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Effects of Farmer-Herder Conflicts on Food Security of Rural Farming Households in Ogun State, Nigeria

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Abstract

This study investigates the effect of farmer–herder conflicts on the food security status of rural farming households in Ogun State, Nigeria. Ogun State is an important agricultural zone in south-western Nigeria, where increasing pressure on land and water resources has increased conflicts between farmers and herders, with serious implications for rural household food security. Primary data were obtained from 240 farming households through a multi-stage sampling technique. The data were analysed using descriptive statistics, Likert scale analysis, and a Logit regression model. The descriptive results revealed that respondents had a mean age of 53.02 years and an average farming experience of 18.78 years. Most of the respondents were male (66.7%) and married (81.1%). Findings from the Likert scale analysis showed that respondents considered both formal measures, such as arrest and prosecution, and community-based approaches, including peacebuilding initiatives, as effective strategies for managing farmer–herder conflicts. The Logit regression results showed that the frequency of farmer-herder conflicts significantly increase the likelihood of food insecurity in the study area ($\beta = -0.089$, significant at the 5% level). In contrast, livelihood diversification ($\beta = 0.065$, significant at the 5% level) and higher levels of education ($\beta = 0.083$, significant at the 10% level) are positively associated with household food security. Conversely, household size has a negative and statistically significant effect on food security ($\beta = -0.132$, significant at the 1% level). Overall, the estimated coefficients are significant at the 1%, 5%, and 10% confidence levels. The study concludes that farmer–herder conflicts pose a serious threat to food security in rural Ogun State. It therefore recommends that policymakers adopt an integrated approach that combines formal conflict resolution mechanisms with community-based initiatives, alongside the development of designated grazing areas, to reduce land-use conflicts and promote peaceful coexistence between farmers and herders.

Introduction

Over the past few years, Nigeria has witnessed an alarming increase in violent conflicts between farmers and herders, with a particular focus on the escalating tensions between Fulani herdsmen and crop farmers. These conflicts are mostly driven by growing competition over scarce natural resources, notably water and grazing land, which are essential to both livestock rearing and crop production. As herders move their cattle in search of pasture and water, farmlands are often encroached upon, leading to extensive crop damage and heightened tensions. The consequences have been severe, including loss of lives, destruction of property, and a gradual decline in agricultural output. In the past, farmers and herders mostly lived together peacefully, using informal agreements to share land and resources for both crops and livestock. Over time,

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this balance has been upset by population growth, worsening environmental conditions, and changes in how land is used. As a result, competition over land has grown, turning small disagreements into long-lasting and sometimes violent conflicts

The situation has become more complicated and now goes beyond just land disputes, as conflicts increasingly have ethnic tensions (International Crisis Group, 2017), especially between Fulani herders from the North and crop farmers in the Southwest. These clashes are often violent and have created a strong sense of insecurity in local communities. In response, some communities have formed ethnic militias or defense groups, which has made the cycle of violence worse. Attacks on farming communities, particularly in Ogun State, have caused many deaths and forced farmers to leave their homes, threatening their livelihoods (International Crisis Group, 2017; Adeniyi, 2019). The conflicts have also led to retaliatory attacks by herders, increasing divisions and raising fears that the violence could spread to other parts of the country (Bello and Abdullahi, 2021).

Nigeria's agricultural sector, especially livestock production, is vital to the country's economy, with the Fulani people being the main contributors. Together with other pastoral groups, the Fulani are responsible for rearing more than 90% of the nation's livestock, which provides an important source of both food and income for many households (Alhassan, 2013). Traditionally, herders have moved their livestock in search of grazing land, particularly during the dry season. In recent years, however, these movements have increasingly led to tension with farmers, who have expanded their farmland to meet the rising demand for food crops driven by rapid population growth. This growing competition for land and water has caused a sharp rise in violent clashes, especially in Ogun State. The resulting conflicts directly affect household food security, with farmers suffering significant crop losses and herders losing cattle, undermining the ability of both groups to provide for their families.

