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An Empirical Assessment of the Impacts of Farmers-Herders Conflict on Food Crop Production in the North-Eastern Region of Nigeria

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Abstract

The persistent conflicts between farmers and herders have had serious effects on food crop production in sub-Saharan African countries, particularly Nigeria. Therefore, this research aims to assess the impacts of the farmers-herders conflict on food crop production in the North-Eastern region of Nigeria. The results revealed that the majority of the farmers in the area were males 68%; married 51% and within the active age range of below 50 years 86.8%. Similarly, 96.2% had secondary or tertiary education, whereas 3.8% had either primary education or no formal education. Approximately 86% of the farmers were cultivating small plots of farmland, between 1 to 5 hectares. All of this data was analyzed using descriptive statistics and multiple regression models. Therefore, it is recommended to encourage modern farming practices that utilize improved technologies. By favouring small areas of land with high productivity, we can reduce competition on farmland. Furthermore, the establishment of efficient commercial cattle ranches should be considered, along with providing an enabling environment for peaceful coexistence in the community.

Keywords: Farmers, Herders, Crisis, Food Crop, Production, Assessment.

Introduction

Most developing countries in sub-Saharan Africa prioritize sustainable food production and the improvement of people's welfare through efficient agricultural production. Nigeria is an agrarian state with most of its population living in rural areas, largely depending on farming for sustenance. A significant population of farmers in the northeastern part of Nigeria grow rice either at subsistence or commercial scale. Rice is produced as a major staple food crop in Nigeria and its production has been given high priority in a bid to enhance food sufficiency for the growing population. There was a significant increase in the production of milled rice in Nigeria from 5.1 million metric tons in 2010 to approximately 5.2 million metric tons. However, the increased production status has not met the ever-increasing level of rice consumption in Nigeria; hence, the need to augment through importation. According to Adewuyi and Amuritya (2021) rice production in Nigeria has fallen short of its demand, leading to a high level of importation. The various efforts of the Nigerian government aimed

at improving the production of rice, and other food crops, have been hampered by many socio-political factors, among which the persistent crisis between farmers and Fulani herders ranks highest. Hyginus (2022) noted that the continual conflicts between farmers and herders in Nigeria have contributed immensely to hampering food security, as desired by the government.The laudable efforts of the government at enhancing high food crop production have been negatively affected by the incessant crisis between farmers and Fulani herders. The multiplier effects of the farmer-herder crisis, as noted by the Africa Centre for Strategic Studies (2021) include land degradation, a decrease in food production, loss of lives and property, inter-communal clashes, poverty, etc. These pose a great danger to efforts to improve food sufficiency in Nigeria and other West and Central African countries.Kwaghga (2018) emphasized that the farmer-herder conflict is one of the security challenges facing Nigeria in recent times, with serious implications for nation-building and national integration. Furthermore, Nwosu (2017) reported that the farmer-herder conflict took on a new dimension with the resurgence of democracy in Nigeria. According to Okoro (2018), conflicts between herders and farmers in Nigeria occurred no less than 95 times within two and a half years, from January 2016 to June 2018. Kwaja and Adelewin (2017) identified some factors attributed to the emergence of the farmer-herder conflict, including ineffective agricultural policies, an imbalance of socio-economic welfare, climatic changes, a low level of infrastructure, and improper utilization of resources. Ajibo et al. (2018) also reported that the porous nature of Nigerian borders, over-concentration of infrastructure in urban centers, ineffective security response, and lack of political will to address the issue are the factors that aid herders-farmers conflicts in Nigeria. Moreover, Oghuvbu and Oghuvbu (2020) noted that conflicts between farmers and herders in most African countries have been worsened by factors such as rapid population growth, an increase in people engaging in farming as a means of livelihood, environmental degradation, indiscriminate grazing by herders, and the proliferation of Small Arms and Light Weapons. Beetseh (2018) reported that deforestation and uncontrolled pastoralism contribute to the ongoing conflict between farmers and herders. The Africa Centre for Strategic Studies (2021) highlighted that conflicts between farmers and herders in many parts of West and Central African countries have escalated due to factors such as population pressure, challenges of land use, access to resources, growing social inequalities, and lack of trust among communities. The farmers-herders crisis has resulted in enormous damage to socio-economic livelihoods in many communities in Nigeria. According to Mufutau, Brimah and Shittu (2020), the entrepreneurial practices and economic activities of many rural communities in Nigeria have been negatively affected by the farmer-herder conflicts. Ndubuishi (2018) reported that in February 2016; the conflict between farmers and Fulani herders in the Agatu community of Benue State, Nigeria led to the death of not fewer than 40 people, while about 100 suffered various degrees of injuries. Furthermore, Ndubuishi (2018) stressed that about 2,000 people were displaced during the same attack in February 2016. Similarly, Uroko (2018) reported that the Miyetti Allah Cattle Breeders Association in Nigeria alleged that about 6,000 cows were lost due to the unfortunate clashes between

