



KNOWLEDGE AND ATTITUDES OF LIVESTOCK FARMERS TOWARDS WILDLIFE-FRIENDLY BREEDING PROGRAMS IN OYO STATE

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ABSTRACT

The study investigated the knowledge and attitudes of livestock farmers towards wildlife-friendly breeding programs in Oyo State, Nigeria. Multi stage sampling procedure was used for the study. Data were collected using a structured questionnaire and analysed using both descriptive and inferential statistics. The findings revealed that the majority (73.3%) of respondents were male, with farmers aged between 31 and 50 years, and a significant portion (40%) having more than 16 years of farming experience. While a general awareness of wildlife-friendly breeding programs existed (mean = 3.45), farmers lacked practical knowledge of implementing these practices, particularly regarding their impact on livestock productivity (mean = 2.98). Despite a positive attitude towards the potential benefits of wildlife-friendly practices (mean = 3.22), concerns about increased workload (mean = 2.70) and preference for traditional methods (mean = 2.35) were prevalent. Major barriers to adoption included the high cost of implementation (mean = 3.67), lack of technical knowledge (mean = 3.45), and limited government support (mean = 3.70). Regression analysis showed that farmers' educational level ($p < 0.001$), participation in agricultural training programs ($p = 0.001$), and access to extension services ($p = 0.003$) were significant predictors of positive attitudes towards wildlife-friendly breeding. Additionally, cattle farmers demonstrated a stronger inclination to adopt such practices compared to those managing other livestock ($p = 0.002$). The study concludes that while farmers are generally receptive to wildlife-friendly breeding programs, substantial challenges particularly financial constraints, inadequate training, and limited government support hinder widespread adoption. The provision of financial incentives, enhanced agricultural education, and stronger government policies are recommended to facilitate the integration of wildlife conservation into livestock farming practices. These findings contribute to the broader discourse on sustainable agriculture and biodiversity conservation, offering actionable insights for policymakers and stakeholders.

Keywords: Wildlife-friendly, Breeding, Livestock, Farmers, Adoption, Challenges

INTRODUCTION

The expansion of agriculture, particularly livestock farming, has often been linked to significant environmental degradation, including the loss of biodiversity. Livestock farming, when not managed sustainably, can disrupt ecosystems, contribute to deforestation, and endanger local wildlife. In response, wildlife-friendly breeding programs have emerged as a sustainable solution aimed at minimizing the negative impacts of livestock farming on biodiversity while promoting coexistence between livestock and wildlife (Lapeyre *et al.*, 2019). These programs integrate agricultural productivity with conservation goals, offering a dual benefit for farmers and the environment (Linnell *et al.*, 2020). In Nigeria, where livestock farming is a critical economic activity, the pressure on natural habitats is increasing due to expanding grazing areas and the continuous demand for agricultural land (Olaoye *et al.*, 2021). Despite the growing awareness of environmental conservation, the level of knowledge and attitudes of livestock farmers toward wildlife-friendly practices remains a concern. Farmers' perceptions of wildlife conservation and sustainable farming practices are essential for the successful implementation of wildlife-friendly breeding programs (Schmitz *et al.*, 2021). Agricultural education can play a pivotal role in equipping farmers with the knowledge and skills



necessary for adopting environmentally responsible practices, thereby facilitating the coexistence of livestock and wildlife.

Research has highlighted that the adoption of wildlife-friendly practices is often hampered by a lack of awareness, insufficient educational programs, and limited technical support for farmers (Kiffner *et al.*, 2022). In Oyo State, understanding the existing knowledge levels and attitudes of livestock farmers towards these programs is crucial for shaping effective agricultural education interventions. This study seeks to assess the knowledge and attitudes of livestock farmers in Oyo State towards wildlife-friendly breeding programs and the role of agricultural education in promoting sustainable farming practices. By examining farmers' awareness and attitudes, this research aims to provide insights into the potential barriers and opportunities for integrating wildlife conservation into livestock farming practices in the region.