Farmer–herder conflicts in Nigeria have long been rooted in disputes over land, but their frequency and intensity have grown in recent years due to factors such as climate change, population growth, and ineffective government policies. The expansion of farmland, together with environmental changes that have altered grazing conditions, has heightened tensions between the two groups. These conflicts pose serious threats to food security in affected areas, as they disrupt agricultural production, cause food shortages, result in economic losses, and undermine the livelihoods of rural communities (Moritz, 2016).

The situation in Ogun State reflects a wider national trend of increasing farmer–herder conflicts in Nigeria. Despite the importance of these disputes, there is still a lack of comprehensive research examining their specific effects on the food security of rural farming households in the state. While previous studies have investigated farmer–herder conflicts (Alhassan, 2013; Aliyu *et al*., 2018; Leme, 2017; Lalah *et al*., 2020; Lenshie *et al*., 2020; Turner *et al.,* 2020; Ogbanje *et al.,* 2021), none have focused directly on their impact on household food security. This represents a significant gap in the literature and highlights the urgent need for research that explores how these conflicts affect local communities, particularly in terms of access to food and essential resources. Although much is known about the causes and dynamics of farmer–herder conflicts, there is still very little empirical evidence on how they influence household food security in Ogun State.

Moreover, few studies have included household perspectives when assessing the effectiveness of conflict mitigation measures. By using the Sustainable Livelihood Framework, this study offers a detailed understanding of how the frequency of farmer–herder conflicts affect food security and identifies which mitigation strategies are considered most effective by the communities directly impacted. Based on this, the study is guided by the following research questions:

i. What effect does the frequency of farmer-herder conflict have on the food security in rural farming households in Ogun State, Nigeria?
ii. What are the most effective strategies associated with the management of farmer-herder conflicts in Ogun State Nigeria?

Conceptualising Farmer-Herder Conflicts in Nigeria

Farmer–herder conflicts are a significant challenge for agriculture in Nigeria. Traditionally, herders moved their cattle each year in search of grazing land,

especially during the dry season, a practice that has been common across West Africa for centuries (FAO, 2001; Blench, 2004). In recent years, however, this relationship has become more strained due to land shortages, population growth, climate change, and weak governance (Benjaminsen *et al*., 2012; Turner *et al*., 2020). The conflicts have been particularly severe in southern states such as Ogun and Oyo. According to Aliyu *et al.* (2018), clashes became notably more intense around 2012. Prior to that, farmers and herders generally coexisted peacefully, with only minor disputes (Nzeh, 2015; Doyin, 2017). Since 2012, competition over farmland and grazing areas has led to more violent clashes, crop destruction, displacement, and damage to infrastructure (Lumun *et al*., 2020). Farmers report that herders' cattle often destroy crops, while herders claim that farmers encroach on grazing land. Ogun State, where agriculture is a key livelihood, has been particularly affected by these conflicts.

The Conflict and Food Security Nexus

Food security, as defined by the FAO (2008), exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food. Conflicts disrupt this by reducing agricultural output, displacing farmers, damaging infrastructure, and driving up food prices (Nnaji *et al.,* 2022). Empirical studies have confirmed these links. Oloruntoba and Okoruwa (2018) found that herder incursions caused crop destruction and limited market access, leading to income loss and food shortages. Ogbanje *et al*. (2021) reported that farmers in conflict-prone areas experienced lower yields and higher levels of household food insecurity due to abandoned farms and harvest losses. Similarly, Lenshie *et al.* (2020) observed that land disputes undermine local food systems and weaken rural resilience in southern Nigeria. Despite this growing body of research, few studies have quantitatively examined this relationship in Ogun State using household-level data.

