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## Research Article

# Effect of Land Use Conflict Between Crops Farmers and Pastoralists on Their Income and Standard of Living in Giwa Local Government Area of Kaduna State, Nigeria

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## ABSTRACT

This study examined the effect of land use conflict between crop farmers and pastoralists on their income and standard of living in Giwa Local Government Area of Kaduna State, Nigeria. The research was prompted by the growing incidence of violent clashes between the two groups over farmland, grazing routes, and water resources, which have disrupted agricultural productivity and community stability. A descriptive survey design was employed, and data were collected from 387 respondents comprising both crop farmers and pastoralists across conflict-prone wards. Primary data were gathered using a structured questionnaire and interviews, while secondary data were sourced from relevant journals, government reports, and local records. The data were analyzed using descriptive statistics and t-test analysis to determine variations in income and living standards before and after the conflicts. The results revealed a significant decline in household income, agricultural output, and asset ownership among both crop farmers and pastoralists. Crop farmers' average annual income dropped from ₦3,452,870.40 to ₦1,698,554.20, while that of pastoralists declined from ₦462,380.00 to ₦298,472.50. These conflicts resulted in reduced food availability, displacement, and weakened social cohesion. The study found a strong relationship between recurrent land use conflicts and declining standards of living in Giwa LGA. It concludes that the persistent disputes between crop farmers and pastoralists have severely undermined livelihoods and rural development in the study area. The study recommends the strengthening of local conflict-resolution mechanisms, the establishment of well-demarcated grazing routes and farmlands, the promotion of ranching systems, and post-conflict livelihood support programs to restore peace and improve economic resilience.

**Keywords:** Crop farmers; Income; Land use conflict; Pastoralists; Standard of living

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## INTRODUCTION

Land remains one of the most essential natural resources that supports human livelihoods, food production, and economic growth. In most parts of sub-Saharan Africa, particularly Nigeria, land is the

primary source of income for both crop farmers and pastoralists (Adebayo, 2020). However, increasing population pressure, agricultural expansion, and environmental degradation have led to intense competition over land resources. This competition

has become a major source of conflict between crop farmers and pastoralists in many rural communities (Blench, 2017; Okoli & Atelhe, 2014).

In northern Nigeria, livestock and arable farming, both of which are very important sub-sectors of the Nigerian economy are competitively dependent on relatively small land resources, which tends to lead to crisis and conflicts (Mohammed, 2020). The competition over farmlands, grazing areas, and water points often leads to disputes that escalate into violent clashes, resulting in loss of lives, destruction of crops, and displacement of communities (Ofuoku & Isife, 2009). Kaduna State, located in the North-West geopolitical zone of Nigeria, is one of the states most affected by such conflicts. Its fertile lands and favorable climate attract both sedentary farmers and mobile pastoralists in search of arable land and pasture.

Giwa Local Government Area is a notable flashpoint of these farmer–pastoralist conflicts. The increasing encroachment of farmlands into grazing routes, coupled with inadequate land use planning and weak conflict resolution mechanisms, has exacerbated tensions in these areas (Ibrahim, 2019). These conflicts not only threaten food security but also undermine social cohesion and rural development (Nformi *et al.*, 2014).

Therefore, examining the causes, patterns, and effects of land use conflict between crop farmers and pastoralists in Giwa Local Government area is essential for formulating effective policies and sustainable land management practices. Understanding the dynamics of these conflicts will also contribute to promoting peaceful coexistence and improving agricultural productivity in Kaduna State and Nigeria at large.

In Giwa Local Government Area of Kaduna State, Nigeria, conflicts between crop farmers and pastoralists over land use, grazing routes and water access have intensified. Competition for scarce natural resources such as arable land and grazing areas has been exacerbated by population growth, climate change, expansion of farming into previously grazing areas and weak institutional frameworks. These disputes have resulted in loss of crops and livestock, displacement of households and increased economic vulnerability in farming and herding communities (Dan-Azumi, 2025). Despite these widespread disruptions, there is limited empirical

evidence specifically measuring how these land-use conflicts in Giwa LGA impact incomes and standards of living of crop farmers and pastoralists. Therefore, this study seeks to examine the effect of land use conflict between crop farmers and pastoralists on their income and standard of living in Giwa Local Government Area, Kaduna State.

