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The Socio-Economic Effects of Farmers-Herders Clash on Crop Farmers in Nasarawa State

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Abstract
This research delved into socio-economic effects of farmers-herders clash on crop farmers in Nasarawa State, Nigeria. The study employed a descriptive research design, combining primary data collected through questionnaires, interviews, and field observations, along with secondary data from relevant literature. A sample size of 200 respondents, comprising both crop farmers and herders, were selected from eight Local Government Areas that were most affected by the conflicts. The findings revealed that the most significant causes of farmers-headers clash were competition for land resources (mean = 3.38), ethno-religious tensions (mean = 3.22), and political instigation (mean = 2.91). Also, the mean score of 3.265 indicates that a large proportion of the farmers had experienced direct clashes with herders, the mean score of 2.855 indicates that the clashes had some significant negative impact on crop yield, the mean score of 2.810 indicates that a large proportion of the farmers had experienced loss of crops due to the clashes, the mean score of 2.975 indicates that a significant number of the farmers have been forced to abandon their farmlands due to the clashes, among others. The results of the regression analysis indicate that there is a significant positive relationship between the farmers-headers clash (FHC) and the socio-economic activities of crop farmers (SACF) in Nasarawa state. The R-squared value of 0.638 indicates that the model explains 63.8% of the variation in the dependent variable (SACF). This is a relatively strong relationship. The Durbin-Watson statistic of 1.740 is within the acceptable range of 1.5 to 2.5, which indicates that there is no autocorrelation in the residuals. The highest mean score of 3.10 is for the statement "Creation of grazing reserves should be implemented". This suggests that the respondents believe that this is an important measure to mitigate the negative socio-economic effects of the farmer-herder clash. The recommendations aimed to address the underlying causes of the clashes, promote stability, and foster sustainable development in the region.

Keywords: Effects, Socio-Economic, Farmers-herders clash, Crop farmers Nasarawa state, Nigeria

Introduction

The historical antecedent of the post-colonial Africa is tainted with the menaces of conflicts. These conflicts had redefined the fate of the continent to be known as “a very good laboratory for the study of violence and its attendant effects apart from crippling its socio-economic development (Aning and Atta-Asamoah, 2011). Internal conflicts have turned Africa to be highly unstable and unsecured. The volatile nature of these conflicts in Africa has affected all levels of activities, destabilizing economic, political and social engagements on a large scale (Mawoli and Adamu, 2020). Presently, Africa is going through very fundamental conflict that permeates the socio-political and economic structures of the various states (Ojukwu et al., 2020).

The manifestations of conflicts of different magnitudes have become brazen characteristics of the democratic development in Nigeria (Ndubuisi, 2018). Such conflicts include, religious, farmer-herders, electoral, ethnic, communal, and indigene-settler conflicts, among others. Among all these conflicts, farmers-herders conflict is the most prominent and

problematic issue in recent times facing the country (Ojo, 2016). The consequential effect of these conflicts has been under-development throughout the country (Alimba and Modibbo, 2014). This conflict has become a recurring disaster in the Northern part of the country. Despite the provocative nature of this menace, farmers-herders conflict remains under studied among the list of conflicts ravaging the North.

There are different ethnic groups in Northern Nigeria, but the two most prominent groups are, Hausas and Fulanis (Abubakar, et al, 2007; Mohammed and Ibrahim, 2021). The Fulani ethnic group is comprised mostly of shepherds and cattle herders. They are either rural or pastoral. They usually migrate from one area to another. Most of them are Muslims who speak the Fulfulde and Hausa languages. More than 30 million Fulanis live in the northern states of Nigeria (Gordon, 2000). Their migration indicates that they operate in areas where they lack land tenure security. Consequently, they are often faced with exclusion in tenure and discrimination (Nwankwo and Okafor, 2021). The major Fulani groups in Nigeria are: Fulbe Adamawa, Fulbe Gombe, Fulbe Borgu, Fulbe Mbororo and Fulbe Sokoto (Eyekpimi, 2016). Presently, grazing lands have reduced drastically and grazing routes have been blocked in many parts of the north. Very few grazing reserves still exist but, they are not properly managed (Muktar, 2021).

The movement of herdsmen across the length and breadth of Nigeria for grazing lands has pitched them against host communities and farmers (Awotokun et al, 2020). This results in fierce resistance and monstrous killings on both sides over land. The clashes are usually occasioned by the destruction of agricultural lands of the aborigines by the herds of cattle belonging to the herdsmen (Oderinde, et al 2022). Other causes of these migrations are deforestation and desertification in the Sahel Savanna (Blench, 2004; Abass, 2012; Okolie and Atelhe, 2013). Again, the issue of climate change and Boko Haram posed a threat to the herders in search for more grazing lands. Boko Haram insurgency for instance has ravaged the North Eastern part of the country rendering the area difficult for cattle grazing (Obi, et al 2021)

The history of herders and farmers conflicts in Nasarawa State is not a new phenomenon because these conflicts have remained a recurring challenge even with the advent of democratic rule (Ogbogbo, 1999). Adogi (2013) pointed out that the conflicts between the farmers and herders in Nasarawa State have been on the rise since the 1990s because Nasarawa state has experienced resource-related communal clashes often misinterpreted as ethnic, political and religious clashes. The farmers are always afraid that Fulani herders will destroy their farmlands. Nchi (2013) opined that the herder-farmer conflicts in Nasarawa State have serious economic undertones.

Unfortunately, while these conflicts persist over the years, the paucity of studies on the effect of these conflicts and its socio-economic implications in the State have attracted the attention of researchers, yet, their divergent views and findings calls for further studies. Olayoku (2014) asserted that from a methodological point of view, conflict between farmers and herders are not well reported and there is need for further studies. Some of the divergent views of these authors such as Adogi (2013), Nwankwo and Okafor (2021), and Obi et al (2021) among others illustrate the complex and multifaceted nature of the herders-farmers conflict in Nigeria, rooted in historical, economic, and socio-political factors. In view of their findings, no study has been done particularly on the socio-economic effects of farmers-herders' clash on crop farmers in Nasarawa State and that necessitates the following questions which was investigated in the course of this study: (a) What is the pattern of relationship existing among farmers-herders in Nasarawa State? (b) What are the causes and effects of farmers-herders' conflict on crop farmers in Nasarawa State?