Theoretical Framework: Sustainable Livelihood Framework (SLF)

This study draws on the Sustainable Livelihood Framework as its guiding theory. The framework, developed by the UK Department for International Development (Mandishekwa, 2022), explains how households rely on different kinds of capital, including natural, human, physical, social and financial, to secure their livelihoods, maintain food security and build resilience. Conflicts act as shocks that disrupt access to these resources, making it more difficult for households to sustain their way of life. In the case of farmer and herder disputes, land and water, which form natural capital, are under pressure. Farming tools and infrastructure, representing physical capital, are often damaged, while trust and cooperation among community members, which make up social capital, are weakened. As these resources decline, households become increasingly vulnerable to food insecurity. The Sustainable Livelihood Framework helps to explain these vulnerabilities and provides a way to examine how factors such as education, household size and multiple sources of income can strengthen resilience in affected communities.

Conflict Mitigation Strategies: Local Perceptions and Effectiveness

The second objective of this study is to evaluate how effective different conflict mitigation measures are perceived to be. Previous research highlights two main approaches, namely state-led mechanisms and community-based initiatives. Formal measures, including policing, legal interventions and the demarcation of grazing routes (Leme, 2017), are often underfunded, poorly coordinated or met with resistance from local communities. For instance, attempts to implement open grazing bans in southern states have produced mixed outcomes because of weak enforcement and political opposition (International Crisis Group, 2021).

Community-based strategies, including traditional mediation, peace committees and intergroup dialogue, have shown promise in resolving disputes, especially in situations where trust still exists (Wahab and Adetunji, 2016). Involving local communities often increases the legitimacy of these measures and encourages compliance, particularly in rural areas where formal justice systems are distant or difficult to access.

Methodology

Study Area, Sampling Techniques and Method of Data Collection

The study was carried out in Ogun State, Nigeria, where most of the rural population relies on farming. Farmers grow crops such as maize, cassava, vegetables and spices. Cattle rearing is also an important economic activity in the state, largely undertaken by migratory Fulani herders who engaged in livestock farming. The state is covered with natural grasses and a variety of herbaceous plants, which make it an attractive area for cattle grazing. The state is officially divided into four political divisions: Ijebu, Remo, Egba, and Yewa (Ogun State Government, 2025). Primary data were collected using a structured questionnaire, which was administered to 240 respondents across the study area. The questionnaire gathered information on the socioeconomic characteristics of the respondents, including their age, sex, marital status, household income, food consumption and expenditure patterns, and the extent of farmer–herder conflicts.

A multi-stage sampling procedure was employed for the study. In the first stage, all the existing four political divisions were selected. In the second stage, two Local Government Areas (LGAs) from each division, known for high levels of farmer–herder conflict, were purposively selected, giving a total of eight LGAs. In the third stage, three farming communities were purposively chosen from each of the eight LGAs, resulting in a total of 24 communities. In the final stage, ten (10) farmers from each community, who had experienced the impact of cattle grazing on their farms, were purposively selected. This process yielded a total of 240 respondents who were interviewed for the study.

Method of Data Analysis

Perceived Effectiveness of Different Mitigation Strategies of Farmer-Herder Conflicts

Model 1: Analyzing Conflict Mitigation Strategies

To understand how people in the study area perceive different ways of managing farmer herder conflicts, the study used a five (5) point Likert scale. Respondents were asked to state how much they agreed with a range of proposed strategies, covering both formal measures such as legal enforcement and arrests, as well as community-based approaches including dialogue, peacebuilding and the creation of grazing routes. Each respondent indicated their view using the scale of 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree and 5 for strongly agree.

For each strategy, the mean score and standard deviation were calculated. The mean score reflects the general level of agreement on how effective each strategy is perceived to be, while the standard deviation shows how similar or varied the responses were across respondents. Lower variation suggests broad agreement, whereas higher variation points to differing views among participants. Based on these values, the effectiveness of the conflict mitigation strategies was then categorised accordingly.

4.5–5.0 (Strongly Agree): Strategies that were highly effective in managing conflicts.

3.5–4.4 (Agree): Strategies perceived as generally effective.

2.5–3.4 (Neutral): Strategies with mixed perceptions regarding their effectiveness.

1.5–2.4 (Disagree): Strategies perceived as ineffective.

1.0–1.4 (Strongly Disagree): Strategies perceived as highly ineffective.