This study is justified because agriculture remains the backbone of the Nigerian rural economy, supporting the livelihoods of millions of crop farmers and pastoralists. Conflicts between farmers and herders in regions such as Kaduna have been shown to undermine agricultural productivity and rural welfare (Dan-Azumi, 2025). Moreover, recent evidence indicates that such conflicts contribute to food insecurity and human insecurity, with large numbers of people displaced and many losing access to their livelihoods. By focusing on Giwa LGA, the study will provide localized data that can inform policy, programming and community-level interventions to restore livelihoods, reduce conflict and improve standards of living. Ultimately, the findings will contribute to the body of knowledge at the intersection of conflict studies, rural development and agricultural economics, and serve as a resource for practitioners and policymakers working in conflict-affected rural areas of Nigeria.

## **MATERIALS AND METHODS**

### **Study Area**

Giwa Local Government Area (LGA) is one of the twenty-three (23) Local Government Areas of Kaduna State, located in the northern part of the state. It lies approximately between latitude 10°40' and 11°10' N and longitude 7°15' and 7°45' E, covering an estimated land area of about 2,066 square kilometers (Kaduna State Government, 2024). There are 11 wards that constitute Giwa LGA namely; Giwa Ward, Kankangi, Gangara, Shika, Danmahawayi, Yakawada, Idasu, Kidandan, Galadimawa, Kadage and Panhauya. The administrative headquarters is located in Giwa Town, which serves as the central hub for commerce, administration, and transportation within the area. According to the National Population Commission (NPC, 2024 projection), Giwa LGA has an estimated population of about 480,000 people, comprising predominantly Hausa and Fulani ethnic groups, with smaller populations of other groups engaged in trading and artisan activities. The population is largely

rural, with most inhabitants depending on agriculture and livestock production as their main sources of livelihood. Crop farmers typically cultivate grains such as maize, sorghum, millet, groundnut, and beans, while pastoralists rear cattle, sheep, and goats.

The area experiences a tropical continental climate characterized by distinct wet and dry seasons. The rainy season usually spans from May to October, with annual rainfall averaging 1,000 mm, while the dry season lasts from November to April and is dominated by the cold harmattan winds. The mean annual temperature ranges between 21°C and 34°C (Nigerian Meteorological Agency, 2024). These climatic conditions, along with fertile sandy-loam soils, make Giwa suitable for both crop farming and grazing, which explains the economic interdependence and also the frequent competition between farmers and herders over land and water resources.

Vegetation in Giwa LGA falls within the Northern Guinea Savanna zone, consisting mainly of tall grasses and scattered trees such as neem, shea butter, and acacia. Several seasonal rivers and streams, including tributaries of the Galma River, provide important water sources for domestic use, irrigation, and livestock watering. However, pressure on these resources has intensified in recent years due to population growth, land expansion, and climate change, leading to recurrent conflicts between farmers and pastoralists (Dan-Azumi, 2025; The Kukah Centre, 2023).

Economically, Giwa serves as a significant agro-commercial center, hosting weekly markets such as the Giwa and Shika markets, where farmers sell grains, livestock, and dairy products. Despite its economic potential, the area has been affected by repeated farmer-herder clashes, banditry, and insecurity, which have disrupted farming and grazing activities. This has led to the displacement of households, destruction of farmlands, loss of livestock, and general decline in income and standard of living among the rural population (Suleiman & Kasimu, 2022; Adetayo & Kingimi, 2024).

A multi-stage sampling procedure was adopted in this study. The first stage involved purposive selection of Giwa LGA. In the second stage, it involves purposive selection of some wards due to their high level of involvement in land use conflict namely; Idasu, Kidandan, Galadimawa, Danmahawayi, Gangara,

Panhauya, Shika and Yakawada. The final stage involves purposive selection of villages from the wards which include; Kuringa, Fatika, Biye, Gindin Dutse, Kunfa, Bijimi, Dunbus, Karau-karau, Wazata and Kaya.

