to humans, but rather in the potential evolution of a strain capable of human-to-human transmission. Both diseases have the potential to trigger explosive outbreaks with elevated mortality rates, resulting in significant losses for smallholder farmers (Grace et al., 2024). Hence, it is crucial to study and understand backyard broiler production's management and health practices, as this would be of importance not only to public health but also to inform policy.

Therefore, the main aim of this study was to assess the backyard broiler production in the Serenje district of central Zambia, to specifically look at the demographics of backyard broiler producers, their source of breeds, marketing, management practices, health practices, and the challenges they face. This study may also inform policy and help identify areas of appropriate interventions in backyard broiler production in the whole country and beyond.

MATERIALS AND METHODS

Ethics Statement

This study was approved by the institutional research ethics review committee at Mulungushi University under protocol no: SMHS-MU1-2024-55. Participation in the study was voluntary and consented, and all participants were assured of confidentiality.

Study location

The study was conducted in the Serenje district, an agricultural district located in the Central Province of Zambia. It comprises both urban and rural livelihoods,

making it an ideal study location to obtain a picture of the Zambian context. Figure 1 shows the location of Serenje district in Central Zambia.



Figure 1 – Map of Zambia showing the location of Serenje (Source: Wikipedia).

Sample Size and Sampling Method

As is in most parts of Zambia, backyard broiler producers are not registered in Serenje. Therefore, it was difficult to obtain the total list of backyard broiler farmers in the district. However, according to the District Livestock Development office, it is estimated that there are about 120 households involved in backyard broiler production. For this study, 55 households were randomly sampled, representing 45% of the estimated total.

Data Collection

A structured questionnaire was used for data collection, after it was pretested for appropriateness. The questionnaire was administered to 55 farmers and collected information on (but not limited to) demographics, experience in broiler production and day-old-chicks (DOC) management, housing, marketing, broiler meat consumption, biosecurity, mortality management, health management, sources of information on broiler production, and challenges in broiler production. All responses were based on farmers' recall. In some cases, some farmers had kept records that the researchers examined to verify the answers. Consent was sought from the farmers to administer the questionnaire after explaining the purpose of the study and assuring them of the confidentiality of their identity. Participation was voluntary.

Data Analysis

Data were entered in Excel and cleaned to remove all incomplete responses. MINITAB V18 was used for data analysis. Qualitative responses were presented as a percentage of the total respondents who selected



a particular response. Descriptive statistics (i.e., the mean and standard error of the mean) were tabulated for quantitative data.

RESULTS

Respondents' Demographics

The respondents were owners of the broilers and the enterprise itself, and Table 1 shows the demographics of these respondents. More males were involved in backyard broiler production than females. Most of these backyard broiler owners were between the ages of 30 and 39 years. The bulk of farmers had a household size of between 5 and 10 persons/household, with an average household size of under seven persons per household.

The majority of respondents in this study had attended at least secondary education. About half of them attended college or university-level education. The greater number of broiler farmers in the study area by their main occupation were either civil servants or full-time farmers. Farming and formal employment were the most common sources of income, with only a quarter having off-farm business income.

Most of the farmers produced their chickens on rented land. Only a quarter of them owned land by title, and about a third used traditionally owned land for their production. The majority of farmers had a monthly income of less than ZMW 5000. The study further revealed that there was more broiler production in the urban than in the peri-urban areas.

Experience in broiler production and Day-old-chicks management

Table 2 shows the experience of backyard broiler producers, day-old chicks (DOC) management, and nutrition. Most backyard broiler producers had less than 5 years of experience with keeping broilers. This indicates that backyard broiler production is on the rise, as less than 20% had experience of more than 5 years in broiler production. All the farmers got their day-old chicks (DOC) from agents who worked for hatcheries. Only Cobb 500 and Ross 308 breeds were produced in the study area, with most producers producing Cobb 500.