MATERIALS AND METHODS

The Study Area

This study was conducted in Oyo State, Nigeria, a key livestock farming region with diverse ecological zones ranging from forest to savannah. Five purposively selected Local Government Areas (LGAs); Ibarapa Central, Iseyin, Saki West, Afijio, and Ogbomoso North, were chosen based on their high livestock farming activities and proximity to wildlife habitats. Ibarapa Central and Iseyin are known for cattle and goat farming, Saki West has large-scale livestock operations, Afijio features mixed farming, and Ogbomoso North has a growing commercial poultry sector.

Sampling Procedure and Sample Size

The study adopted a stratified random sampling technique to ensure balanced representation across livestock types. A total of 150 livestock farmers, comprising cattle, goat, and poultry farmers, were randomly selected from the five LGAs at 30 respondents per LGA. This ensured a diverse and representative sample for assessing knowledge and attitudes toward wildlife-friendly breeding programs.

Method of Data Collection

Data were collected using a structured questionnaire designed to capture respondents' demographic characteristics, knowledge levels, and attitudes toward wildlife-friendly breeding programs. The questionnaire was pre-tested with 20 farmers outside the study area and the Cronbach alpha test for reliability was 0.934, showing that the instrument was excellent. Data collection involved a self-administered questionnaires to ensure completeness and accuracy.

Method of Data Analysis

Data were analyzed using descriptive statistics. Descriptive statistics, including frequencies, percentages, means, and standard deviations, summarized demographic characteristics and assessed knowledge and attitudes. Statistical analyses were conducted using SPSS version 25.

Model Specification

The binary logistic regression model used to assess the factors influencing farmers' knowledge and attitudes towards wildlife-friendly breeding programs is specified as follows: Let Y be the dependent variable representing the likelihood that a farmer has a positive attitude towards wildlife-friendly breeding programs:

Y = 1 if the farmer has a positive attitude

Y = 0 if the farmer does not have a positive attitude

The logistic regression model is specified as:

$$\ln\left(\frac{Y}{1-Y}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \varepsilon \quad \dots(1)$$

Where:

- $\ln\left(\frac{Y}{1-Y}\right)$ is the natural logarithm of the odds that a farmer has a positive attitude towards wildlife-friendly breeding programs.

- β_0 is the intercept.

- $\beta_1, \beta_2, \dots, \beta_n$ are the coefficients of the independent variables (X_1, X_2, \dots, X_n) that influence the dependent variable.



- ε is the error term.

The independent variables (X_1, X_2, \dots, X_n) include:

X_1 : Age of the farmer – Measured in years

X_2 : Level of education – Measured as categorical (1 = No formal education, 2 = Primary, 3 = Secondary, 4 = Tertiary)

X_3 : Type of livestock farm – Measured as categorical (1 = Cattle, 2 = Goat/Sheep, 3 = Poultry)

X_4 : Years of farming experience – Measured in years

X_5 : Access to extension services – Measured as binary (1 = Yes, 0 = No)

X_6 : Participation in agricultural training programs – Measured as binary (1 = Yes, 0 = No)

X_7 : Farm size – Measured in hectares

X_8 : Awareness of wildlife conservation – Measured using a Likert scale (1 = Low, 2 = Moderate, 3 = High)

The parameters of the model ($\beta_0, \beta_1, \dots, \beta_n$) were estimated using maximum likelihood estimation (MLE).

RESULTS AND DISCUSSION

SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS

The result in Table 1 indicated that the majority (73.3%) of respondents were male, which aligns with the broader gender distribution in livestock farming in Nigeria, where men traditionally dominate this sector. Age distribution shows that majority (63.3%) of the respondents were between 31 and 50 years old, suggesting that middle-aged farmers are more involved in livestock farming. This finding is consistent with research suggesting that middle-aged individuals are often more engaged in farming activities due to their accumulated experience (Olaoye *et al.*, 2021). Furthermore, a significant portion (40%) of the respondents had over 16 years of farming experience, indicating a wealth of practical knowledge in livestock management. However, while the majority of respondents have secondary or primary education, a notable 16.7% of farmers have no formal education. This could impact their ability to grasp and implement new concepts such as wildlife-friendly breeding programs, highlighting the importance of targeted educational interventions in agricultural practices (Kiffner *et al.*, 2022).



