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Perception and preference between Yoruba and Fulani ecotype chickens among local farmers in the derived savanna zone

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Abstract

This study examined farmers' preferences for Yoruba and Fulani ecotype chickens among 98 smallholder poultry farmers in the derived savanna zone of Ogbomoso North and South Local Government Areas. A cross-sectional survey design with structured questionnaires was employed using multistage sampling technique. Data were analyzed using descriptive statistics and chi-square tests. Findings revealed clear differences in genotype rearing preference among farmers between the two local governments. In Ogbomoso North, a higher proportion of farmers reared Fulani ecotype chickens (61.2%), whereas Yoruba ecotypes were more common in Ogbomoso South (51.0%). Farmers in Ogbomoso North also showed stronger preference for Fulani chickens (69.4%) compared with those in Ogbomoso South (44.9%). Fulani ecotype chickens were rated more favorably for egg production, egg size, body size, and marketability. The study further showed that poultry production in the two areas remains largely traditional. Most farmers depended on natural mating (70.0%) and birds were selected mainly for egg production (49.0%). Feeding practices combined commercial (49%) and homemade feeds (16%), although low feeding frequency reflected feed scarcity and financial limitations. Diseases were identified as the major challenge, particularly coccidiosis (51%) and Newcastle disease (39%), while weak veterinary support limited effective disease control. Housing systems were mainly semi-intensive (50%) and constructed with wood, offering limited protection. Marketing relied heavily on local markets, resulting in low annual income for most farmers. In conclusion, there is preference for Fulani ecotype chickens in Ogbomoso North local government and Yoruba ecotype chickens in Ogbomoso South local government. However, Fulani ecotype chickens was highly favourable for egg production, egg size, body size and marketability. It can therefore be recommended that both ecotypes (Yoruba and Fulani) chickens should be conserved and genetically improved to ensure sustainable poultry production across different agro-ecological zones. Government agencies and agricultural institutions should strengthen programs aimed at conserving indigenous chicken genetic resources and promoting their sustainable utilization.

Keywords: *Preference, Derived Savanna, Fulani ecotype, Yoruba ecotype, Ogbomoso*

Introduction

The poultry industry in Nigeria plays an important role in improving food security, generating income, and supporting rural livelihoods, especially through the production of indigenous chickens. Local poultry farming provides households with animal protein, employment opportunities, and socio-cultural benefits for millions of smallholder farmers across the country (Adebambo *et al*., 2021). The poultry sector contributes nearly 25% of the total meat consumed in Nigeria and creates jobs for more than 25 million people involved in different stages of the poultry value chain. Nigeria is estimated to possess over 200

million poultry birds, making it one of the countries with the largest poultry populations in Africa (FAO, 2019). Poultry production in Nigeria operates under various systems, ranging from traditional village-based management to intensive commercial production. Village poultry production accounts for almost 80% of the national flock and remains highly integrated into rural farming systems. These birds provide a reliable source of income, particularly for women and vulnerable rural households who may have limited access to other livestock enterprises (Sonaiya and Swan, 2004).

Indigenous chickens are widely distributed across Nigeria, with about 83 million birds managed under extensive systems and approximately 60 million under semi-intensive systems (Omotoso *et al*., 2020). These chickens are valued for their adaptability, disease tolerance, hardiness, and ability to survive under harsh tropical conditions that often limit the productivity of exotic breeds (Yakubu *et al*., 2020). Among the recognized indigenous chicken ecotypes in Nigeria are the Yoruba and Fulani ecotypes (Daramola *et al*., 2022). These ecotypes represent important genetic resources that are adapted to distinct ecological conditions and socio-cultural environments (Daramola *et al*., 2022). The Yoruba ecotype is predominantly found in the southern parts of Nigeria, especially within the derived savanna region, while the Fulani ecotype is commonly associated with pastoral communities in the northern and middle belt areas of the country (Rachman *et al*., 2024).