While the average batch size was 211 chickens, most farmers had a batch size of between 100 and 200 chickens. The study revealed that over half of the respondents produced between 4 and 5 batches per year, with an overall mean annual number of batches of 4. Most of the farmers bought their DOC at a

Table 1 – Social demographics of backyard broiler farmers in Serenje.

Attribute	Response	Proportion (%)
Gender	Female	43.64
	Male	56.36
Age	< 30 years	16.37
	30 - 39 years	40.00
	40 - 49 years	29.09
	≥ 50	14.55
Household size	<5	14.55
	5-10	78.18
	>10	7.27
Education	Primary	27.27
	Secondary	32.73
	College or university	40.00
Occupation	Civil servant	32.73
	Farmer	34.55
	Self Employed	21.82
	Unemployed	5.45
	Work for a Private company or organization	5.45
Main income source	Farming	41.82
	Formal employment	32.73
	Off-farm business	25.45
Land ownership	Ownership by title	25.45
	Renting	40.00
	Traditional land ownership	34.55
Average monthly income	< ZMW* 1000	12.73
	ZMW 1000 and ZMW 1900	32.73
	K2000 - k4900	20.00
	ZMW 5000 - ZMW 10 000	30.91
	> ZMW 10 000	3.64
Residence	Peri-urban	36.36
	Urban	63.64

* ZMW= Zambia Kwacha (currency) exchange rate at the time of data collection: 1USD=ZMW 20.

price between ZMW 13 and ZMW 14. However, the prevailing mean cost per unit of DOC stood at ZMW 14.18.

Due to the scarcity of broiler hatcheries in Zambia, individuals must pre-order day-old chicks from agents or designated delivery points and wait for subsequent delivery. This study asked the respondents to describe this situation in Serenje district. Almost 75% of the farmers collected their day-old chicks (DOC) within two weeks of when they paid for them. A few of the farmers collect them after two weeks. Over three-quarters of the farmers use DOC from hatcheries outside the province, and most use private transport to transport the DOC. All broiler farmers in the study area indicated they used commercial chicken feeds.



Table 2 – Experience, Day-old-chicks Management and Nutrition practices by Backyard broiler farmers in Serenje.

Attribute	Response	Frequency (%)
Experience	<2 years	72.73
	2-5 year	9.09
	>5 years	18.18
Source of DOC	Agents	100
Strain produced	Cobb 500	56.36
	Ross 308	41.82
	I don't mind	1.82
Batch Size	<100	3.64
	100-200	80
	>200	16.36
No of batches	<4	30.91
	4-5	54.55
	>5	14.54
DOC Price (ZMW)*	<13	5.45
	13-14	54.55
	15-16	40
Time from order to collection time	< 2 weeks	78.18
	>2 weeks	21.82
Distance to Hatchery	It is outside the province	76.36
	It is within the same district	23.64
Mode of transportation	By using own private transport	47.27
	Use public transport	18.18
	Its near, we carried home	34.55
Type of Feed	Commercial feed	100

*ZMW= Zambia Kwacha (currency) exchange rate at the time of data collection: 1USD=ZMW 20, DOC= day old chick.

Housing

Table 3 shows the housing of backyard broiler production in Serenje. All farmers provided housing for their broilers. Most poultry farmers never had well-done floors in their poultry houses. About a third had floors of compacted clay, while only a fifth had concrete floors.

Rice hulls and wood shavings were the only two types of bedding used by farmers, with rice hulls being the most popular, being used by over three-quarters.

Table 3 – Housing, Bedding, and feed practices by backyard broiler farmers in Serenje.

Attribute	Response	Proportion (%)
Floor	Compacted Clay	32.73
	Concrete	20.00
	Nothing on the floor	47.27
Beddings	Rice hulls	81.82
	Wood shavings	18.18
Walls	Clay bricks	85.45
	Concrete blocks	9.09
	Plastics	5.45
Roofing	Grass thatched	14.55
	Iron sheets	83.64
	Plastics	1.82

The bulk of poultry houses were made of walls of clay bricks. Other less common materials used for poultry walls included concrete blocks and plastics. Iron sheets were the most common roofing material used by 80% of farmers, while just under 15% used grass for roofing.