The significance of this study is that, it provides valuable insights into the socio-economic effects of farmer-herder clash on crop Farmers in Nasarawa State. The research conducted by Awotide et al. (2018); Mohammed and Isiaka (2020) supports the importance of this study. The study will contribute to the development of evidence-based policies and strategies to address the conflicts and promote sustainable agricultural practices. The aim of the study therefore, was to ascertain the socio-economic effects of farmers-herders' clash on crop farmers in Nasarawa State. This aim was achieved through the following objectives: (a) to determine the pattern of relationship existing among farmers/herders in Nasarawa State. (b) to examine the causes of farmers-herders' clash in Nasarawa State. (c) to determine the socio-economic effects of the conflict on crop farmers. (d) to provide recommendations based on research findings on how to mitigate the effects of the conflict on crop farmers in Nasarawa state.

The Research Hypothesis

(a) Let H_O be: There is no statistically significant relationship between farmers-herders' clash and the socio-economic activities of the crop farmers in Nasarawa State.

(b) Let H_1 be: There is statistically significant relationship between farmers-herders' clash and the socio-economic activities of the crop farmers in Nasarawa State.

Study Area

Nasarawa State falls within the Guinea Savannah Agro-Ecological Zone, and it is located within latitudes 7°52′N and 8°56′N and longitudes 7°25′E and 9°37′E. The State is bounded to the north by Kaduna State, to the east by Plateau State, to the south by Benue State and to the west by Kogi State and the FCT (Figure 1). It has a total land area of about 26,256 square kilometers and using the 2006 national population (NPC, 2006) as a reference, the projected population as of 2022 was approximately 2,886,000, with a density of about 109 persons per square kilometer. Nasarawa state is made up of 13 local government areas (Table l). It has annual rainfall range of about 1100 to 2000 mm. The mean monthly temperatures of the State range between 20°C and 34°C (Lyam, 2000).

Table 1: Local Government Areas in Nasarawa State.

S/No	L.G.A	Areas(sq.km)	2006 Pop.Estimates	Pop. Density
1.	Akwanga	1020	172,800	169.5
2.	Awe	2573	174,600	67.86
3	Doma	3656	214,600	58.69
4	Karu	2407	333,800	138.7
5	Keana	1046	126,300	120.7
6	Kokona	1982	167,600	84.55
7	Lafia	2827	509,300	180.1
8	Nasarawa	4872	289,000	59.32
9	N/Eggon	1203	229,100	190.4
10	Obi	968.4	230,000	237.5
11	Toto	2338	183,800	78.61
12	Wamba	1161	112,200	96.66
13	Keffi	201.5	142,900	709.3
	Total	**26,256**	**2,886,000**	**2,191.89**

Source: *(i) National Population Commission of Nigeria (web), (ii) National Bureau of Statistics (web) using 2.8% growth rate*

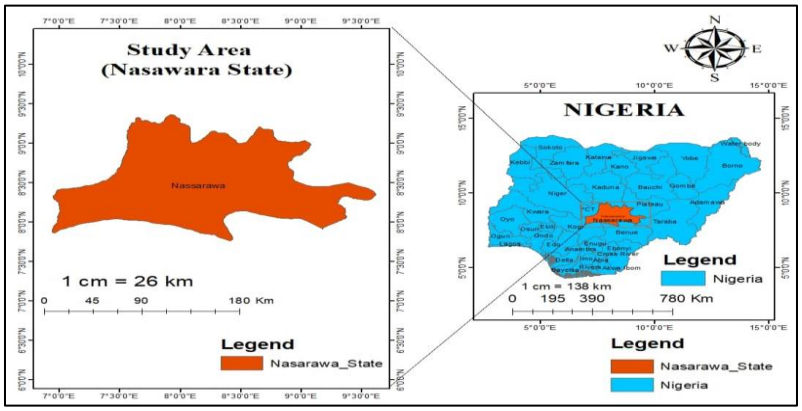

Figure 1: Map of Nigeria showing Nasarawa State
Source: Adapted from Google Map 2023

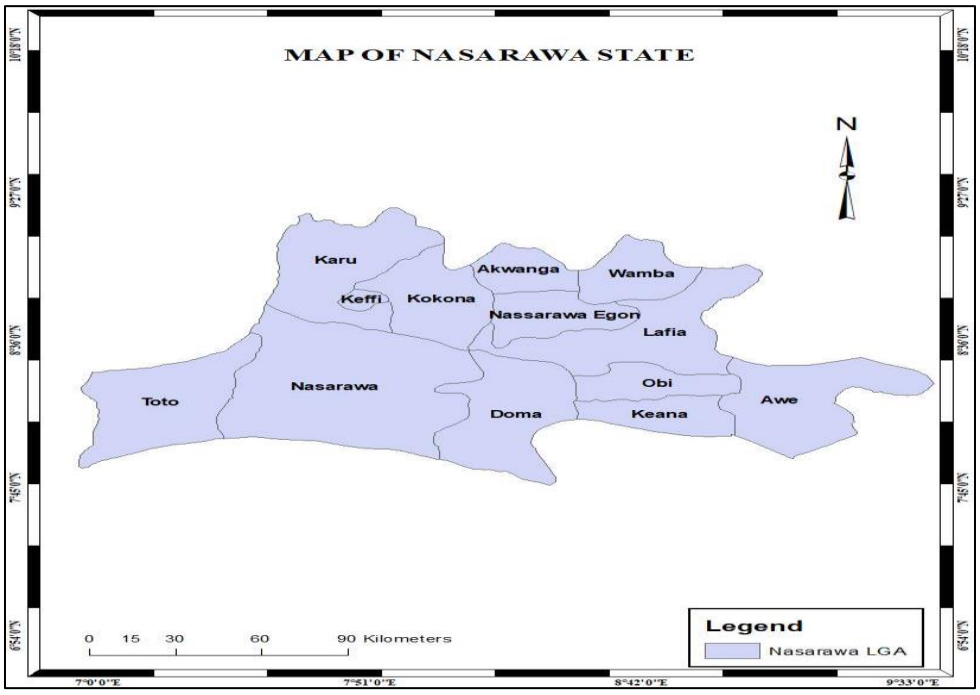

Figure 2: Map of Nasarawa State showing the 13 Local Government Areas
Source: Survey Department, Ministry of Land and Urban Development Lafia.