The Yoruba ecotype originated from southwestern Nigeria, particularly among communities dominated by the Yoruba ethnic group. These chickens are well adapted to humid tropical conditions, dense vegetation, and mixed crop-livestock farming systems common in forest and derived savanna zones (Rachman *et al*., 2024). In contrast, the Fulani ecotype is closely linked with Fulani pastoral communities spread across northern and central Nigeria (Rachman *et al*., 2024). Findings from this study are expected to provide valuable information that will support informed decisions regarding conservation, genetic improvement, and sustainable utilization of indigenous chicken resources in Nigeria.

Materials and Methods

Study location

Poultry farmers at open poultry markets and farms in Ogbomoso, Oyo State, Nigeria were recruited for the study. Ogbomoso is located at the southwest region of Nigeria, which lies, on the longitude of 40°, 150′ East of the Greenwich meridian and latitude of 80°, 150′ North-East of Ibadan the capital of Oyo State. The altitude is between 300m to 600m above the sea level. The mean annual rainfall of 1247ml and a mean temperature of 30°C with a relative humidity between 60-85% (Google Earth Map, 2023).

Study Design

A cross-sectional survey design was employed to assess farmer perceptions and preferences for Yoruba and Fulani ecotype chickens. The study utilized quantitative approach through structured questionnaire administration with farmers. The target population consisted of smallholder farmers in the derived savanna zone who are actively engaged in indigenous chicken production, specifically those keeping Yoruba ecotype, Fulani ecotype, or both ecotypes of chickens.

Sampling Procedure

Total of 98 farmers were sampled in both Ogbomoso North (49 farmers) and South local (49 farmers) government areas. A multistage sampling technique was employed for this study:

Stage 1: Purposive selection of a state (Oyo

state) within the derived savanna zone based on the presence of both Yoruba and Fulani ecotype chickens.

Stage 2: Random selection of two (2) Local Government Areas (LGAs) from the selected state.

Stage 3: Purposive selection of farmers keeping indigenous chickens from each selected community.

Data collection and procedure

A structured questionnaire was developed and used as the primary data collection instrument. The questionnaire was divided into seven main sections: Section A: General Information (demographics), Section B: Breeding and Selection practices, Section C: Nutrition and Feeding management, Section D: Health Management practices, Section E: Housing and Management systems, Section F: Marketing and Economics and Section G: Challenges and Opportunities

Data collection was carried out by enumerators who were familiar with the local languages and customs. The questionnaires were administered through face-to-face interviews with farmers at the markets and farms. Each questionnaire administration lasted approximately 10-15 minutes. Data collection was conducted over a period of two (2) weeks. To ensure data quality: daily review of completed questionnaires was conducted and incomplete or inconsistent questionnaires were excluded from analysis.

Variables Measured

Dependent variables: Farmer preferences for Yoruba ecotype chickens vs. Fulani ecotype chickens.

Independent variables: socio-demographic characteristics (location, occupation), management practices and production systems, and market access and economic factors.

Data Analysis

Collected data were coded, entered into Microsoft Excel, and arranged before analysis. Data were then exported to statistical software packages for analysis.

Data analysis was performed using SPSS. The following analytical approaches were employed:

i. Descriptive Statistics: Frequencies, percentages, means, and standard deviations were calculated to describe farmer characteristics, management practices, and preferences.
ii. Comparative Analysis: Chi-square tests and t-tests were used to compare preferences between different farmer groups and ecotypes.
iii. Ranking Analysis: Weighted scores were calculated for trait preferences using the formula: Weighted Score = Σ(Rank $\times$ Frequency)/Total responses

Results

Table 1 showed the distribution of respondents based on area and chicken genotype. Respondents in Ogbomoso North Local Government Area reared more Fulani Ecotype chickens (61.2%) compared to Ogbomoso South Local Government Area (20.4%). However, respondents in Ogbomoso South Local Government Area reared more of Yoruba Ecotype chickens (51.0%) compared to Fulani Ecotype chickens (20.4%).