Marketing

Table 4 shows the marketing practices among backyard broiler producers in Serenje. Almost all farmers sold their broilers between five and six weeks of age. Many farmers sold their chickens directly at the market without involving agents or retailers. However, a few sold them to individuals within the compounds at farm gates and to retailers who subsequently resold to consumers.

Almost all the farmers sold their chickens as live birds. About a tenth sold their chickens for ZMW 95/chicken, with the rest selling for ZMW 100/chicken. The majority of the farmers made a gross profit of less than ZMW 5000, with very few making gross profits of more than ZMW 10000, resulting in an average gross profit of ZMW 5699.

Almost all farmers recognized that broiler demand exhibited a seasonal trend, particularly spiking during festive seasons. This awareness of market fluctuations could influence farmers' strategies and production planning.

Table 4 – Marketing practices by backyard broiler farmers in Serenje.

Attribute	Class	Proportion (%)
Marketing age	5 weeks	49.09
	6 weeks	47.27
	7 weeks	3.64
Market source	Individuals from our compounds come to buy	12.73
	Supply marketers at the local market	9.09
	Take to the market ourselves	78.18
Product sold	As live chickens	94.55
	As whole-dressed chickens	5.45
Price per chicken (ZMW) *	95	10.91
	100	89.09
Gross profit (ZMW) *	<5000	49.09
	5000-10000	38.18
	>10000	12.73
Seasonal Demand	No	5.45
	Yes	94.55
Main Competitor	Commercial Poultry farms	36.36
	Fellow backyard broiler farmers	40
	Sellers of imported Chickens	23.64

*Exchange rate at the time of data collection: 1USD=ZMW 20.



Regarding market competition, most respondents identified fellow backyard farmers as their primary competitors. Just over a third also mentioned commercial farmers as competitors. This acknowledgment sheds light on local farmers' challenges in competing with larger, more established commercial entities.

Broiler meat consumption

Table 5 shows data on broiler meat consumption. A significant majority of broiler-producing households consumed the broiler meat they produced. Most consumed broiler meat at least once or twice per week, and only under a tenth never consumed the meat at all.

Table 5 – Household Consumption of Broilers by backyard broiler farmers in Serenje.

Attribute	Response	Proportion (%)
Consumption	No	9.09
	Yes	90.91
Consumption frequency	1-2 times per week	85.45
	3-4 times per week	1.82
	5-6 times per week	3.64
	None	9.09

Biosecurity and mortality management

The study sought to document the biosecurity practices among backyard broiler producers. Table 6 shows biosecurity measures and mortality management in the Serenje district. Only slightly over half of the respondents mentioned wearing specific clothes and footwear in the poultry house. About a third mentioned isolating sick birds in separate rooms as a biosecurity measure. However, most respondents did not have footbaths at the entry of their poultry houses.

The respondents were then asked how often they cleaned their poultry houses as a biosecurity measure. The majority (over three-quarters) had a weekly cleaning regime. Cleaning at the end of the production cycle, a daily cleaning regime, and cleaning whenever the need arose were practiced by a few farmers.

To assess the potential for disease transmission, respondents were asked whether wild birds or rodents had access to their chickens' water and food sources. The study revealed that predators had no access to the housing and production premises in most households.

This study established a mortality rate of 7.07% in Serenje, with most farmers experiencing a mortality rate between 5% and 10% (Table 6). In terms of mortality management, mortalities on most farms were either burnt or buried or, in rare cases, consumed by the households.

Table 6 – Biosecurity and Mortality Management by backyard broiler farmers in Serenje.