Materials and Methods

A cross-sectional research design was used for this study. According to Casley-Smith et al. (1998), a cross-sectional design involves the collection of data at a point in time. In this type of research design, either the entire population or a subset thereof is selected.

Data collection

The primary data for this study were collected using different sources employing a combination of methods including field observation, collection of coordinates with the aid of GPS, use of camera, oral interview, the use of structured questionnaire and through some key informants who are members of the selected communities (One herder and one farmer).

Secondary data were obtained through a review of important materials which were obtained from published and unpublished documents, textbooks, research papers and journals in Libraries and from internet**.**

Sample and Sampling Technique

The study used a sample size of 200 respondents (50 herders and 150 farmers) as the study respondents. The study sample was drawn from eight (8) randomly selected Local Government Areas in the State which includes; Doma, Nasarawa-Eggon, Awe, Nasarawa, Wamba, Obi, Lafia, and Kokona. This study used three sampling techniques namely: simple random sampling for the selection of the Local Government Areas, convenient sampling for the selection of only herders and farmers and multi-stage sampling technique. Multi-stage sampling was considered appropriate because sample selection was done in stages, thereby giving the researcher the opportunity to use more than one technique of sample selection. At the first stage of sample selection, LGAs were selected conveniently based on the senatorial zones of the State, so as to ensure that every zone or district was represented in the final sample to be used.

The second stage was the selection of respondents from the selected Local Government Areas to form the sample size for the study. The sample size was statistically determined using the Yamane (1967) formula which is expressed as follows:

n = N/(1+N(e2))
where:
n= Sample size to be selected
N= Target population under investigation
1= Unit (a constant)
e= Level of significance 0.05 or 5%

Table 2: The sampled Local Government Areas and respondents

Local Government Areas	No of respondents.	Percentage (%)
Lafia	16	8.0%
Doma	29	14.5%
Obi	17	8.5%
Nasarawa	32	16.0%
Nasarawa-Eggon	39	19.5%
Awe	27	13.5%
Kokona	18	9.0%
Wamba	22	11.0%
Total	200	100.0%

Source: Field survey 2023

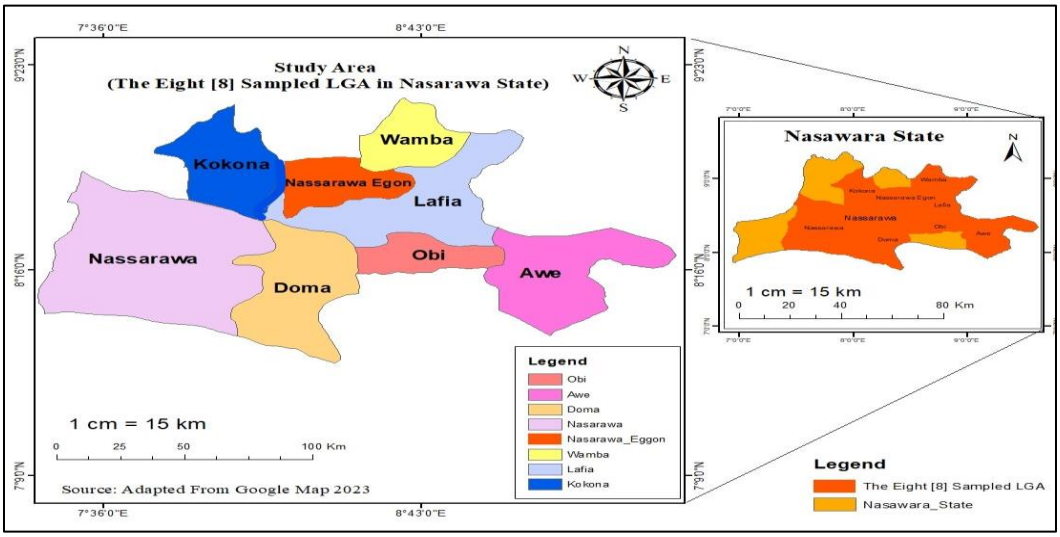

Figure 3: Map of Nasarawa State showing the sampled Local Government Areas
Source: Adapted from Google Map 2023

Instrument for data collection

Data were collected with the use of camera, interviews and questionnaire. The questionnaire covered the socio-economic characteristics of both crop farmers and herders, the pattern of relationship existing among farmers and herders, the perceived causes of farmers-herder's clash, the socio-economic effects of farmers-herders' clash on crop farmers and lastly, the mitigation measures for farmers-herders' clash in the study area. The questionnaire was divided into five (5) sections to answer the four research questions and achieve the objectives of the study. The first section (section A) was on frequency and scale. The remaining four sections (section B, section C, section D, and section E) had a four-point Likert type scale of Strongly agree (SA), Agree (A), Disagree (D), and Strongly disagree (SD).

Validation and Reliability of the Research Instrument

The research instruments were validated by two experts, selected on the basis of their expertise and experience, both of Geography Department, University of Nigeria, Nsukka. The researchers used their wealth of experience in the field to enrich the content of the questionnaires.