Table 1: Mean Value of Distribution of Respondents Based on Zone and Chicken Genotype

	Genotype No (%)			
Zone	**Yoruba Ecotype**	**Fulani Ecotype**	**Both**	**Total**
Ogbomoso North LGA	10 (20.4%)	30 (61.2%)	9 (18.4%)	49
Ogbomoso South LGA	25 (51.0%)	10 (20.4%)	14 (28.6%)	49

Table 2 presented the chicken genotype preference by farmers across the two zones (Ogbomoso North and South Local Government Area). Higher proportion of farmers (85.7%) in Ogbomoso South LGA preferred the Yoruba ecotype. Respondents in Ogbomoso North LGA showed greater preference for the Fulani ecotype (77.6%). Preference for both genotypes combined was generally low across both zones (30.6% in Ogbomoso North LGA and 36.7% in Ogbomoso South LGA).

Table 2: Chicken Genotype Preference by Farmers across the Two Zones

Genotype	Ogbomoso North LGA	Ogbomoso South LGA	χ^2	P-value
Yoruba Ecotype	38 (77.6%)	42 (85.7%)	1.200	0.273
Fulani Ecotype	34 (69.4%)	22 (44.9%)	6.038	0.014*
Both Genotypes	15 (30.6%)	18 (36.7%)	0.423	0.515

* P-value is significant ($p<0.05$)

Table 3 showed the preference scores for Yoruba and Fulani ecotype chickens. The Table uses a preference scoring system where lower scores indicate higher preference (scale where 1 = most preferred). Statistical significance is tested using the Friedman χ^2 test, with different superscript letters (^{a}, ^{b}) indicating significant differences at 0.05 probability level between groups. Traits like egg number, ease of sale, and egg size showed significantly stronger preference for Fulani ecotype chickens. Across all traits with the exception of meat taste, the Fulani ecotype chickens showed lower preference scores (higher preference) compared to the Yoruba ecotype. It showed that Fulani Ecotype hens are strongly preferred for egg number (2.02) compared to (1.29) for Yoruba ecotype hens. Fulani ecotype chickens are also more marketable (2.08) compared to Yoruba ecotype chickens (1.33).

Table 3: Mean (± SD) of Trait Preference Scores for Yoruba and Fulani Chickens

Trait Preference Code	Fulani Ecotype	Yoruba Ecotype	Friedman χ^2	P-value
BSC	1.38 ± 0.61	1.74 ± 0.89	12.408	P < 0.01 **
BSH	1.45 ± 0.72	1.68 ± 0.85	9.027	P < 0.01 **
ENH	1.29 ± 0.68	2.02 ± 1.10	18.559	P < 0.001 **
EZH	1.48 ± 0.76	1.96 ± 1.02	10.370	P < 0.01 **
MTC	1.41 ± 0.84	1.58 ± 0.90	3.214	P = 0.073
MTH	1.46 ± 0.71	1.70 ± 0.88	4.906	P = 0.027 *
ESC	1.33 ± 0.79	2.08 ± 1.17	16.208	P < 0.001 **
ESH	1.36 ± 0.80	2.11 ± 1.20	17.012	P < 0.001 **

^{a},^{b}mean with different letters are significantly different across rows. BSC = Body Size – Cock, BSH = Body Size – Hen, ENH = Egg Number – Hen, EZH = Egg Size – Hen, MTC/MTH = Meat Taste – Cock/Hen, ESC/ESH = Ease of Sale – Cock/Hen

Table 4 presented the trait preference scores in Yoruba and Fulani ecotype chickens within each zone (Ogbomoso North and Ogbomoso South LGAs). The Table uses a preference scoring system where lower scores indicate higher preference (scale where 1 = most preferred). Traits like egg number, egg size, and ease of sale were rated better in Ogbomoso South than North. Across all traits measured, Ogbomoso South

shows lower preference scores compared to Ogbomoso North. It showed that Ogbomoso South residents strongly preferred chickens for egg number (1.41) compared to 2.02 for Ogbomoso North residents. Ogbomoso South chickens are also more marketable with ease of sale scores of (1.43 for cocks and 1.39 for hens) compared to Ogbomoso North chickens (2.15 for cocks and 2.08 for hens).