Model 2: Effects of Farmer-Herder Conflicts on Rural Farming Household Food Security

The study used a binary Logit regression model to examine how farmer herder conflicts affect household food security. The dependent variable, household food security, is classified as either food secure or food insecure, making the Logit model suitable for estimating the likelihood of a household being food secure based on key socio economic and conflict related factors. The model also allows for the analysis of nonlinear relationships and makes it possible to interpret marginal effects and odds ratios, which are valuable for policy decisions. The Logit model was chosen because it has been widely used in similar research, for example by Arene and Anyaeji in 2010, who investigated the factors influencing food security among rural Nigerian households, showing its relevance for this study.

The functional form of the model:

$$Logit(P) = ln\ \frac{P}{1-P} = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \beta 7X7 + \beta 8X8 + \beta 9X9 + \beta 10X10 + \varepsilon$$

Where:

P represents the probability that a household is food secure (coded as 1 for food secure, and 0 otherwise).

$ln\ \frac{P}{1-P}$ = represents the log-odds of being food secure

$\beta 0$ represents the intercept

$\beta 1$ to $\beta 10$ are coefficients to be estimated

ε is the error term

The independent variables that were included in the model are:

X_1 = Frequency of Conflicts

X_2 = Farm size (Ha)

X_3 = Household Income

X_4 = Livelihood Diversification (Number of Livelihood Sources)

X_5 = Access to Agricultural Inputs

X_6 = Market Access (The physical distance from the household to the nearest market in Km)

X_7 = Education Level of Household Head (years)

X_8 = Household size (Number)

X_9 = Years of experience in farming (years)

X_{10} = Membership of Cooperatives Society (Dummy)

The food security index (Fi) is defined as follows:

$$Fi = \frac{\text{per capita food expenditure for the ith household}}{\frac{2}{3} \times \text{mean per capita food expenditure of all households}}$$

Where:

Fi is the food security index for the ith household.

A household is considered food secure when its monthly food expenditure is equal to or above two-thirds of the mean per capita food expenditure of all households in the study, i.e., Fi ≥ 1. Conversely, a household is food insecure when its monthly food expenditure is less than two-thirds of the mean per capita food expenditure of all households in the study, i.e., Fi < 1.

This study uses household food expenditure as a measure of food security because it directly shows a household's ability to buy enough food within its budget. This method captures both the availability of food and the household's access to it, which are key to understanding how farmer–herder conflicts affect rural households. Other measures, such as caloric intake or the Food Insecurity Experience Scale (FIES), were not used because collecting detailed consumption data was not feasible, and this study focuses mainly on the economic aspect of food security.

The explanatory variables were selected based on both theoretical considerations and previous empirical studies on food security and household resilience. The frequency of conflict is the main independent variable, providing a direct indication of how conflict situations impact food security using a per-capita food expenditure index.

In addition, socio-demographic factors such as years of education, household size, and the degree of livelihood diversification were included to help explain differences in vulnerability and coping capacity among households. To provide a balanced analysis, we combined community level perceptions, collected through Likert scale responses, with regression analysis of household level data. This approach allows us to examine both the impact of conflicts on food security and which conflict mitigation strategies are considered most practical in the study area.

Results and Discussion

Dominance Analysis of Socio-Economic Characteristics and their Influence on Support for Community-Driven Conflict Resolution

As shown in Table 1, the socio-economic background of respondents offers important insight into the factors that influence their vulnerability to conflict, their coping strategies, and their willingness to support peaceful, community-led solutions. Instead of looking at these characteristics separately, the analysis emphasizes how they work together to shape attitudes towards non-violent and restorative approaches to conflict. The table reports only the dominant indicators for each socio-economic feature to keep the results clear, straightforward, and easy to understand. By highlighting the most common category in each case, it provides a concise picture of the typical situation of the respondents without including unnecessary detail.