The researcher conducted a pretest on the questionnaires in Lafia Local Government Area within the study area so as to ascertain the degree of reliability of the questions. Data generated from the generated questionnaire were used in computing the reliability by applying the Cronbach alpha reliability formula shown below:

$$\alpha = \frac{N\bar{c}}{\bar{v} + (N-1)\bar{c}} \qquad (4)$$

Where α stands for Cronbach's alpha reliability
N stands for the number of items
C stands for average covariance between items pairs
V stands for average variance
(THE RED PORTION SHOULD COME TO THIS PORTION, ei, BEFORE DATA ANALYSIS)
From the computation, a reliability coefficient of 0.987 was found. According to Cortina (1993), an alpha coefficient greater than 0.7, should be accepted. The instrument was therefore accepted and used in order to acquire data for the research.

Method of data collection

The respondents were interviewed and instrument (questionnaire) was administered in their localities by the researcher. The researcher was able to administered two hundred (200) copies of the questionnaire to the respondents in the eight (8) selected LGAs in the study area which were most affected by the crisis. One hundred and fifty (150) copies were administered to crop farmers and fifty (50) copies were administered to herders in the study area. At the end of the instrument administration, two hundred (200) copies of the instrument were successfully filled and returned. One hundred and fifty (150) from crop farmers and fifty (50) from herders respectively.

Data analysis

Data collected were analyzed using descriptive and inferential statistics.

Descriptive statistics such as frequency count, percentage, mean and standard deviation were used. Frequency count and percentage were used to analyzed section A, while mean and standard deviation were used to analyzed section B, section C, section D, and section E of the questionnaire respectively. The four-point likert-type scale used to collect data for section B, section C, section D, and section E of the instrument (questionnaire) was rated. The rating was designed thus; strongly agree (SA)-4, Agree (A)-3, Disagree (D)-2, Strongly disagree (SD)-1.

The mean score of the respondents based on the 4-point Likert-type scale was;

mean score (Ms) = 4+3+2+1/4
= 10/4
=2.5

From the calculation above, the mean score (Ms)= 2.5. Using the interval sale of 0.05, the upper limits The probability value (p-value) was calculated using IBM SPSS 27 statistical software package.

cut-off point was 2.5 + 0.05=2.55. The lower limit was 2.5-0.05=2.45. Based on these, any mean score below 2.45 (i.e, Ms<2.45) was considered as strongly disagree. Any mean score between 2.45 and 2.5 was considered disagree. Those between 2.5 and 2.55 was considered as agree. A mean score greater than 2.55 (Ms>2.55) was considered strongly agree.

Inferential statistics was used to test the hypothesis. The inferential statistics used was the Linear regression. It was used to test relationships between the independent variables of the causes of farmers-herders clash and a dependent variable of the socio-economic effects of farmers-herders clash on crop farmers in Nasarawa State. In order to determine and understand how one variable predicts another. The formula for the Linear regression is; $\boldsymbol{Y= b_o + b_1X_1}$

Where:
Y = dependent variable
X= independent variables
b's= regression Co-efficient
bo= Constant

Results and Discussion

Farmers Respondents Across Local Government Areas (L.G.A).

Table 3: Farmers Respondents Across Local Governments Areas

Local Government Areas	No of respondents.	Percentage (%)
Lafia	11	7.3%
Doma	21	14.0%
Obi	10	6.7%
Nasarawa	25	16.7%
Nasarawa-Eggon	31	20.7%
Awe	23	15.3%
Kokona	13	8.7%
Wamba	16	10.7%
Total	150	100%

Source: Field survey 2023.

Results from Table 3 showed that 20.7% of the respondents were from Nasarawa-Eggon, 16.7% were from Nasarawa, 15.3% were from Awe, 14.0% came from Doma, 10.7% were from Wamba, 8.7% came from Kokona, 7.3% came from Lafia, while Obi had the lowest which is 6.7%.

Herders Respondents across Local Government Areas (L.G.A)

Table 4: Herders Respondents across Local Government Areas

Local Government Areas	No of respondents.	Percentage (%)
Lafia	5	10.0%
Doma	8	16.0%
Obi	7	14.0%
Nasarawa	7	14.0%
Nasarawa-Eggon	8	16.0%
Awe	4	8.0%
Kokona	5	10.0%
Wamba	6	12.0%
Total	50	100%

Source: Field survey 2023

Results from Table 4 showed that 10.0% of the respondents herders were from Lafia, 16.0% from Doma, 14.0% from Obi, 14.0% from Nasarawa, 16.0% from Nasarawa-Eggon, 8.0% from Awe, 10.0% from Kokona, 12.0% from Wamba. With a total of 50 herders' respondents, recording a 100% responds to the survey.

Socio-economic characteristics of respondents
Gender Distribution of the Respondents.
Table 5: Gender Distribution

Gender	No of respondents.	Percentage (%)
Male	116	58.0%
Female	84	42.0%
Total	200	100%

Source: Field survey 2023.

Table 5 showed that male respondent had higher percentage which is 58.0% while the female respondents had lower percentage which is 42.0%. Thus, this implies that the percentage of males are more engaged in farming and herding than females.

Age group of Respondents
The study considered age distribution, the young, matured and old were accessed in the study.

Table 6: Age group

Age Group	No of respondents.	Percentage (%)
15-30 years	41	20.5%
31-45 years	58	29.0%
46-60 years	69	34.5%
Above 60 years	32	16.0%
Total	200	100%

Source: Field survey 2023.

Table 6 indicates that the age of the respondents which fall within 46-60 years has the highest percentage which is 34.5%, whilst the age of the respondents which fall above 60 years has the lowest percentage which is 16.0%, and others with percentage of 20.5% and 29.0% fall within 15-30 years and 31-45 years respectively. This implies that youths or the able labor-force are more engaged in both farming and herding activities in the study area..

Marital Status of Respondents
Table 7 below depicts the marital status of the respondents in the study area.

Table 7: Marital Status

Marital Status	No of respondents.	Percentage (%)
Married	103	51.5%
Single	51	25.5%
Divorced	26	13.0%
Windowed	20	10.0%
Total	200	100%

Source: Field survey 2023.