Attribute	Class	Proportion (%)
Biosecurity	Isolate birds with suspected disease	34.55
	Restrict visitors' access to poultry houses	9.09
	Wearing of specific protective clothing in poultry house	56.36
Footbath	No	54.55
	Yes	45.45
Cleaning	At the end of each production cycle or batch	9.09
	Daily	7.27
	Weekly	78.18
	Whenever need arises	5.45
Predators Access	No	85.45
	Yes	14.55
Mortality	<5%	12.73
	5-10%	80
	>10%	7.27
Mort Disposal	Burning	27.27
	Burying or Trashing	67.27
	Consume if they are of age	5.45

Heath Managements

Table 7 shows health management practices among backyard broiler farmers. Most broiler farmers never consulted veterinarians or broiler livestock experts. Almost all farmers experienced disease outbreaks, despite almost all of them vaccinating their broilers against the major known diseases. However, all farmers treated their chickens when sick, with only a third using ethnoveterinary medicines.

Table 7 – Heath Management and Practices by backyard broiler farmers in Serenje.

Attribute	Response	Proportion (%)
Call Vets	No	67.27
	Yes	32.73
Disease outbreak	No	7.27
	Yes	92.73
Treat sick birds	Yes	100.00
Vaccinations	No	3.64
	Yes	96.36
Ethnoveterinary medicines	No	67.27
	Yes	32.73

Sources of information on broiler production

Table 8 shows the most common source of information on broiler production. Most respondents sourced their information from agricultural agencies and organizations. Books/production manuals were mentioned by under a third of the farmers. Other sources mentioned by a few farmers included agro-dealers, friends, and veterinarians/Livestock production experts.



Table 8 – Sources of information on broiler production by backyard broiler farmers in Serenje.

Attribute	Class	Proportion (%)
Main source of information	Agricultural agencies and organization	49.09
	Agro input dealers	9.09
	Books and magazines	27.27
	Friends	5.45
	Veterinarians and/or Livestock experts	9.09

Challenges in Broiler production

Table 9 shows the common challenges faced by backyard broiler producers. The most common challenges mentioned were the cost of feed, diseases, and price fluctuations. Other less common challenges mentioned were lack of market, lack of capital, feed shortage, and shortage of DOC.

Table 9 – Challenges in Broiler Production faced by backyard broiler farmers in Serenje.

Challenge	Proportion (%)
Cost of feed	94.55
Diseases	92.73
Price fluctuations	87.27
Lack of market	43.64
Lack of capital	20.00
Feed shortage	16.36
Shortage of DOC	12.73

DISCUSSION

Backyard broiler production is a critical livestock subsector in Zambia, owing to how many benefit from it in terms of income and protein supply. By characterizing the backyard broiler production in Serenje district, Zambia, this study offered insights into the demographics of the producers, their experiences in broiler production, housing practices, marketing strategies, broiler meat consumption patterns, biosecurity measures, mortality management, health practices, sources of information, and the prevalent challenges faced by small-scale broiler farmers.

This study revealed a diversity in the socio-demographics of the people involved in backyard broiler production in Serenje. This agrees with what Ambrose-Oji (2009) reported, which is that people engaged in agricultural production mostly have different socioeconomic characteristics. The male dominance in broiler production revealed in this study resonates with the findings of another study from Rwanda (Mbuza *et al.*, 2017). The dominance of men in broiler production may be because backyard broiler production is mainly associated with income generation, which men mostly want to be in charge of. However, this is different in

other backyard poultry farming enterprises, where the main reason may in some cases be home consumption or hobbies (Gharib *et al.*, 2012; Fagrach *et al.*, 2023).

This study revealed that fewer young people (under 30 years old) were involved in backyard broiler production in Serenje. A similar study by Isiaka *et al.* (2023) revealed that over 70% of the broiler producers were within the age of economic activeness of over 30 years. The lower participation of young people could be due to their lower economic status, as the broiler business requires substantial capital to start.

This study revealed that most respondents had at least secondary education, with almost half and a third having a tertiary and secondary education level, respectively. This result points to the high potential for this sector to improve. This is because education, coupled with good practices, enhances farmers' capability to achieve enhanced production and productivity in broiler farming (Ali & Hossain, 2010).