A significant portion (37.8%) of respondents were aged between 41 and 50 years, with a mean age of 53.02 (SD ≈ 8.3). This mature age profile suggests that

most farmers are not only experienced but also more likely to favour stability over confrontation. Their experience and social standing may strengthen their ability to influence collective decisions and support peacebuilding initiatives grounded in community values. The predominance of male respondents, at 66.7%, reflects the traditional organisation of rural agriculture, where men often assume leadership roles. While this can reinforce gendered patterns of land access and decision making, it also positions male farmers to take an active role in restorative dialogue and conflict mediation. The findings also show that 81.1% of respondents were married, revealing a strong family tie and a sense of social responsibility. Married individuals are generally more invested in household stability, which aligns with a preference for peaceful solutions that prevent displacement, economic loss, and violence. Taken together, these socio-demographic characteristics provide a solid foundation for community-led initiatives, reflecting a population deeply rooted in place and shared responsibility.

Educational attainment remains limited, with 46.7% of respondents completed only primary school with a mean year of education of 7.3 years (SD ≈ 2.3 years). This may limit access to modern agricultural techniques, because basic literacy still plays a role in shaping openness to cooperative action and collective problem solving. As Mwangi and Kariuki (2015) reported that minimal education can increase awareness of group benefits, such as those provided through peacebuilding efforts and local governance structures. Household composition also contributes to both risk and resilience. About 64.4% of respondents had between 6 and 8 household members, with an average size of 6 (SD ≈ 1.9 persons). Larger households may benefit from more hands for farm labour, but they also face increased consumption needs and economic pressure. This dynamic can heighten vulnerability in conflict zones, as larger families are disproportionately affected by disruptions in food supply, grazing disputes, and displacement (Gollin, 2023; Drammeh *et al*., 2017). Yet, the need to protect household welfare may also motivate participation in restorative and inclusive conflict mitigation.

A significant indicator of community alignment with collective, peaceful solutions lies in the widespread participation in farming cooperatives. In this study, 66.7% of respondents reported being members of such associations. These cooperatives do more than enhance economic stability, they also play a crucial role in building trust and fostering unity among farmers. As highlighted by Lamidi (2025), farmer groups in rural settings often act as informal institutions that support conflict resolution by promoting dialogue, shared responsibility, and mutual aid. Because they are part of the community, these groups are very effective at solving local disputes and help create fair and lasting solutions. An overwhelming percentage (98.9%) of participants relied on farming as their primary source of livelihood, with half having between 11 and 20 years of experience in the field with a mean year of experience of 18.78 years (SD ≈ 6.1 years). This level of long-term engagement reflects not only a deep connection to agriculture but also a vested interest in preserving the stability of the farming environment. Given their reliance on the land for survival, these farmers are more likely to support conflict resolution strategies that safeguard their fields and avoid disruptions that could jeopardize their crops, income, or future productivity.

Economic hardship remains a serious issue for many rural farming households in the study area. A large share of the respondents (38.9%) earned between ₦41,000 and ₦50,000 per month, which is far below the national minimum wage of ₦70,000 in Ogun State. With such limited income, many households are financially fragile and struggle to cope when conflicts occur. When crops are damaged during a herder incursion, affected farmers often do not have enough money to buy new seeds, fertilisers, or other farm inputs needed for the next planting season. This loss can delay recovery and reduce future harvests. Low income also limits access to credit, insurance, and other forms of external support, making it harder for households to absorb shocks and recover quickly. As a result, the effects of farmer–herder conflicts tend to last longer and continue to threaten food production and household food security in the study area.

Accessing markets remains a major hurdle for many rural farmers, particularly when the distance from their farms to points of sale is considerable. In this study, 45.6% of respondents reported traveling

between 4 and 6 kilometers to reach the nearest market, with an average distance of 5.1 kilometers (SD ≈ 1.3 KM). This means that after harvesting, farmers must travel several miles just to sell their produce often on poor roads and without reliable transportation. As Ibrahim *et al.* (2021) suggest, such limited proximity to markets not only increases the cost of moving goods but also cuts into potential earnings and delays the sale time of sensitive perishable farm products. In regions already strained by farmer herder tensions, these challenges can heighten household insecurity. As a result, many farmers are more inclined to support peaceful, community-based conflict resolution strategies that help preserve access routes and ensure uninterrupted market activity. To cope with economic and environmental uncertainty, many (48.9%) respondents had more than one source of income.