Table 7 showed that among the variables, respondents who were married constituted the largest group at 51.5%, while the widowed had the smallest percentage at 10.0%. Additionally, 25.5% of the

respondents were single, and 13.0% were divorced. Consequently, it can be inferred from Table 7 that the majority of the sampled respondents were married. Furthermore, the study revealed that married individuals were more actively involved in farming and herding activities.

Educational Qualification of Respondents

Table 8: Educational Qualification

Education level	No of respondents.	Percentage (%)
Primary	54	27.0%
Secondary	58	29.0%
Tertiary	31	15.5%
None	57	28.5%
Total	200	100%

Source: Field survey 2023.

Table 8 revealed that 27.0% of the respondents had primary education, while 29.0% had secondary education. Additionally, 15.5% of the respondents possessed tertiary education, while the remaining 28.5% had no form of formal education. In total, 71.5% of the respondents demonstrated the ability to read and understand English, indicating at least a basic level of education. The remaining 28.5% (57 respondents) faced challenges in reading and comprehending English, which posed difficulties during the survey. This language barrier extended the duration of the survey, as it required more time to read and explain the questions to the 57 respondents who lacked formal education.

Household Size of Respondents.

Table 9: Family Size

Family size	No of respondents.	Percentage (%)
1-5	44	22.0%
6-10	83	41.5%
11 and above	73	36.5%
Total	200	100%

Source: Field survey 2023.

Table 9 revealed that the highest percentage of household sizes falls within the range of 6-10, accounting for 41.5%. In contrast, the lowest household sizes, ranging from 1-5, make up 22.0% of the total, while household sizes of 11 and above represent 36.5%.

Occupation of Respondents

Table 10 displayed the occupations of the respondents. It revealed that 74.5% of the respondents were identified as farmers (they were the main focal point of the study), 25.0% as herders, and a minor 0.5% as traders.

Table 10: Respondents Occupation

Occupation	No of respondents.	Percentage (%)
Farmer	149	74.5%
Herder	50	25.0%
Trader	1	0.5%
Total	200	100%

Source: Field survey 2023

Types of Agriculture Practiced By The Respondent

Table 11: Types agricultural practices of respondents

Agricultural practice	No of respondents.	Percentage (%)
Subsistence	82	41.0%
Commercial	68	34.0%
Both	50	25.0%
Total	200	100%

Table 11 showed the type of agriculture the respondents practiced. It indicated that 41.0% of the respondents practiced subsistence agriculture. 34.0% practiced commercial system of agriculture, while 25.0% practiced both subsistence and commercial agriculture.

Types of crops grown

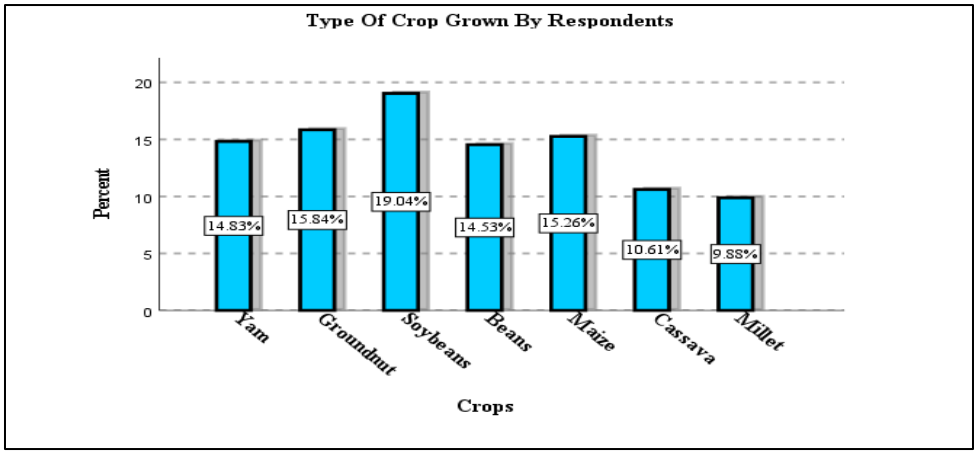

Figure 6: Type of crops grown
Source: Field survey 2023

Results from Figure 6 revealed that 14.38% of the respondents cultivated yam, 15.48% cultivated groundnut, 19.04% cultivated soya beans, 14.53% cultivated beans, 15.26% cultivated maize, 10.61% cultivated cassava while 9.88% cultivated millet.

Farmland Size Used in Cultivation

Table 12: Farmland size

Farmland size (by Hectare)	No of respondents.	Percentage (%)
Less than 5	95	47.5%
6-10	93	46.5%
10 and above	12	6.0%
Total	200	100%

Source: Field survey 2023

The result presented in Table 12 showed that 47.5% of the respondents cultivated less than 5 hectares, 46.5% cultivated 6-10 hectares, while 6.0% of the respondents cultivated 10 hectares and above.

Annual income of Respondents

Table 13 indicated that the 25.5% of the respondents had annual income of less than 100,000, 34.5% of the respondents had annual income ranging from 101,000-200,000. 26.0% of the respondents had annual income ranging from 201,000-500,000, while 14.0% had annual income above 500,000.

Table 13: Annual income

Income Range	No of respondents.	Percentage (%)
less than 100,000naire	51	25.5%
101,000-200,000	69	34.5%
201,000-500,000	52	26.0%
Above 500,000	28	14.0%
Total	200	100%

Source: Field survey 2023

Farming experience Respondents

Table 14 depicted the years of farming experience. From the table, it could be deduced that farming experience ranging from 11-20 years had the highest percentage which was 35.5% while below 10 years has the lowest percentage which was 31.5%.

Table 14: Farming experience

Years of Farming.	No of respondents.	Percentage (%)
Below 10 years	63	31.5%
11-20 years	71	35.5%
20years above	66	33.0%
Total	200	100%

Source: Field survey 2023

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The Pattern of Relationships existing between Farmers and Herders.