the farmers and Fulani herders in Southern Kaduna State, Nigeria. Many more destructions have been done to communities in most rural settlements across Nigeria (Beetseh, 2018). Therefore, there is an urgent need to investigate the remote and immediate causes, as well as the consequences of this menace that has adversely affected the level of food sufficiency in the country.

The struggle over grazing land and scarce resources has, for many years, led to violent clashes in frequency, intensity, and geography to the extent that Amnesty International reported in January, 2018 alone, 168 people were killed from the conflict (Ajibo, et al., 2018). Farmers have lost their lives and farm produce worth billions of naira annually across many states affected by the conflict since 2001 when the problem became more pronounced. Amnesty International (2018) reported that 168 people were killed in the conflict in January 2018 alone in Nigeria. Farmers lost their lives and farm produce worth billions of naira across many states that were affected by the conflict annually, according to Amnesty International (2018). Furthermore, Kwagha (2018) attributed the causes of the farmers-herders conflict to the unending and unsettled issue of indigenous settlers in North-Central Nigeria. Antwi (2018) identified some major causes of the conflict, tracing it to climate change, depleting farmlands, lack of political will, and inadequate government response to the crisis. Kwaja & Adelehin (2017) noted that the farmers-herders conflict has many dimensions, as well as socio-cultural and economic implications for Nigeria. Kenneth and Ananti (2018), farmers-herders conflicts have many implications for national security and development as they fuel the escalation of the already fragile security situation in the country, resulting in increased food insecurity in the country. They further observed that the crisis negatively influences the economic performance of the agricultural sector in terms of crop and livestock production. According to Mufutau, Brimah and Shittu (2020), the entrepreneurial practices and economic activities of many rural communities in Nigeria have been negatively affected by the farmer-herder conflicts. It is urgent to address this ongoing issue, which has hindered the productivity of major food crops in the country. The farmers-herders crisis has resulted in enormous damage to socio-economic livelihoods in many communities in Nigeria.