Table 1: Distribution of Respondents based on the Scio-economic Characteristics

Variables	Frequency (n = 150)	Percentage (%)	Mean
Gender			
Male	110	73.3	-
Female	40	26.7	-
Age (years)			43.1
18 – 30	20	13.3	
31 – 40	45	30.0	
41 – 50	50	33.3	
51 and above	35	23.3	
Level of Education			-
No formal education	25	16.7	
Primary education	50	33.3	
Secondary education	55	36.7	
Tertiary education	20	13.3	
Farming Experience (years)			14.2
Less than 5	15	10.0	
5 – 10	35	23.3	
11 – 15	40	26.7	
16 and above	60	40.0	
Type of Livestock			-
Cattle	65	43.3	
Goat/Sheep	50	33.3	
Poultry	35	23.3	
Access to Extension Services			-
Yes	70	46.7	
No	80	53.3	

Source: Field Survey, 2024.

Knowledge of Livestock Farmers about Wildlife-Friendly Breeding Programs

The knowledge levels of livestock farmers about wildlife-friendly breeding programs appear to vary. While a substantial number of farmers are aware of the concept of wildlife-friendly breeding (mean = 3.45), and understand the general benefits of wildlife conservation (mean = 3.12), their practical knowledge about implementing such practices is moderate to low. Specifically, farmers demonstrate limited knowledge of the impact of wildlife-friendly breeding on productivity (mean = 2.98) and express a lack of guidance from extension agents (mean = 2.56). This low level of technical knowledge aligns with prior research, which has identified a gap in practical wildlife conservation knowledge among farmers in developing countries (Schmitz *et al.*, 2021). These findings suggest the need for more robust extension services and training programs to bridge the knowledge gap.



Table 2: Knowledge of Livestock Farmers Regarding Wildlife-Friendly Breeding Programs

Statements	Mean	Std. Deviation	Remark
I am aware of the concept of wildlife-friendly breeding	3.45	0.84	High
I understand the benefits of wildlife conservation in farming	3.12	0.92	Moderate
I know the impact of wildlife-friendly breeding on livestock productivity	2.98	1.05	Moderate
I have received information about wildlife-friendly breeding from extension agents	2.56	1.15	Low
I know how to implement wildlife-friendly breeding practices on my farm	2.44	1.09	Low

Source: Field Survey, 2024.

Attitudes of Livestock Farmers towards Wildlife-Friendly Breeding Programs

Farmers generally have a positive attitude towards wildlife-friendly breeding programs, as indicated by their belief in the potential benefits to their farms (mean = 3.22) and their willingness to adopt such practices (mean = 3.10). However, there is a degree of concern regarding the perceived increase in workload (mean = 2.70) and some preference for traditional farming methods (mean = 2.35). These concerns highlight a reluctance to fully embrace wildlife-friendly practices due to practical considerations, such as labor intensity and entrenched traditional farming methods. This echoes findings by Lapeyre *et al.* (2019), who suggest that while farmers may be aware of and willing to adopt conservation-oriented practices, perceived challenges in implementation may hinder widespread adoption.

Table 3: Attitudes of Livestock Farmers towards Wildlife-Friendly Breeding Programs

Statements	Mean	Std. Deviation	Remark
I believe that wildlife-friendly breeding benefits my farm	3.22	0.88	Positive
I am willing to adopt wildlife-friendly breeding practices	3.10	0.94	Positive
I am concerned about wildlife conservation on my farm	2.95	0.99	Neutral
I think wildlife-friendly breeding will increase my workload	2.70	1.05	Neutral
I prefer traditional livestock farming methods	2.35	1.10	Negative

Source: Field Survey, 2024.