The result presented in Table 15 depicted the pattern of relationships existing between farmers and herder's in Nasarawa State, Nigeria. Some of the listed patterns of relationship had mean lower than the 2.5 cut-off mean for acceptance, while some of the patterns had mean higher than the 2.5 cut-mark for acceptance. Therefore, this indicated the reason for the accepted and rejected written under the column for the decision.

Table 15: The Pattern of Relationship

Farmers/Headers Relationship	Total	(Ms)Mean	Std. Deviation	Decision
The relationship is Cooperative and harmonious	200	1.7800	1.05697	Rejected
The relationship is Tense but manageable	200	2.7950	.73188	Reject
The relationship is Conflict-ridden and hostile	200	3.2200	1.02805	Accepted
Collaborative farming practices is the most common form of interaction.	200	1.6650	.98367	Reject
Joint marketing and trade activities is the most common form of interaction.	200	2.7950	.77846	Accepted
Joint community events and celebrations is the most common form of interaction.	200	2.2700	.76815	Rejected
Farmers and herders frequently engage in joint initiatives or projects	200	2.2650	.93227	Rejected
Farmers and herders engage in joint initiatives or projects	200	2.1750	.81096	Rejected
There are shared resource management practices.	200	1.8200	1.05029	Rejected
Farmers and herders communicate with each other	200	3.1950	1.04999	Accepted
There are joint farming or grazing agreements.	200	2.2600	.82206	Rejected
There are cultural or traditional practices that promote cooperation.	200	2.4100	.82175	Rejected
A history of intermarriage or intermingling of cultures	200	3.0700	1.09135	Accepted
There are social institutions or organizations between farmers and herders.	200	2.3700	.79767	Rejected
Collaboration on issues related to policy advocacy or representation.	200	2.2450	.82971	Rejected
Both participate in joint religious ceremonies.	200	2.9650	1.04846	Accepted
There are shared economic ventures or business partnerships.	200	2.6600	.78580	Accepted
There is high level of trust among both.	200	2.1200	.87718	Rejected
There is Mutual respect and understanding in livelihood activities	200	2.1500	.91195	Rejected
Government policy play a role in shaping the relationship.	200	2.8200	.81296	Accepted

Decision rule: <2.5=reject and >2.5=accept.
Source: Field survey 2023

From Table 15, the mean scores for the different patterns of the relationship between farmers and herders in Nasarawa State suggested that the relationship was generally perceived as conflict-ridden and hostile. The mean score for the statement "The relationship is cooperative and harmonious" was 1.78, which was below the midpoint of the scale (2.5). The mean score for the statement "The relationship is tense but manageable" was 2.79, and the mean score for the statement "The relationship is conflict-ridden and hostile" was 3.22. These findings implied that majority of the respondents did not believe that the relationship between farmers and herders in Nasarawa State was cooperative and harmonious. Instead, they believe that the relationship was tense and often hostile. According to Mohammed and Ibrahim (2021), this is due to a number of factors, including land scarcity and competition for resources, lack of communication and understanding between farmers and herders, negative stereotypes about each other, and government policies that favor one group over the other.

The mean scores for the different forms of interaction between farmers and herders also suggested that the relationship was not very cooperative. The mean score for the statement "Collaborative farming practices is the most common form of interaction" was 1.66, which was well below the midpoint of the scale. The mean scores for the other statements are also low, with the exception of the statement "Farmers and herders communicate with each other" (3.19). These findings suggested that farmers and herders in Nasarawa State do not interact with each other very often, and when they do, it is usually not

in a collaborative or cooperative way. This is due to the same factors as stated above that are causing the conflict between the two groups. The mean score for the statement "Government policy plays a role in shaping the relationship" was 2.82, which was above the midpoint of the scale. This suggested that respondents believed that government policies does play some role in the relationship between farmers and herders. This was likely because government policies affected land use, access to resources, and the enforcement of laws and regulations.

Table 15 also depicted that the relationship between farmers and herders in Nasarawa State was generally perceived to be conflict-ridden and hostile. The findings suggested that this was due to a number of factors, including land scarcity and competition for resources, lack of communication and understanding between farmers and herders, negative stereotypes about each other, and government policies that favored one group over the other. It is therefore, important to address these factors in order to improve the relationship between farmers and herders and reduce the negative impact of the conflict on the socioeconomic development of Nasarawa State.

The Causes of Farmers-Herders Clash in Nasarawa State

Results from Table 16 depicted the causes of farmers-herders clash in the study area. This result showed that the most significant causes of farmers-headers clash were competition for land resources (mean = 3.38), ethno-religious tensions (mean = 3.22), and political instigation (mean = 2.91). Other significant causes included the scarcity of water resources (mean = 3.15), the presence of armed groups and militias among herding communities (mean = 3.05), inadequate law enforcement and security (mean = 3.06), the lack of clear boundaries and grazing (mean = 3.08), economic disparities between farmers and herders (mean = 3.09), lack of effective conflict resolution mechanisms (mean = 3.08), and misinformation and rumor-mongering (mean = 3.13). The least significant causes were land ownership disputes (mean = 1.71), cultural and traditional practices (mean = 1.85), external influences (e.g., climate change, globalization) (mean = 1.84), and unequal access to agricultural inputs (e.g., fertilizers, seeds) (mean = 1.89).

The competition for land is often exacerbated by the fact that farmers and herders have different needs for land. Farmers need land for crops, while herders need land for grazing their livestock. This leads to conflict when the two groups clash. Similarly, this is in conformity with the findings of Usman (2020) which stated that, competition for scarce resource is also one of the causes of the conflict in the study area. Again, Ethno-religious tensions are another major cause of conflict between farmers and herders. Nigeria is a multi-ethnic and multi-religious country, and there is often tension between different ethnic groups and religious groups.

On the other hand, Table 16 indicated that land ownership disputes, cultural and traditional practices, external influences (like climate change, and globalization) and unequal access to agricultural inputs with mean of 1.70, 1.84, 1.84, and 1.89 respectively were not accepted as part of the major causes of the farmers-herders clash in the study area. The reason for their rejection was because their mean was not up to the minimum of 2.5 which was the cut-off mean for acceptance.