Objectives of the Study

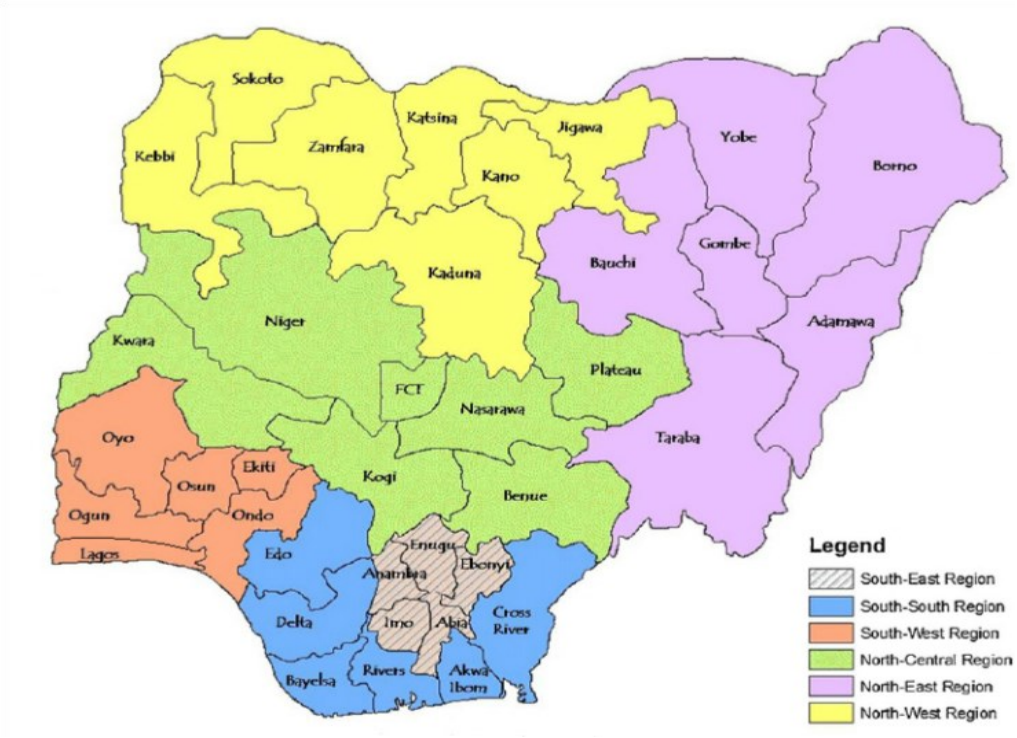
This research aims to undertake an empirical assessment of the impacts of the farmers-herders conflict on rice production in the North-Eastern Region of Nigeria.

The specific objectives include:

i. Identifying the socio-economic characteristics of farmers in the study area.
ii. Analyze the factors that influenced the output of rice production as a result of the crisis.
iii. Assess the impacts of the farmers-herders conflict on rice production in the area.

The Study Area

The study will be carried out in three purposively selected states in the North-East of Nigeria comprising Adamawa, Bauchi and Taraba State. These are states in the northern parts of Nigeria that have recently suffered the the most from farmer-herder crisis activities in the North-Eastern region of Nigeria. They are notable for the cultivation of annual crops such as rice, maize, millet, cowpea, and groundnut. The majority of farmers in these areas also rear livestock such as cattle, goats, sheep, and poultry.



Source: *National Identity Management Commission*

Data Collection and Sampling Technique

The primary data for this study were collected through the use of structured questionnaires. Rice farmers were purposively targeted for this study because rice is the predominant food crop grown in this zone. Three hundred and sixty (360) questionnaires were distributed by enumerators using a multi-stage sampling survey for the study. The first stage involved purposive sampling of three states within the region that have been mostly affected by insurgency, communal crisis, and farmers/herders clashes in recent times, i.e., Adamawa, Bauchi and Taraba State (Okoro, 2018). Secondly, three local government areas were randomly selected from each of the sampled states. The third stage involved random sampling of forty (40) farmers from each of the local government areas to give one hundred and twenty (120) farmers per state. Thus, a total of three hundred and sixty (360) farmers were contacted for the survey. At the end of the survey, only three hundred and forty-one (341) respondents were used for the study due to improper filling of the other twenty-nine (29) questionnaires.

Data Analysis

The data obtained from the field survey were analyzed using descriptive statistics, which include frequency distribution and percentages.

Multiple Regression Analysis

The model specification is as follows:

$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \ldots \beta_iX_n + e_i$ (i)

Where;

Y = Output of rice after the crisis.