Table 4: Mean (± SD) of Trait Preference Scores for Yoruba and Fulani Chickens by zone

Trait Preference Code	Ogbomoso North	Ogbomoso South
BSC (Body size – cock)	1.48 ± 0.82	1.32 ± 0.74
BSH (Body size – hen)	1.54 ± 0.85	1.36 ± 0.76
ENH (Egg number – hen)	2.02 ± 1.13	1.41 ± 0.88
EZH (Egg size – hen)	1.96 ± 1.07	1.38 ± 0.79
MTC (Meat taste – cock)	1.68 ± 0.91	1.44 ± 0.72
MTH (Meat taste – hen)	1.72 ± 0.89	1.47 ± 0.79
ESC (Ease of sale – cock)	2.15 ± 1.25	1.43 ± 0.89
ESH (Ease of sale – hen)	2.08 ± 1.19	1.39 ± 0.86
Chi square χ^2	272.44	245.09

[ab]mean with different letters are significantly different across rows. BSC = Body Size – Cock, BSH = Body Size – Hen, ENH = Egg Number – Hen, EZH = Egg Size – Hen, MTC/MTH = Meat Taste – Cock/Hen, ESC/ESH = Ease of Sale – Cock/Hen

Table 5 indicated the majority of respondents 70% relied on natural mating for breeding, with only 12% using artificial insemination. Farmers selected breeding stock mainly based on egg production 49%, followed by plumage colour 20% and size 19%. Disease resistance 5% and meat production 8% were less emphasized. Slightly more than half 57% practiced crossbreeding, suggesting some awareness of genetic improvement but limited use of advanced methods.

Table 5: Results from the Section B of the Questionnaire (Breeding and Selection)

Question	Options	Frequency	Percentage (%)
What method do you use for breeding?	Natural mating	34	70
	Artificial insemination	6	12
	Both	9	18
What criteria do you use for selecting breeding stock?	Egg Production	24	49
	Meat production	4	8
	Disease Resistance	2	5
	Size	9	19
	Plumage colour	10	20
Do you practice Crossbreeding?	Yes	28	57
	No	21	43

Table 6 revealed that most farmers (47%) combined both commercial and homemade feeds while (31%) relied solely on commercial feeds. Feeding frequency was highest for once daily (47%) but fewer farmers feeding twice (41%) or thrice daily (12%). A large proportion (78%) reported providing supplement such as vitamins and minerals.

Table 6: Results from Section C of the Questionnaire (Nutrition and Feeding)

Question	Option	Frequency	Percentage (%)
What type of feeding do you provide?	Commercial feed	15	31
	Homemade feed	8	16
	Combination	24	47
	Other	2	4
How often do you feed your chicken?	Once daily	23	47
	Twice daily	20	41
	Thrice daily	6	12
Do you provide supplements?	Yes	38	78
	No	11	22

Table 7 presented the health management of chickens. The most common disease encountered were Coccidiosis 51% and Newcastle 39%. Farmers relied mainly on medication 46% and vaccination 41% for disease prevention while sanitation and biosecurity were rarely practiced. Almost half 525 had no veterinary care plan.

Table 7: Result from Section D of the Questionnaire (Health Management)

Question	Option	Frequency	Percentage (%)
What disease have you encountered?	Newcastle	19	39
	Gumboro	5	10
	Coccidiosis	28	51
What method do you use for disease prevention?	Vaccination	20	41
	Medication	23	46
	Sanitation	2	4
	Bio security	4	9
Do you have a veterinary plan?	Yes	24	48
	No	25	52

Table 8 indicated that most farmers 50% practiced semi- intensive housing followed by free- range 29% and intensive system 21%. Wooden materials 65% were the most common for housing construction with fewer using concrete 21% or metal 13%. Waste management was mostly done through daily 47% or weekly 39% cleaning, though some farmers used irregular methods 14%, which could increase disease risk.