Table 16: The Causes of Farmers-Herders Clash

Causes of Farmers/Headers Clash.	Total	(Ms)Mean	Std. Deviation	Decision
Competition for land resources is the primary cause.	200	3.3800	.75395	Accept
Ethno-religious tensions is the primary cause.	200	3.2200	.81543	Accept
Political instigation is a primary cause.	200	2.9150	.90102	Accept
Land ownership disputes contribute to farmers-herders clashes	200	1.7050	.69309	Reject
The scarcity of water resources.	200	3.1550	.81504	Accept
The cultural and traditional practices.	200	1.8450	.71662	Reject
The presence of armed groups and militias among herding communities.	200	3.0500	1.04063	Accept
Inadequate law enforcement and security.	200	3.0600	1.01566	Accept
The lack of clear boundaries and grazing.	200	3.0850	.97598	Accept
Political leaders and policymakers have role in preventing or exacerbating farmers-herders clashes	200	2.9650	1.00440	Accept
External influences (e.g., climate change, globalization).	200	1.8400	.69050	Reject
The proliferation of small arms and light weapons.	200	3.1650	1.01138	Accept
Economic disparities between farmers and herders contribute to the conflicts	200	3.0900	.83389	Accept
Lack of effective conflict resolution mechanisms.	200	3.0800	.95822	Accept
Misinformation and rumor-mongering.	200	3.1300	.95270	Accept
Unequal access to agricultural inputs (e.g., fertilizers, seeds) contributes to the conflicts	200	1.8900	.65578	Reject

Decision rule: <2.5=reject and >2.5=accept.
Source: Field survey 2023

The Effects of Farmers-Herders Clash

The results presented in Table 17 depicted the effects of farmers-herders' clash on crops farmers in Nasarawa State. The mean scores for the variables were high, suggesting that these were the areas that were most affected by the clashes: Experienced conflicts or clashes with herders: The mean score of 3.265 indicated that a large proportion of the farmers had direct experience conflicts or clashes with herders. The mean score of 2.855 indicated that the clashes had a significant negative impact on crop yield production. The mean score of 2.810 indicated that a large proportion of the farmers had experienced loss of crops due to the clashes. The mean score of 2.975 indicated that a significant number of the farmers had been forced to abandon their farmlands due to the clashes. The mean score of 2.930 indicated that the clashes had a significant negative impact on the income of the farmers from crop farming. The mean score of 2.940 indicated that a large proportion of the farmers had experienced physical violence and/or threats as a result of conflicts with herders. The mean score of 2.945 indicated that a large proportion of the farmers had considered switching to alternative livelihood options due to conflicts with herders. The mean score of 2.745 indicated that the clashes had a significant negative impact on the overall agricultural productivity in Nasarawa State. The mean score of 2.630 indicated that a significant number of the farmers had experienced psychological stress or emotional distress as a result of conflicts with herders. The mean score of 2.690 indicated that the clashes had a negative impact on the access of the farmers to markets and selling their produce. The lower mean scores for the following statements suggested that these areas were less affected by the clashes: The mean score of 2.900 indicated that a significant number of the farmers had not frequently encountered conflicts with herders. The mean score of 1.940 indicated that the changes in the behavior of wildlife in the farmlands due to conflicts with herders was not a major concern for the farmers. The mean score of 2.185 indicated that the clashes had a negative impact on the relationship between the

farmers and their neighboring farmers. The mean score of 2.235 indicated that a small proportion of the farmers had received compensation or support from the government for losses incurred due to conflicts with herders. The mean score of 2.225 indicated that a small proportion of the farmers' families had to move to IDP camps due to farmers-herders clashes.

Table 17: The Effects of Farmers-Herders Clash

Effects of Farmers/Headers Clash	Total	(Ms)Mean	Std. Deviation	Decision
I have experienced conflicts or clashes with herders	200	3.2650	.75340	Accept
I have frequently encountered conflicts with herders	200	2.9000	.94577	Accept
The Clash has affected crop yield production.	200	2.8550	.98429	Accept
I have experienced loss of crops due to the clash	200	2.8100	.99441	Accept
I have been forced to abandon farmlands.	200	2.9750	.95863	Accept
The clash has affected my income from crop farming	200	2.9300	.95901	Accept
I have experienced physical violence and/or threats as a result of conflicts with herders	200	2.9400	1.02059	Accept
I have invested in additional security measures to protect my crops from herders	200	2.8550	.97917	Accept
I have observed some changes in the behavior of wildlife in my farmlands due to conflicts with herders	200	1.9400	.88335	Reject
Farmers-herders clash have affected my relationship with neighboring farmers	200	2.1850	.60215	Reject
I have received compensation or support from the government for losses incurred due to conflicts with herders	200	2.2350	.65722	Reject
I have considered switching to alternative livelihood options due to conflicts with herders	200	2.9450	2.45399	Accept
The clash has impacted the overall agricultural productivity in Nasarawa State	200	2.7450	1.03699	Accept
I have experienced psychological stress or emotional distress as a result of conflicts with herders	200	2.6300	.94209	Accept
The clash have affected your access to markets and selling your produce	200	2.6900	1.01442	Accept
My family have move to IDP camps due to farmers/herders clash	200	2.2250	1.05829	Reject

Decision rule: <2.5=reject and >2.5=accept.
Source: Field survey 2023

Plate 1: Pictures showing destroyed houses and farmland in Kokona LGA
Source: Field survey 2023

The Mitigation Measures of the Effects of Farmers-Herders Clash

Results presented in Table 18 indicated the mitigation measures of the effects of famers-herders clash in the study area as suggested by the respondents. All the listed mitigation measures had mean higher than the 2.5 cut-off mean for the acceptance. This indicates the reason for the accepted written under the column for decision. Thus, it implies that the respondents accepted mitigation measures were the best ways to tackle the effects in their area.