This study also revealed more broiler production in the urban than in the per-urban, and none in the rural area. This showed that urban backyard poultry is on the rise in Zambia, just as other researchers have reported (Lockhart *et al.*, 2010; Karabozhilova *et al.*, 2012; Beam *et al.*, 2013; Elkhoraibi *et al.*, 2014; Ozdemir 2020). This may be due to urbanization, increased income levels among urban people, and the need for extra income by most households in urban areas.

Cobb 500 and Ross 308 are common breeds of broilers produced worldwide. In this study, Cobb 500 was the most produced broiler breed. Cobb 500 was also reported to be Rwanda's most-produced broiler breed (Mbuza *et al.*, 2017). Farmers may prefer Cobb 500 because of its significant growth potential, particularly when provided with suitable nutrition and the correct amino acid patterns (Vieira *et al.*, 2012). Nonetheless, the choice of breed may be influenced by many factors, such as the availability of hatcheries and the price of DOC.

The findings of this research indicate that, on average, farmers produce four batches of 211 chickens/batch annually. This average flock size is lower than the reported flock size in Zimbabwe (Gororo & Kashangura, 2016). However, Mbuza *et al.* (2017) reported findings similar to those of this study. Given the limited flock size and the relatively small number of batches per year, the economic viability of backyard broiler production in the study area becomes highly questionable. The profitability of such production is dependent upon various factors, including farm size (Kawsar *et al.*, 2013) and flock size (Adeyonu & Odozi, 2022).



Broiler nutrition is very important for chicken performance, and its proper management also helps with profitability. The habit of using commercial feeds revealed in this study has also been reported in other studies (Gororo & Kashangura 2016; Alemayehu *et al.*, 2019; El-Menawey *et al.*, 2019). Its prominence could result from the quality assurances provided by commercial feed.

Housing is an integral part of broiler production, as it plays a vital role in influencing the well-being, comfort, health, and productivity of birds (Qaid *et al.*, 2023). Khalid *et al.* (2021) have also reported that the performance of the broilers could be affected by housing type and conditions. All farmers in this study provided housing and employed a deep litter management system.

The use of rice hulls as the most common bedding material in this study agrees with the findings of El-Menawey *et al.* (2019), who found plant straw to be the most common bedding material. However, other studies reported the use of different bedding materials (Badubi *et al.*, 2004; Mbuza *et al.*, 2017). Nevertheless, the availability and affordability of materials influence the choice of bedding type.

While poultry houses made of clay bricks were common in this study area, other researchers reported concrete walls to be common elsewhere (El-Menawey *et al.*, 2019). The common use of iron sheets for roofing found in this study has also been reported in other regions (Mbuza *et al.*, 2017). The differences in the materials used in poultry housing may be influenced by many factors, among them the availability and accessibility of the materials to the farmers.

This study revealed that many respondents sold their chickens at the market without involving agents or retailers between them and the consumers. This retail channel was also the most common in small-scale broiler farmers in Karnataka, India (Lavanya *et al.*, 2017). The small flock sizes in this production system may prompt farmers to opt for this retail method because it maximizes profits by cutting out the middlemen.

The age at which farmers in this study sold their chickens (5-6 weeks) falls within the expected maturity period of broilers. Depending on the production system, broilers can be slaughtered and sold at any age from as young as 33 days (Karaman *et al.*, 2023) to as late as 8 weeks (Mbuza *et al.*, 2017).

The preponderance of selling chickens as live chickens without any value addition reported in this study is similar to what Gororo, Kashangura (2016)

reported. The prominence of selling chickens as live birds may be a result of farmers' limited capital to purchase processing equipment.

The average selling price per chicken in this study (ZMW 99.46) (approximately 4.7 USD) is higher than the price range of live broilers reported in Nigeria, which was between ₦1,700 – ₦3,500 (approximately 1.74 USD- 3.91 USD at the time of this study) (Adeyonu *et al.*, 2021). However, higher prices of US\$ 6.10/ chicken have also been reported (Phiri *et al.*, 2023). The differences in pricing could be due to several factors, mainly related to the cost of production, which is also driven by many factors, such as the cost of inputs.