Livelihood diversification not only buffers households against agricultural shocks but also reduces dependence on a single income stream, enhancing resilience in the face of conflict (Minyiwab *et al.*, 2024). Their ability to adapt highlights a broader readiness to embrace diverse coping mechanisms, particularly those centered on peaceful, locally driven approaches to resolving conflict. Lastly, land ownership data revealed that 44.4% of respondents had between 1 and 2 hectares, with a mean farm size of 1.8 hectares (SD ≈ 0.9 hectares). While smallholder plots offer some degree of food security, they are often inadequate in the face of land related disputes, especially where grazing rights overlap or degradation limits productivity. This makes it imperative for farmers to engage in peaceful negotiations that protect their limited land assets.

Overall, the socioeconomic characteristics of the study population suggest a community with strong internal structures, practical experience, and a vested interest in long term peace. Their economic realities, social networks, and cooperative memberships all align with a clear preference for community based, peaceful conflict resolution. These findings underscore the importance of centering restorative approaches in both research and policy responses to rural conflict.

Table 1: Dominance Analysis of the Respondents' Socio-Economic Characteristics

Characteristics	Dominant Indicators (n = 240)	Mean Value	Standard Deviation (SD)
Age	37.8% were between 41–50 years	53.02 years	8.3 years
Sex	66.7% were Male	-	
Marital Status	81.1% were Married	-	
Education	46.7% had Primary Education	7.3 years	2.3 years
Household Size	64.4% had 6–8 members	6 people	1.9 people
Membership of Cooperative Societies	66.7% were members	-	
Primary Occupation	98.9% were Farmers	-	
Years of Experience in Farming	50% had 11–20 years of farming experience	18.78 years	6.1 years
Income	38.9% earned between 41,000–50,000 Naira	₦45,002.22	₦18,689.97
Market Access (Distance to Nearest Market)	45.6% were 4–6 km away from the nearest market	5.1 km	1.3 km
Livelihood Diversification	48.9% had more than one source of income	-	
Farm Size	44.4% had farms between 1–2 hectares	1.8 hectares	0.9 hectares

Source: Field Survey, 2025

Mitigation Strategies for Managing Farmer-Herder Conflicts

The results shown in Table 2 provide clear insight into how respondents perceive the effectiveness of different strategies for managing farmer and herder conflicts in the study area. Each strategy was rated using a 5-point Likert scale, with scores above three (3) indicating general support. While formal measures such as arrest and prosecution, with a mean of 4.74, and vigilantism (informal community vigilante groups), with a mean of 4.67, received the highest scores, the data also show strong support for peaceful and community-led approaches to conflict resolution.

Peace building initiatives were rated highly, with a mean score of 4.62, just below the punitive strategies. Traditional settlement practices that rely on local leaders and indigenous mediation methods were also viewed positively, with a mean of 4.18, as were community-imposed restrictions on cattle movement, with a mean of 4.03. These findings suggest that respondents do not see enforcement and peace-building as opposing approaches. Instead, they view them as complementary ways of managing conflicts at different stages.

The support for both punitive and restorative measures reflect a practical response to ongoing insecurity rather than a contradiction. Formal measures such as arrest, prosecution, and vigilantism are seen as immediate ways to deter conflict and protect communities when violence occurs or when state support is limited. Peace-building and traditional settlement methods, on the other hand, are viewed as long-term solutions that help rebuild trust, address the causes of conflict, and prevent it from happening again.

This shows that rural communities value local approaches as much as formal interventions. Many respondents believe that lasting peace cannot be achieved through punishment alone. The strong support for vigilantism seems to reflect frustration with slow institutional responses rather than a rejection of non-violent solutions. Overall, respondents demonstrate a careful balance between accountability and restoring harmony.