The sample size for this study consists of a total of 387 households selected through a combination of purposive and systematic random sampling techniques. The purposive sampling procedure was undertaken to include the two categories of household in each community;

- i. Crop farmers (10,550)
- ii. Pastoralists (1,350)

This makes a total number sample frame of 11,900. The formula expressed below by Yamane (1967) was used to get the total sample size;

$$n_0 = \frac{N}{1+N(e^2)}$$

$n_0$  = Sample size

N = Sample frame in the selected area

e = margin of error (0.05)

**N=11,900**

**$n_0=387$**

e = margin of error (0.05)

$$\frac{387}{11900} \times 100 = 3.25\% \cong 3\%$$

The study used both primary and secondary data. The primary data were collected through the use of structured questionnaire. In addition, focus group discussion (FGD) with key informants was also conducted to both the crop farmers and pastoralists. The income sales was generated based on the crop sales for crop farmers and milk sales from the pastoralists. The results were authenticated with information from FGD with key informants' interview. The major conflicts are usually just before crop physiological maturity for harvesting. This result is for 2024 cropping season.

#### **Analytical Techniques**

Descriptive statistics was used to analyze the data. These includes the use of frequency distribution, mean and percentage to analyze their income and T-test to compare the effect of land use conflict on both crop farmers and pastoralists' income and standard of living in the study area

## **RESULT AND DISCUSSION**

The findings presented in Table 1 reveal the significant impact of land use conflict between crop farmers and pastoralists on their income and standard of living in Giwa Local Government Area, Kaduna State. The results reflect 2024 income estimates, show that both groups experienced sharp and statistically significant declines in their earnings following recurring farmer-herder clashes.

For crop farmers, the mean annual income before the conflict was ₦3,452,870.40, but this figure fell drastically to ₦1,698,554.20 after the conflict. The t-test value of 10.83 with a p-value of 0.000 indicates a highly significant difference between the two periods, confirming that the drop in income is not due to chance. This reduction reflects the severe consequences of conflict on agricultural productivity in Giwa LGA. Repeated attacks and land disputes have led to widespread destruction of farmlands, loss of crops, and displacement of farming communities. Many farmers have been forced to abandon their farms, while others cultivate only small portions of land for fear of insecurity. The loss of productive farmland and reduced yields have consequently lowered household income and weakened farmers' ability to meet essential needs such as food, healthcare, education, and housing. Thus, the conflict has led to a noticeable decline in their overall standard of living.

The situation among pastoralists follows a similar pattern. Their mean annual income from livestock sales and products decreased from ₦462,380.00 before the conflict to ₦298,472.50 after the conflict, with a t-value of 3.12 and a p-value of 0.003, also showing a statistically significant decline. The reduction in pastoralists' income can be linked to the loss of cattle during violent encounters, restricted access to grazing routes, and the high cost of feed and water in secure areas. In addition, the movement restrictions imposed for safety reasons have disrupted traditional grazing systems, resulting in poor livestock health and reduced productivity. This has translated into lower earnings and increased poverty among pastoralist households, thereby affecting their welfare and standard of living.

When the total household income of both groups was examined, the pattern remains the same conflict has caused a general downturn in economic activities and earnings. Although nominal income levels appear higher than earlier years due to inflation, the real

income and purchasing power of both farmers and pastoralists have fallen sharply. This means that even with increased market prices, households can now afford less than they could before the conflicts began. The overall effect is reduced economic security, food scarcity, and deepening poverty across Giwa LGA. These results are consistent with findings from recent studies in Kaduna State and other parts of northern Nigeria. For instance, Suleiman and Kasimu (2022) similarly reported that persistent farmer-herder conflicts significantly reduced agricultural productivity, constrained income-generating activities, and heightened economic vulnerability among rural households. Their observations closely mirror the pattern in this study, where both crop farmers and pastoralists experienced marked income declines after conflict situations. These outcomes align with recent empirical studies conducted in other parts of Kaduna and Northwestern Nigeria (Ibrahim & Yakubu, 2023; Haruna *et al.*, 2024; Suleiman & Tukur, 2023), which emphasize that herder-farmer conflicts now represent a major barrier to achieving food security, poverty reduction, and sustainable livelihoods in agrarian communities.