X_1 = Farm size (ha); X_2 = Seed in kg; X_3 = Fertilizer in kg; X_4 = labour in man-days; X_5= Herbicides in liters; X_6 = Pesticides in liters; X_7 =Age (Yrs); X_8 = Access to education; X_9 = Gender; X_{10} = Household size (number); X_{11} = Access to Extension Services (Dummy: 1 for YES and 0 otherwise); X_{12} = Access to credit facilities (Dummy: 1 YES, and 0 otherwise)

$\beta_1, \beta_2, \beta_3 \ldots \beta_n$ Coefficients of the independent variables.

e = error term.

β_0 is the intercept.

Results and Discussion

Socio-economic Characteristics of the Respondents

Table 1 shows the socio-economic characteristics of the farmers identified in the study area.The findings reveal that the majority of farmers in the area were under the age of 50 (86.8%). Rice farming requires a lot of labor, which can only be provided by young and energetic members of the community. This result agrees with the findings of Adewuyi et al. (2020) who reported that rice farming required men and women within active ages. Furthermore, the results indicate that the majority of farmers were male (68%) and married (51%). Most farmers in the area were educated, with 77.1% at the tertiary level and 19.1% at the secondary level; only 3.8% had either primary education or no formal education. Access to formal education has been observed as an important socio-economic factor that influences the attitude and aptitude of farmers towards new technologies in farming (Sanzidur and Chidiebere, 2018; Adewuyi and Offar, 2022). The results further reveal that most of the farmers in the area (85.9%) were cultivating small plots of farmland of between 1- 5 ha. This is a prominent feature of most peasant Nigerian farmers who still engage in subsistence agricultural practices. The result corroborates the findings of other researchers who had observed that most farmers in Nigeria are still operating at a subsistent level using small plots of land (Thomas et al., 2018; Melesse, 2018). As indicated in the results, the farmers had limited access to credit facilities and extension services.

Table 1: Socio-economic Characteristics of the Respondents

Variables	Frequency	Percentage
Age (Yrs.)		
< 30	120	35.2
30 – 39	69	20.2
40 – 49	107	31.4
50 – 59	25	07.3
≥ 60	20	05.9
Total	341	100
Gender		
Male	232	68.0
Female	109	32.0
Total	341	100
Marital Status		
Single	98	28.7
Married	176	51.6
Divorced	67	19.6
Total	341	100
Educational Level		
Pry/No Formal Education	13	03.8
Secondary	65	19.1
Tertiary	263	77.1
Total	341	100.0
Farm Size		
- 5	293	85.9
- 10	15	04.4
> 10	33	09.7
Total	341	100.0
Access to Credit Facilities		
YES	23	06.7
NO	318	93.3
Total	341	100.0
Access to Extension Service		
YES	22	06.5
NO	319	93.5
Total	341	100.0

Source: Field Survey, 2023.

Factors Influencing the Production of Rice in the Area as a Result of the Herders-Farmers Crisis

Table 2 shows the various factors that influenced the level of rice production in the area due to the herders-farmers crisis. The model had the best fit with R^2 value of 55.8%. This implies that over 50% of the variations in rice output were explained by the independent variables in the model. The findings revealed that farm size had a statistically significant effect on the output of rice produced at 99% confidence interval (p-value = 0.009). In this case,the farm size with coefficient (β_1 =3.805) implies that a reduction in the size of the farm by one hectare would cause a decrease in the output level by 3.805. The struggle between the farmers and herders on the limited available farmlands has been observed also by various researchers as a major factor responsible for the incessant farmers-herders conflicts (Oghuvbu & Oghuvbu, 2020; Hyginus, 2022 and Ajibo et al., 2018). Furthermore, the analysis identified other factors that affect the output of rice in the area, including the the amount of seeds used (β_2 =0.164) and pesticides (β_6 =1.387). Both seeds and pesticides had a statistically significant influence on the output of rice at 99% confidence intervals. This result indicates that the availability, or lack thereof of these farm inputs had serious effects on the production of rice in the area. The prevalent crisis between farmers and herders in the area could be responsible for the inadequate supply of these major farm inputs. Similarly, Mufutau, Brimah and Shittu (2020) also noted that farmers-herders conflicts had resulted in a shortage of farm inputs in many communities in the country. Moreover, the age of the respondents (β_7 = 4.178) was shown in the results to have a statistically significant relationship with the level of output of rice produced.This implies that the age of the farmers played an important role in the production of rice in the area. The more aged members of the community are usually the most vulnerable group in every crisis. Age has been shown by other researchers (Alemu, 2020, Adewuyi & Amuritya, 2021) to have a significant influence on the production of major crops such as rice. Additionally, the level of education (β_8 = 1.909) and gender (β_9 = 3.641) were statistically significant factors influencing the output of rice production in the area.The devastating nature of crises like the farmers-herders conflicts would disrupt the educational infrastructure in the affected community. This implies that the level of productivity of farmers in the area was affected as a result of the unfavorable impact of the conflicts on the educational system.