FACTORS AFFECTING ADOPTION OF WILDLIFE-FRIENDLY BREEDING PROGRAMS

The factors affecting the adoption of wildlife-friendly breeding programs reflect practical and financial challenges. The high cost of implementation (mean = 3.67) and lack of technical knowledge (mean = 3.45) are significant barriers, consistent with previous studies (Linnell *et al.*, 2020). Additionally, limited access to extension services (mean = 3.12) and the perception that wildlife-friendly practices may reduce livestock productivity (mean = 3.25) further hinder adoption. The lack of government support or incentives (mean = 3.70) stands out as a crucial factor, suggesting that policy interventions are needed to encourage adoption. The presence of government subsidies and training programs has been highlighted in recent literature as essential for promoting sustainable farming practices (Schmitz *et al.*, 2021).



Table 4: Factors Affecting Adoption of Wildlife-Friendly Breeding Programs

Statements	Mean	Std. Deviation	Remark
High initial cost of implementing wildlife-friendly programs	3.67	0.82	High
Lack of technical knowledge for implementation	3.45	0.98	High
Fear of reduced livestock productivity	3.25	1.02	Moderate
Limited access to extension services and training	3.12	0.87	Moderate
Perceived increase in labor intensity	2.88	1.09	Moderate
Lack of government support or incentives	3.70	0.77	High

Source: Field Survey, 2024.

ROLE OF AGRICULTURAL EDUCATION IN ENHANCING FARMERS' UNDERSTANDING AND ATTITUDES TOWARDS WILDLIFE CONSERVATION

Agricultural education plays a significant role in enhancing farmers' understanding and attitudes toward wildlife conservation. The results indicate that education programs significantly improve knowledge of wildlife conservation (mean = 3.98), increase awareness of biodiversity (mean = 3.92), and positively influence attitudes toward sustainable practices (mean = 3.85). The strong support for integrating wildlife conservation into agricultural curricula (mean = 4.10) underscores the necessity for formal education in driving sustainable practices. These findings are supported by Kiffner *et al.* (2022), who stress that agricultural education is critical for bridging the gap between conservation and farming practices. Extension services were also found to be an important source of information (mean = 3.75), reinforcing the need for continuous support for farmers through these programs.

Table 5: Role of Agricultural Education in Enhancing Farmers' Understanding and Attitudes

Statements	Mean	Std. Deviation	Remark
Agricultural education improves my knowledge of wildlife conservation	3.98	0.74	High
Training programs have positively influenced my attitude toward wildlife conservation	3.85	0.79	High
My awareness of the importance of biodiversity has increased due to agricultural education	3.92	0.71	High
Extension services provide essential information on wildlife-friendly practices	3.75	0.85	High
Wildlife conservation should be integrated into agricultural curricula	4.10	0.63	Very High
Agricultural education has helped me adopt sustainable farming practices	3.80	0.76	High

Source: Field Survey, 2024.

POTENTIAL CHALLENGES AND OPPORTUNITIES FOR THE IMPLEMENTATION OF WILDLIFE-FRIENDLY BREEDING PROGRAMS

The findings highlight several challenges to the implementation of wildlife-friendly breeding programs, as seen in Table 6, aligning with broader conservation and agricultural sustainability literature. Financial constraints (mean = 3.88) and inadequate technical knowledge (mean = 3.65) emerged as the most significant barriers, consistent with previous studies emphasizing resource limitations as a primary obstacle in conservation efforts (Olaoye *et al.*, 2021; Nnaji & Okonkwo, 2022). Financial constraints have been widely reported as a major hindrance to sustainable agricultural and conservation initiatives, as many farmers lack the necessary capital to invest in eco-friendly practices (Agyeman *et al.*, 2020). Inadequate technical knowledge about wildlife conservation is another key barrier, highlighting the need for capacity building and training programs. Studies have shown that limited awareness and technical know-how often deter farmers from adopting sustainable breeding methods (Chukwu *et al.*, 2019; Tadesse & Getachew, 2021). This knowledge gap



reinforces the importance of agricultural extension services in disseminating best practices and ensuring that farmers receive adequate training to implement conservation-friendly approaches effectively (Adebayo *et al.*, 2023).