The results in Table 2 highlight a broad community agreement in favour of combining legal enforcement with culturally appropriate, non-violent, and restorative methods. This shows the importance of supporting community-led peace-building, strengthening local institutions, and recognising traditional leaders as key partners in preventing further conflict.

Effects of Farmer-Herder Conflicts on Food Security of Rural Farming Households

The Logit regression results in Table 3 provide useful insights into how farmer–herder conflicts affect food security, measured using a per-capita food expenditure index for rural households in the study area.

Table 2:Strategies Associated with the Management of Farmer-Herder Conflicts

Strategies	Mean	Decision
Payment of compensation	2.91	Disagreed
Verbal warning	3.30	Agreed
Re-allocation of new plot	2.86	Disagreed
Provision of relief materials	3.58	Agreed
Arrest and prosecution	4.74	Agreed
Restriction of cattle movement in the community	4.03	Agreed
Vigilantism (informal community vigilante groups)	4.67	Agreed
Traditional settlement	4.18	Agreed
Deployment of armed forces	3.94	Agreed
Peace building	4.62	Agreed
Creation of grazing routes	3.20	Agreed

Source: Field Survey, 2025

The model performs well, with a log-likelihood of -57.286 and a statistically significant chi-square probability (Prob > chi^2 = 92.77), showing a good fit. It also correctly classified 86.7% of households, predicting 208 out of 240 cases accurately. This high accuracy shows that the model is effective in capturing the impact of conflicts on food security in the study area.

A major finding is that the frequency of farmer-herder conflicts has a negative effect on household food security. This relationship is statistically significant at the 5% significance level, with a coefficient of -0.089. This result confirms that repeated conflict undermines rural households' ability to produce, access, and

maintain stable food supplies. As conflicts escalate, they disrupt agricultural calendars, destroy farmland and crops, displace families, and sever critical supply routes to markets. This aligns with the earlier empirical studies of Muriuki *et al.* (2023), who argue that recurring conflict directly weakens local food systems and increases community vulnerability. This study does more than quantify the impact of violence, it points to a path forward. Community-led peace-building mechanisms, which respondents in other parts of this study rated highly, could play a crucial role in mitigating the food security effects identified here. Where frequent conflict increases household food insecurity, non-violent, and restorative solutions can farmers help preserve farmland, facilitate movement to markets, and reduce the conditions that push families into crisis. The results, therefore, support the broader argument that investment in grassroots peace-building is not just socially desirable but economically and nutritionally necessary.

The analysis also shows that livelihood diversification has a positive effect on household food security. This mean that households with more diverse sources of income are more likely to be food secure. This effect is statistically significant at the 5% significance level, with a coefficient of 0.065. Households that earn income from different sources are better protected against farming risks, including those caused by conflicts. The positive link between livelihood diversification and food security shows that families with multiple income streams can cope more effectively with agricultural risks. Having different sources of income provides financial stability and helps households recover from shocks that threaten their access to food. This agrees with earlier studies by Minyiwab *et al*. (2024) and Salifu (2024), who highlighted the importance of income diversity in making rural households more resilient. In practice, households with extra sources of income can better withstand problems such as lost crops, market disruptions, or displacement caused by violence.

Education is also positively linked to household food security, with a coefficient of 0.083, which is statistically significant at 10% significance level. This suggests that household heads with more education are better able to adopt improved farming practices, make use of extension services, and access relief or support when needed. As Ahmed and Ahmed (2023) observed, education increases adaptive capacity and encourages long-term planning, both critical in conflict-prone regions. This again speaks to the broader need for capacity-building at the community level. This approach closely aligned with restorative, people-centered development strategies.

On the other hand, household size has a strong negative effect on food security, measured using per capita food expenditure, with a coefficient of -0.132, statistically significant at the 1% significance level. Larger families place greater pressure on available food, particularly in rural areas where land, income, and access to markets are limited. This is consonance with our *a priori* expectation and supports the earlier study of Drammeh *et al*. (2019)'s conclusion that larger households are structurally more vulnerable unless additional support systems are in place.