Table 8: Result from Section E of the Questionnaire (Housing and Management)

Question	Options	Frequency	Percentage (%)
What type of housing do you use for construction?	Free-range	14	29
	Intensive	10	21
	Semi-Intensive	25	50
What material do you use for construction?	Wood	32	65
	Metal	6	13
	Concrete	11	21
How do you manage waste and sanitation?	Daily cleaning	23	47
	Weekly cleaning	19	39
	Other	7	14

Table 9 revealed that local markets dominated as sales outlets 86% with minimal access to urban markets 14% and no use of online platforms. Pricing was mainly influenced by market demand 55% while production costs 37% and competition 8% played smaller roles. Annual income varied with most farmers earning between 50,000 – 100,000 35%, though a quarter 24% reported higher earnings above 200,000.

Table 9: Result from Section F of the Questionnaire (Marketing and Economics)

Question	Option	Frequency	Percentage (%)
Where do you sell your chickens?	Local markets	42	86
	Urban markets	7	14
	Online platforms	0	0
What factor influence your pricing?	Production cost	18	37
	Market demand	27	55
	Competition	5	8
What is your average annual income from sales?	₦10,000-₦50,000	15	31
	₦50,000-₦100,000	17	35
	₦150,000-₦200,000	5	10
	Above ₦200,000	12	24

Table 10 showed that the greatest challenge faced by respondents was disease 76% followed by feed scarcity 14% and market fluctuations 10%. The key opportunities identified for improvement were training and education 39% and access to credit 39% with improved infrastructure also noted by 22% of respondents.

Table 10: Result from Section G of the Questionnaire (Challenges and Opportunities)

Question	Options	Frequency	Percentage (%)
What Challenges do you face?	Disease	37	76
	Feed scarcity	7	14
	Market fluctuation	5	10
What opportunities do you see for improvement?	Training and Education	19	39
	Access to credit	19	39
	Improved infrastructures	11	22

Discussion

The findings of this study on farmer perceptions and preferences for Yoruba and Fulani ecotype chickens in Ogbomoso North and South Local Government Areas demonstrate the influence of socio-cultural background, production objectives, and environmental conditions on poultry management decisions. A larger proportion of farmers in Ogbomoso North preferred and raised Fulani ecotype chickens, which may be attributed to their known hardiness, resistance to diseases, and strong scavenging ability under semi-extensive production systems. These characteristics are particularly important in areas with limited access to veterinary services and commercial feed resources (Ajayi, 2010).

In contrast, farmers in Ogbomoso South showed a stronger preference for Yoruba ecotype chickens because of their relatively higher egg production, improved market value, and suitability for semi-intensive and intensive management systems. Traits such as egg number, egg size, and marketability were considered highly important by farmers in this area (Olajide *et al*., 2019). Farmers in Ogbomoso South consistently rated Yoruba chickens more favorably across major productive and

economic traits, including ease of sale and egg yield. This observation agrees with the report of Adebambo *et al*. (2021), who noted that indigenous chicken genotypes possessing desirable market characteristics are more readily adopted in urban and peri-urban environments.

Although Fulani chickens were less preferred for commercial purposes, they were valued for their ability to survive under low-input management systems. Similar observations were made by Kondombo *et al*. (2003), who reported that rural poultry farmers in Burkina Faso prioritized adaptability and survivability over high productivity. Furthermore, farmers in Ogbomoso South assigned lower weighted scores to most productive traits, indicating stronger preferences and a more market-oriented production approach. This trend may be linked to better infrastructure, improved market access, and closer proximity to urban consumers.

These findings emphasize the importance of designing location-specific breeding and improvement programs that consider farmers' preferences, environmental realities, and market demands instead of relying on generalized breeding strategies. Ajayi and Ejiofor (2009) similarly stressed that successful indigenous poultry improvement programs should involve participatory breeding approaches tailored to local socio-economic and ecological conditions.