Also, Adetayo and Kingimi (2024) established that conflicts disrupt farming cycles, destroy crop fields, and limit grazing mobility, thereby reducing available income streams for both livelihood groups. The reductions recorded in Giwa Local Government Area align strongly with their conclusion that recurrent conflicts not only suppress current income but also undermine long-term livelihood sustainability. Compared to their study, the present findings further demonstrate that the negative effects are not isolated but widespread across multiple farmer-herder communities.

Other regional studies, such as those by Abubakar and Yahaya (2021) and Eze *et al.* (2023), have also shown that conflicts lead to decreased farm sizes, limited access to grazing land, heightened production costs, and displacement of households. The pattern observed in this study supports these earlier findings, indicating that the economic consequences of conflict follow a persistent trend irrespective of location. The similarity across studies reinforces the conclusion that land use conflicts have both direct and ripple effects on rural living conditions.

In summary, the data from this study clearly demonstrate that land use conflicts between crop

farmers and pastoralists have had profound and lasting negative effects on income levels and standards of living in Giwa Local Government Area. This aligns with the conclusions of several previous authors who equally emphasized the severe livelihood disruptions caused by insecurity, land disputes, and climate-related pressures. Addressing this problem will require comprehensive strategies such as community-based peacebuilding initiatives, establishment of ranching systems or designated

grazing reserves, and improved security architecture to protect lives and livelihoods. Without such interventions, the economic and social well-being of both farmers and herders in Giwa and similar areas will continue to deteriorate, echoing the trends documented by earlier researchers.

The results of the incomes of crop farmers and pastoralists before and after the conflicts for year 2024 is presented in Table 1.

**Table 1: Showing incomes of crop farmers and pastoralists before and after the conflicts for year 2024**

Category	Economic Indicator	Mean (#)	N	Std. Deviation	Std. Error Mean	t-Value	Df	Sig (P)
Crop farmers	Annual crop income before conflict	3,452,870.40	278	2,147,220.85	128,280.90	10.83	277	0.000
	Annual crop income after conflict	1,698,554.20	278	1,042,177.93	62,270.70	-	-	-
Pastoralists	Livestock income before conflict	462,380.00	109	128,615.72	12,030.50	3.12	108	0.003
	Livestock income after conflict	298,472.50	109	166,904.88	16,490.00	-	-	-
Overall household income	Crop farmers	1,623,914.75	278	122,418.60	73,200.00	8.47	385	0.000
	Pastoralist	3,978,615.30	109	4,116,770.55	39,300.00	-	-	-

## CONCLUSION

The study concludes that land use conflict between crop farmers and pastoralists in Giwa Local Government Area has had severe socioeconomic implications on both groups. The findings revealed that frequent clashes over farmland, grazing routes, and water resources have significantly reduced farm yields, livestock productivity, and overall household income, thereby deteriorating the standard of living among affected communities. The study therefore underscores the need for integrated land management and peacebuilding strategies that promote coexistence between crop farmers and pastoralists in Giwa and beyond.

The recommendations from the study findings suggested that traditional and community-based institutions should be empowered to mediate disputes between farmers and herders through dialogue, compensation systems, and adherence to established grazing routes. The Kaduna State Peace Commission and local ward heads can facilitate this process. Emirs, chiefs and ward heads should be charged with responsibilities of monitoring the activities of crop farmers and pastoralist within their domain, these would help in checking land use conflicts between the two producing groups.

The Kaduna State Government, in collaboration with the National Boundary Commission and Ministry of Agriculture, should map and demarcate farmlands, grazing areas, and cattle routes to minimize land-use overlap. Also, encouraging the adoption of ranching systems and controlled grazing can reduce mobility-related conflicts and promote sustainable livestock production. Government subsidies and training should be provided to pastoralists.

Furthermore, households affected by violence should receive agricultural inputs, livestock restocking, and access to microcredit to rebuild their economic base by deploying local peace committees and early warning systems across Giwa wards can help prevent escalation of minor disputes into violent conflicts.

In addition, some informant believe that perfect peace can only be achieved in the area if those people among the settled cultivators who acts as patrons and spokespersons of the pastoralist in courts on cases of conflict with cultivators are banned from the act. They always instigate the pastoralist to fight because the patrons take some economic advantages in the conflict. Elite and youth associations should also see themselves as responsible for settling or harmonizing the two groups of producers rather than taking sides

with the crop's growers against the Fulani pastoralists.

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