For household income (X3), the model shows a very small and non-significant coefficient (-0.00001). This might appear unexpected, as income is generally linked to food security. However, in this study, most households earned below the national minimum wage, which meant there was little variation in income and reduced its ability to explain differences in food security. We also tested for multicollinearity with other variables, and no serious issues were identified. These findings suggest that income alone is less important than other factors in determining food security in the study area.

In summary, these results paint a clear picture that farmer-herder conflicts are not only sources of violence but also drivers of chronic food insecurity. Yet embedded within the same communities are resources, education, diversified livelihoods, cooperative membership, and traditional leadership structures that can be leveraged to restore peace and rebuild resilience. Table 3, therefore, is not just a diagnostic tool, it is a roadmap pointing toward sustainable, community-driven interventions. Ultimately, the study underscores the importance of community-driven, peaceful, and restorative solutions in mitigating the adverse effects of conflicts on food security, advocating for a holistic approach that integrates conflict resolution with sustainable development initiatives.

Table 3: Effects of Farmer-Herder Conflicts on Food Security of Rural Farming Households

Variables	Coefficient	Standard Error	Z-value
Constant	2.081***	0.308	6.749
X1: Frequency of Conflicts	-0.089**	0.039	-2.282
X2: Farm Size (Ha)	0.011	0.023	0.473
X3: Household Income	-0.00001	0.00001	-1.169
X4: Livelihood Diversification	0.065**	0.029	2.241
X5: Access to Agricultural Inputs	0.019	0.015	1.267
X6: Market Access (Km)	-0.039	0.032	-1.218
X7: Education Level of Household Head	0.088*	0.048	1.833
X8: Household Size	-0.132***	0.031	-4.258
X9: Years of Experience in Farming	0.0063	0.0065	0.96
X10: Membership of Cooperatives	-0.0055	0.068	-0.082
Log-likelihood ratio	-57.286		
Prob > chi2	92.77		
Total number of cases	240		
Number of cases correctly predicted	208 (86.7%)		

NB: ***, **, * signify significance at 1%, 5%, and 10% levels, respectively

Conclusion and Recommendations

This study demonstrates that farmer–herder conflicts are one of the factors contributing to food insecurity in rural farming communities. Frequent clashes disrupt farming activities, damage crops, and weaken households' ability to secure sufficient food. Households with diversified sources of income and higher education are better able to cope with these challenges, whereas larger households are more vulnerable. These findings show that food security, measured by per-capita food expenditure in the study area, is influenced by a combination of social, economic, and demographic factors.

The study also revealed that respondents expressed strong support for a mix of formal interventions, such as arrest and prosecution, alongside community-led approaches, including traditional dispute resolution and peace-building.

To address these challenges, this study recommends strengthening local peace mechanisms and support traditional leaders and community mediation, creating spaces where farmers and herders can resolve disputes peacefully. Reducing the frequency of conflicts will require a combination of formal legal measures and restorative community initiatives to ensure that accountability and coexistence work together.

Supporting livelihood diversification is important to help households deal with unexpected problems, such as crop losses, herder incursions, or market disruptions, and to maintain food security. Farmers should be encouraged to take part in off-farm activities in the area, such as small trading, poultry farming, food processing, or other small businesses. These activities can provide extra income, reduce reliance on farming alone, and make it easier for households to absorb shocks and maintain food security.

Expanding education for household heads will give them the knowledge and skills to adopt better farming practices and make informed decisions. Extension services and training should be designed to reach farmers with lower literacy levels, ensuring that all households can benefit. Supporting larger households through effective resource management and family planning can also reduce vulnerability and strengthen resilience.

Finally, the development of designated grazing areas in collaboration with local communities, alongside formal interventions such as arrest and prosecution, can minimise land-use conflicts. This balanced approach protects crops, encourages peaceful

coexistence, and strengthens food security in a sustainable way.

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