Poultry meat remains one of the preferred meats consumed by most meat consumers (Parveen *et al.*, 2021). Most of the broiler-producing households in this study consumed broiler meat at least once or twice a week. However, Pant *et al.* (2010) reported that most people consume meat 1-5 times/day.

The study also sought to document the biosecurity practices among these backyard broiler producers. Farmers in this study employed a few biosecurity measures. There were many gaps in biosecurity management among broiler farmers in Serenje district. The gaps revealed in this study are not unique to this study area, as other researchers of similar studies also reported gaps in biosecurity management (Elkhoraibi *et al.*, 2014; Di Pillo *et al.*, 2019; Correia-Gomes & Sparks 2020; Ozdemir 2020).

Hatcheries in Zambia always add 2% extra day-old chicks as compensation for the anticipated normal mortality. This means that the average national normal mortality rate is assumed to be 2%. The mortality rate reported in this study was higher than the anticipated 2%, and also higher than the 4.68% reported by Karaman *et al.* (2023). Mortality rates as high as 10% and 16.86% have been reported by Lamari (2023) and (Phiri *et al.*, 2023), respectively. The differences could be attributed to differences in management and nutrition. In terms of mortality management in this study, mortalities were either burnt or buried or, in rare cases, consumed by the households. In Libya, nearly all broiler mortalities were disposed of by dumping them as rubbish or giving them to pets (Ismael *et al.*, 2018).

This study established that the majority never consulted veterinarians on matters relating to their birds' health, which disagrees with the findings of Mbuza *et al.* (2017). This study also revealed that most farmers vaccinated their chickens against major known diseases, in agreement with the findings of Tsegaye *et al.* (2023). Nonetheless, this finding disagrees with



the findings of other research in Zimbabwe and Libya, where vaccination was uncommon among broilers (Gororo & Kashangura, 2016; Ismaael *et al.*, 2018).

Despite more farmers vaccinating their chickens, disease outbreaks remained rampant in the study area. The high incidences of disease outbreaks reported in this study are not unique to this study, as they have also been found to be common in other jurisdictions (Tsegaye *et al.*, 2023). The report by all farmers that they treated their chickens when sick may be proof of the commercial value farmers attached to broiler production. Nonetheless, only a third were engaged in the use of ethnoveterinary medicines. Ethnoveterinary medicines have also been reported in broilers elsewhere (Gororo & Kashangura, 2016). The sources of information reported in this study are familiar sources of information even in other jurisdictions, as they have been reported in Canada as well (Mainali & Houston, 2017).

The challenges mentioned by broiler farmers in this study had to do with the cost of feed, diseases, price fluctuations, lack of market, lack of capital, feed shortage, and shortage of DOC. These challenges are not unique to Serenje and Zambia, as they have also been reported elsewhere (Ozdemir, 2020).

In conclusion, the study focused on backyard broiler production in Serenje district, Zambia, highlighting its importance as a vital household income source and supply of protein. However, it also revealed significant challenges, including disease management, biosecurity, and market access. This underscores the need for targeted interventions to enhance the sustainability and profitability of these small-scale operations', particularly in biosecurity and training to reduce disease risks. As the first of its kind, not only in Serenje District but in Zambia as a whole, this research offers valuable insights for policymakers and agricultural authorities, paving the way for future investigations and contributing to the improvement of Zambia's poultry sector.

AUTHOR CONTRIBUTIONS

Conceptualization, LS and XR; methodology, LS and XR; software, LS; validation, LS, QN and XR; formal analysis, LS and KE; investigation, KE; resources, QN and XR; data curation, KE; writing—original draft preparation, SL; writing—review and editing, KE, OK, TLT, XS, QN and XR; visualization, LS and KE; supervision, NQ and XR; project administration; NQ and XR; funding acquisition, NQ and XR. All authors have read and agreed to the published version of the manuscript.

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DATA AVAILABILITY STATEMENT

Data used in this study is available upon request to the corresponding author.

CONFLICTS OF INTEREST

Authors declare no conflicts of interest.

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