Table 2: Multiple Regression Analysis and Parameter Estimation of Rice Production after the Herders-Farmers Crisis.

Variables	Coefficients	Standard Errors	t	P-Values
Constant	8.993	6.368	1.412	0.159
Farm Size	3.805	1.455	2.616	0.009 *
Seeds	0.164	0.052	3.181	0.002 *
Fertilizers	- 0.174	0.184	-0.946	0.345
Labour	0.102	0.041	2.503	0.013 **
Herbicides	0.075	0.204	0.369	0.712

Pesticides	1.387	0.252	5.506	0.000 *
Respondent Age	4.178	0.244	5.677	0.000 *
Level of Education	- 1.909	0.228	5.677	0.000 *
Gender	3.641	1.773	2.054	0.041 **
Household-Size	6.672	1.323	-8.383	0.000 *
Access to Extension	17.522	3.731	2.054	0.000 *
Access to Credits	-14.174	3.642	5.043	0.000 *
R-Square	0.558			

*Significant at 1% **Significant at 5%

Source: Field Survey, 2023.

The results revealed that gender (β9 = 3.641) significantly influenced rice production. This suggests that the farmers-herders crisis had a greater impact on female farmers in the area, as they are more vulnerable members of the community. Similarly, Okoro (2018) reported that the farmers-herders crisis had a greater impact on women in society due to their vulnerability and weaknesses. The results in Table 2 further reveal that household size (β10 = 6.672), access to extension services (β11 = 17.522) and credit facilities (β12 = 14.174) had statistically significant relationships with the level of output of rice (at 99% confidence intervals) produced in the area. This suggests that these variables greatly influenced the amount of rice produced and were also affected by the crisis in the area.

Conclusion

The research findings identified the various socio-economic characteristics of the respondents in the area. The results revealed that the majority of the farmers were under the age of 50 (86.8%). Additionally, most of the farmers were male (68%) and married (51%). The findings show that the farmers were educated, with 77.1% at the tertiary level and 19.1% at the secondary level, while only 3.8% had either primary or no formal education. The farmers in the area (85.9%) were cultivating small plots of farmland between 1- 5 hectares.

The results of the multiple regression analysis identified various factors that significantly influenced the levels of rice production output in the area,includingfarm size, seeds, labour, pesticides, age, level of education, gender, household size, access to extension services, and credit facilities. All of these factors were observed in the study to have statistically significant effects on the rice production output, which were the multiplier impacts of the farmers-herders crisis in the area.

Recommendations

Based on the findings of this research, the following recommendations are provided:

i. Modern farming practices with improved technologies that favours utilization of small land areas with high productivity should be encouraged.

ii. Priority should be given to establishing efficient commercial cattle ranches in designated places to reduce competition for available farmland between herders and farmers.
iii. There is a need to build a strong community peace and security architecture within the area to facilitate smooth communication and dialogue.
iv. The already designated grazing reserves across the country should be put into operation.

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