Additionally, the perception that wildlife-friendly practices reduce productivity (mean = 3.45) presents a significant psychological and economic challenge. This concern has been reported in previous research, where farmers hesitate to adopt sustainable breeding systems due to fears of reduced yield and profitability (Smith *et al.*, 2020). However, long-term studies have indicated that well-managed wildlife-friendly systems can enhance ecosystem services, ultimately benefiting both biodiversity and agricultural productivity (Mukherjee *et al.*, 2022). Limited access to extension services (mean = 3.50) further complicates the implementation of wildlife-friendly breeding programs. Previous research has shown that farmers who have frequent interactions with extension officers are more likely to adopt sustainable practices (Adesina & Zinnah, 2021). Unfortunately, inadequate extension coverage, particularly in rural areas, remains a major bottleneck in promoting conservation-oriented agricultural practices (Omotayo & Aluko, 2023).

Another critical challenge is the lack of government incentives (mean = 3.90), which ranked among the highest concerns. Studies have shown that financial and policy support play a pivotal role in encouraging farmers to adopt conservation-friendly practices (Kassie *et al.*, 2021; Bello *et al.*, 2023). Incentives such as subsidies, tax breaks, and financial grants could enhance farmers' willingness to integrate wildlife-friendly approaches into their breeding programs (Nziguheba *et al.*, 2020).

Table 6: Challenges for the Implementation of Wildlife-Friendly Breeding Programs

Statements	Mean	Std. Deviation	Remark
Lack of financial resources to implement wildlife-friendly programs	3.88	0.81	High
Inadequate technical knowledge about wildlife conservation	3.65	0.88	High
Limited access to extension services	3.50	0.94	Moderate
Perception that wildlife-friendly practices reduce productivity	3.45	0.96	Moderate
Lack of government incentives	3.90	0.78	High

Source: Field Survey, 2024.

PROSPECTS FOR IMPROVING FARMERS' ADOPTION OF WILDLIFE-FRIENDLY BREEDING PROGRAMS

The prospects for improving the adoption of wildlife-friendly breeding programs are promising. The provision of financial incentives and subsidies (mean = 4.10) emerges as a key factor, suggesting that farmers would be more likely to adopt these practices if they received economic support. Increased training and capacity-building programs (mean = 3.85) and improved access to extension services (mean = 3.75) are also seen as essential for improving adoption rates. Government policies that support wildlife-friendly practices (mean = 3.92) and increased collaboration between farmers and wildlife experts (mean = 3.63) are other critical factors. These findings align with Lapeyre *et al.* (2019), who argue that strong policy frameworks and financial incentives are vital for the successful integration of conservation practices into agriculture.



Table 7: Prospects for Improving Adoption of Wildlife-Friendly Breeding Programs

Statements	Mean	Std. Deviation	Remark
Provision of financial incentives and subsidies	4.10	0.68	Very High
Increased training and capacity-building programs	3.85	0.75	High
Improved access to extension services	3.75	0.82	High
Government policies supporting wildlife-friendly practices	3.92	0.72	Very High
Strengthening collaboration between farmers and wildlife experts	3.63	0.89	High
Increased community awareness and education on wildlife conservation	3.56	0.94	High

Source: Field Survey, 2024.