Table 18: Mitigation measures

Mitigation Measures for Farmer /Header Clash.	Total	(Ms)Mean	Std. Deviation	Decision
Effective enforcement of land use and land tenure policies can be used to mitigate the implications of the farmers-herders clash on crop farmers.	200	2.8750	.95600	Accept
Increased security presence in affected areas should be implemented.	200	3.0350	1.04366	Accept
Creation of grazing reserves should be implemented.	200	3.1050	1.83872	Accept
Strict enforcement of laws and regulations should be implemented.	200	2.9350	1.03252	Accept
Dialogue and conflict resolution initiatives should be implemented.	200	2.9550	1.05286	Accept
Existing security measures are effective in mitigating the implications of the farmers-herders clash on crop farmers	200	2.3950	1.06047	Reject
Government authorities should take the lead in implementing mitigation measures	200	3.1350	1.02569	Accept
Community leaders should take the lead in implementing mitigation measures	200	2.8400	.96387	Accept
Civil society organizations should take the lead in implementing mitigation measures	200	3.1350	.96511	Accept
Alternative livelihood options for herders should be provided to reduce their reliance on crop farming areas	200	3.2250	1.02940	Accept
Education and awareness programs would play significant role in mitigating the implications on crop farmers	200	3.0250	.98449	Accept
there should be a compensation mechanism for crop farmers who suffer losses as a result of the farmers-herders clash	200	2.9950	1.03457	Accept
Community-level mediation committees can promote peaceful coexistence between crop farmers and herders.	199	3.1055	1.03178	Accept
Sensitization campaigns on the importance of peaceful coexistence can promote peaceful coexistence between crop farmers and herders.	198	2.9293	1.00509	Accept
There should be a designated authority responsible for resolving conflicts between crop farmers and herders.	200	3.0350	1.01930	Accept
Deployment of security personnel can enhance security in areas affected by the farmers-herders clash	200	2.9250	1.01713	Accept
Community-based vigilante groups can enhance security in areas affected by the farmers-herders clash	200	2.9200	1.02413	Accept
There should be special financial support or incentives for crop farmers affected by the farmers-herders clash to help them recover and rebuild their livelihoods	200	3.0700	1.01501	Accept
Creation of ranches should be implemented to mitigate the implications of the farmers/herder's clash.	200	2.8000	1.07039	Accept
Creation of grazing routes will prevent farmers/herders clash.	200	2.9000	.98736	Accept

Decision rule: <2.5=reject and >2.5=accept.

Source: Field Survey, 2023.

The mean scores for the mitigation measures showed that the respondents generally agree with the need for these measures to be implemented. The highest mean score was for the statement "Creation of grazing reserves should be implemented", with a score of 3.10. This suggests that the respondents believe that this was an important measure to mitigate the negative socio-economic effects of the farmer-herder clash. This is in line with the suggestions of Alao et al, (2019).

Analysis of the hypothesis

H_O: There is no significant relationship between farmers-herders clash and the socio-economic activities of crop farmers

H_1: There is significant relationship between farmers-herders clash and the socio-economic activities of crop farmers.

Table 19: Model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.799[a]	.638	.637	.14454	.638	349.643	1	198	.001	1.740

a. Predictors: (Constant), FHC

b. Dependent Variable: SACF

Source: Field survey 2023

The results of the regression analysis indicated that there is a significant positive relationship between the farmers-headers clash (FHC) and the socio-economic activities of crop farmers (SACF) in Nasarawa state. The R-squared value of 0.638 indicates that the model explained 63.8% of the variation in the dependent variable (SACF). This is a relatively strong relationship. The Durbin-Watson statistic of 1.740 is within the acceptable range of 1.5 to 2.5, which indicated that there is no autocorrelation in the residuals. The coefficient for the independent variable (FHC) was 0.908, which was positive and significant. This means that for every one-unit increase in FHC, SACF was expected to increase by 0.908 units. The p-value for the coefficient of FHC is 0.000, which was less than 0.05. This means that the relationship between FHC and SACF was statistically significant.

The results of the regression analysis support the alternate hypothesis which states that there is a significant relationship between the farmers-headers clash and the socio-economic activities of crop farmers in Nasarawa state. The more farmers-herders clash, the more severe the effects of farmers-herders clash were on the socioeconomic activities of crop farmers in Nasarawa state.

Conclusion

The herders-farmers conflict in Nasarawa State is a complex issue with no easy solutions. However, by taking the necessary steps to mitigate the conflict, it is possible to reduce its negative impact on crop farmers and promote peace and stability in the state. The government should play a leading role in resolving the conflict. This includes establishing grazing reserves and ranches, providing compensation to farmers for lost crops and livestock, enforcing laws against cattle rustling and trespass, and promoting dialogue and cooperation between farmers and herders. The government should also work to create a more enabling environment for

peaceful coexistence between farmers and herders. This includes providing access to education and economic opportunities for both groups. By taking these steps, the government can help to build trust and understanding between farmers and herders, and lay the foundation for a more peaceful future. The study highlighted the importance of cooperation and dialogue between farmers and herders. By working together, these two groups can find solutions to the challenges they face and build a more sustainable future for themselves and their communities. The study also has implications for other parts of Nigeria and the world where herders-farmers conflict is a problem. The findings of the study can be used to inform policy decisions on how to mitigate conflict and promote peace and stability in other parts of the world.

Recommendations

From the findings of this study, it recommends as follows:

i. effective regulation of grazing and farming activities in Nasarawa State through efficient land-use laws/legislations and administration;
ii. creation of grazing reserves and dedicated grazing routes in order to solve the issue of herders encroachment on farmlands and vice versa;
iii. mitigation of desertification and drought in the far North by the government, NGOs, communities and individuals in order to forestall mass movement of pastoralists towards the North-central belt;
iv. sensitization of stakeholders, farmers and herdsmen alike, on the need for mutual co-existence and peace; this would help to forestall needless provocations and opportunistic violence;
v. sedentarization of grazing through ranching in order to regulate practice and foreclose clashes between herding and farming communities.

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