The observed differences in farmer preference also have implications for the conservation of indigenous genetic resources. While the Yoruba ecotype appears to be increasingly integrated into semi-commercial poultry systems, the Fulani ecotype remains highly relevant for sustaining rural livelihoods in resource-poor and marginal production areas. Consequently, efforts aimed at improving productive traits such as egg yield and marketability in both ecotypes, alongside farmer-centered extension services, could improve the efficiency and sustainability of indigenous poultry production in Nigeria (Sonaiya and Swan, 2004; Yakubu *et al*., 2010).

Feeding management practices among the respondents involved a combination of commercial and homemade feeds. However, the predominance of once-daily feeding suggests inadequate feed availability and financial limitations among farmers. Similar findings were reported by Olaniyi and Ojedapo (2021), who observed that indigenous chickens in rural communities largely depend on scavenging with minimal supplementation, resulting in irregular nutrient intake and reduced productivity.

Disease occurrence was identified as one of the most serious constraints affecting indigenous poultry production in the study area. Coccidiosis and Newcastle disease were the most frequently reported health problems among farmers. Most respondents relied more on medications than vaccination programs, while sanitation and biosecurity measures were poorly practiced. This situation reflects inadequate veterinary extension support and limited access to affordable vaccines, which have been widely identified as major challenges to indigenous poultry production in Nigeria (Olowofeso *et al*., 2022; Gorom, 2020). In addition, the lack of structured veterinary care plans among many farmers likely contributed to increased mortality rates and flock losses.

The dominant housing systems identified in the study were semi-intensive and free-range systems, with poultry shelters mainly constructed from wooden materials. Although these systems are relatively affordable, they provide insufficient protection against predators, theft, and adverse weather conditions, supporting earlier observations by Yakubu *et al*. (2020).

Waste disposal and sanitation practices were also inconsistent, as some farmers practiced irregular cleaning routines, which may have contributed to the high prevalence of diseases reported during the study.

Marketing activities for indigenous chickens were largely restricted to local markets, while access to urban markets and digital marketing platforms remained very limited. Poor market linkage reduces farmers' income opportunities and discourages expansion of production activities. Similar findings were reported by Opeyemi *et al*. (2021), who noted that weak marketing systems remain a major challenge in rural poultry enterprises. Income analysis further revealed that most respondents earned between ₦50,000 and ₦100,000 annually from poultry production, suggesting that poultry farming contributes to household sustenance mainly at a subsistence level.

Overall, the study revealed that indigenous poultry production in Ogbomoso North and South contributes significantly to household food security, income generation, and cultural practices. Nevertheless, productivity is constrained by inadequate feeding, poor disease management, limited veterinary support services, and weak market access. These findings are consistent with earlier reports highlighting the need for targeted interventions aimed at improving the productivity and sustainability of indigenous poultry systems in Nigeria (Amao *et al*., 2021; Adebambo *et al*., 2024).

Conclusion and Recommendations

Conclusively, the study revealed farmers preference for Yoruba and Fulani ecotype chickens in Ogbomoso North and South Local Government Areas. Yoruba ecotype chickens were more preferred for traits such as egg production, egg size, and marketability among farmers in Ogbomoso South local government. However, Fulani ecotype chickens were more predominant in Ogbomoso North because of their ease of sales, body size and egg size. More so, Yoruba and Fulani ecotype chickens in Ogbomoso North and South Local Government Areas are predominantly managed under traditional production systems, natural mating, low-input feeding practices, frail health management, and semi-intensive systems.

Based on the findings of this study, the following recommendations are proposed:

Breeding and genetic improvement programs should focus on farmer-preferred traits such as high egg production, larger egg size, disease resistance, and improved marketability. Both Yoruba and Fulani ecotype chickens should be conserved and genetically improved to ensure sustainable poultry production across different agro-ecological zones. Government agencies and agricultural institutions should strengthen programs aimed at conserving indigenous chicken genetic resources and promoting their sustainable utilization.

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