Factors Influencing Knowledge and Attitudes towards Wildlife-Friendly Breeding Programs

The regression analysis identifies several factors influencing farmers' knowledge and attitudes towards wildlife-friendly breeding programs. The level of education ($p < 0.001$), participation in agricultural education programs ($p = 0.001$), and access to extension services ($p = 0.003$) are significant predictors, indicating that farmers with higher educational attainment and access to educational resources are more likely to have a positive attitude toward wildlife-friendly breeding programs. This aligns with existing literature that emphasizes the role of education and extension services in fostering sustainable farming practices (Linnell *et al.*, 2020). Additionally, the type of livestock farm, particularly cattle farming ($p = 0.002$), significantly influences farmers' attitudes, suggesting that cattle farmers are more engaged in wildlife-friendly practices, likely due to the proximity of grazing areas to wildlife habitats. These findings reinforce the need for targeted educational and policy interventions to support the adoption of wildlife-friendly practices.

Table 8: Factors Influencing Farmers' Knowledge and Attitudes towards Wildlife-Friendly Breeding Programs

Variables	Coefficient (B)	Std. Error	Wald Statistic	Sig. value)	(p- Odds (Exp(B))	Ratio
Age (years)	0.022	0.014	2.482	0.115	1.022	
Level of education (years of schooling)	0.415	0.086	23.334	0.000***	1.514	
Years of farming experience	0.032	0.018	3.142	0.076	1.032	
Type of livestock (1 = cattle, 0 = others)	0.506	0.162	9.731	0.002**	1.659	
Access to extension services (1 = yes, 0 = no)	0.774	0.261	8.797	0.003**	2.169	
Participation in agricultural education programs (1 = yes, 0 = no)	0.982	0.271	13.134	0.001***	2.670	

***Significant at the 0.01 level, **Significant at the 0.05 level.

To examine the relationship between farmers' socio-demographic factors and their knowledge and attitudes towards wildlife-friendly breeding programs, a chi-square test was used for categorical variables, and an independent sample t-test was used for comparing means. The results are presented in Table 9.



Table 9: Test of Hypotheses

Hypothesis	Test Statistic	p-value	Decision (5% level)
H₀₁: There is no significant relationship between the level of education and farmers' knowledge of wildlife-friendly breeding programs.	Chi-square (χ^2) = 14.561	0.001**	Reject H ₀₁
H₀₂: There is no significant relationship between access to extension services and farmers' attitudes towards wildlife-friendly breeding programs.	T-test (t = 3.874)	0.000**	Reject H ₀₂

Note: $p < 0.01$ (Highly significant)

H₀₁: the chi-square test indicates a significant relationship between the level of education and farmers' knowledge of wildlife-friendly breeding programs ($p=0.001$). This suggests that higher educational attainment is positively associated with better knowledge of wildlife-friendly practices. This is in line with recent studies by Oke *et al.* (2023), who reported that farmers with higher education levels are more likely to adopt modern and sustainable farming

H₀₂: the independent sample t-test shows a significant difference in attitudes towards wildlife-friendly breeding programs based on access to extension services ($p=0.000$). Farmers who had access to extension services displayed more positive attitudes towards adopting these practices. This finding agrees with Ajibola and Adeyemi (2022), who emphasized the critical role of extension agents in shaping farmers' attitudes towards new agricultural innovations.

CONCLUSION AND RECOMMENDATIONS

The study concludes that while livestock farmers in Oyo State exhibit a general awareness and positive attitudes toward wildlife-friendly breeding programs, the practical adoption of these practices is limited by significant barriers. These include financial constraints, lack of technical knowledge, insufficient access to extension services, and inadequate government support. Farmers' educational level and participation in agricultural training programs positively influence their willingness to adopt wildlife-friendly practices. Additionally, cattle farmers showed a greater inclination towards these programs than other livestock farmers. To enhance the adoption of wildlife-friendly breeding, the study recommends stronger government policies, financial incentives, and enhanced agricultural education programs. By addressing these challenges, there is potential for integrating wildlife conservation into livestock farming, contributing to sustainable agricultural practices and biodiversity conservation.

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