Effects of Conflict between Pastoralist and Crop Farming Communities on Households' Food Security in Kwara State, Nigeria

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Abstract: *Pastoralists-farmers' conflicts in Nigeria have grown, spread and intensified over the past decade and today pose a threat to national survival. Thus, this study measured food security status, assessed the effect of pastoralist- crop farmers' conflict on food security and described the coping strategies employed by the respondents to reduce the effects of the conflict. Proportional sampling method was used to select a sample of 200 farming households. The analytical tools include descriptive statistics, logistic regression and food security index. The study indicated that 54.5% and 45.5% of the respondents were food secure and food insecure, respectively. Furthermore, pastoralist-crop farmers' conflict, household size, sex, farm distance and access to co-operatives were the significant factors driving to food security in the area. Moreover, farmers generally used a combination of strategies to manage conflict. The 'use of job experience, hard-working, early cropping, appease other party and seeking for help from relatives, village leaders and governments were some of the effective coping strategies used by the respondents to reduce the effects of conflict. Consequently, ranching and use of Rural Grazing Area (RUGA) settlement be encouraged by the government to reduce the effect of the conflict. Policies and strategies aimed at reducing the household size and enhancing cooperative formation should be pursued.*

Keywords: Conflict, coping strategies, food security index, RUGA settlement

1. Introduction

Food is fundamental to life. It is considered as the basic means of nourishment, and a recommended food intake in terms of quantity and quality is critical for a healthy and productive life (FAO, 2005). Food occupies a large part of a typical Nigerian household budget. The need for food is topmost in the hierarchy of needs. Thus, the achievement of food security is crucial to any given country. A food-secure household is therefore that whose per capita monthly food expenditure fall above or is equal to two-third of the mean per capita food expenditure. On the other hand, a food-insecure household is that whose per capita food expenditure falls below two-third of the mean monthly per capita food expenditure (Omonona *et al.*, 2007). In Nigeria, food insecurity is still a critical challenge among rural and urban households (Ifeoma and Agwu 2014). The country's food security crises became aggravated as a result of the frequent conflict between pastoralist and crop farmers (Gambari, 2018).

Pastoralism is the main livestock production system in much of Africa where pastoralists live in semi-arid zones. It is a historically developed strategy to cope with the uncertainties associated with climate change, a buildup of parasites and other related challenges. It is above all an efficient way to produce livestock at relatively low prices through the use of non-commercial feeding stock. This system of production is breaking down today as violent conflicts between pastoralists and farmers have arisen and created a major national crisis (Gambari, 2018).

Pastoralist and crop farming conflict have remained the most preponderant resource-use conflict in Nigeria (Fasona and Omojola, 2005). Providing food of crop and animal origin as well as raw materials for industry and export in order to meet ever-growing demands, has led to both intensification and expansion of land use (Nyongand Fiki, 2005). The competition between these two agricultural land user-groups however, has often turned into serious hostilities and social friction in many parts of Nigeria. The conflicts

have demonstrated high potential to exacerbate the insecurity and food crisis, particularly in rural communities.

Pastoralists-farmers' conflicts in Nigeria have grown, spread and intensified over the past decade and today poses a threat to national survival. Thousands of people have been killed, communities have been destroyed and so many farmers and pastoralists have lost their lives and property in an orgy of killings and destruction that is not only limited to livelihoods but also affecting national cohesion and food security. Recurrent reprisal killings are simply making the possibilities of peaceful resolution more difficult. Rural banditry is becoming the norm in the Nigerian hinterland and has been transformed into a vicious criminal activity. The result is that the scale of loss of both herds and human lives has been escalating and the victims are on all sides – subsistence farmers, commercial farmers and pastoralists (Cotula*et al*., 2004). This creates food availability and accessibility problems at the household and national levels (Akinsanmi and Doppler, 2005).

Several studies have been done on the determinants of food security of households (Babatunde*et al*., 2007; Omonona *et al*., 2007; Amaza *et al.*, 2008; Ifeoma and Agwu 2014; Ahmed *et al*., 2016; Salau *et al.*, 2018; Shehu *et al.*, 2019). However, data on the effect of conflict between pastoralists and crop-farmers on farming households' food security are rare in the literature. Thus, this study was therefore initiated to measure food security status, assess the effect of pastoralist- crop farmers' conflict on food security and describe the coping strategies employed by the respective stakeholders to reduce the effect of the conflict.

2. Materials and Methods

2.1. Description of the study areas

This study was carried out in Kwara State. The state is located between parallels 8º and 10º north latitudes and 3º and 6º east longitudes east. It covers an area of 35,705 Square kilometres, with a population of 2,371,089 and a population density of 66 people/Square kilometres(NPC, 2006). Kwara shares an international boundary with the Republic of Benin to the west and interstate boundaries with Niger State to the north, Oyo State to the southwest, Osun and the Ekiti States to the southeast and Kogi State to the east (Figure 1).

The climate is characterized by both wet and dry seasons each lasting for about six months. The raining season begins towards the end of April and lasts till October while the dry season spans between November and March. Days are very hot during the dry season; from November to January, temperatures typically range from 33°C to 34°C, while from February to April, the temperature is between 34.6°C and 37°C. The total annual rainfall is about 1318mm with the mean temperature being between 30°C-33°C.

Agriculture is the most prominent occupation in the State and the principal crops grown are Cassava, millet, maize, okra, sorghum, beni-seed, cowpea, yam, sweet potatoes, and palm tree. There are a total of 1,258 rural communities in Kwara (Muhammad-Lawal and Omotesho, 2008). Rural dwellers constitute more than eighty percent of the total population of Kwara state. The State is divided into four zones by the Kwara State Agricultural Development Project (KWADP) in consonance with ecological characteristics, cultural practices and project's administrative convenience. These are Zone A: Baruteen and Kaima Local Government Areas (LGAs); Zone B: Edu and Patigi LGAs; Zone C: Asa, Ilorin East, Ilorin South, Ilorin West and Moro LGAs and Zone D: Ekiti, Ifelodun, Irepodun, Offa, Oyun, Isin and Oke-Ero LGAs.

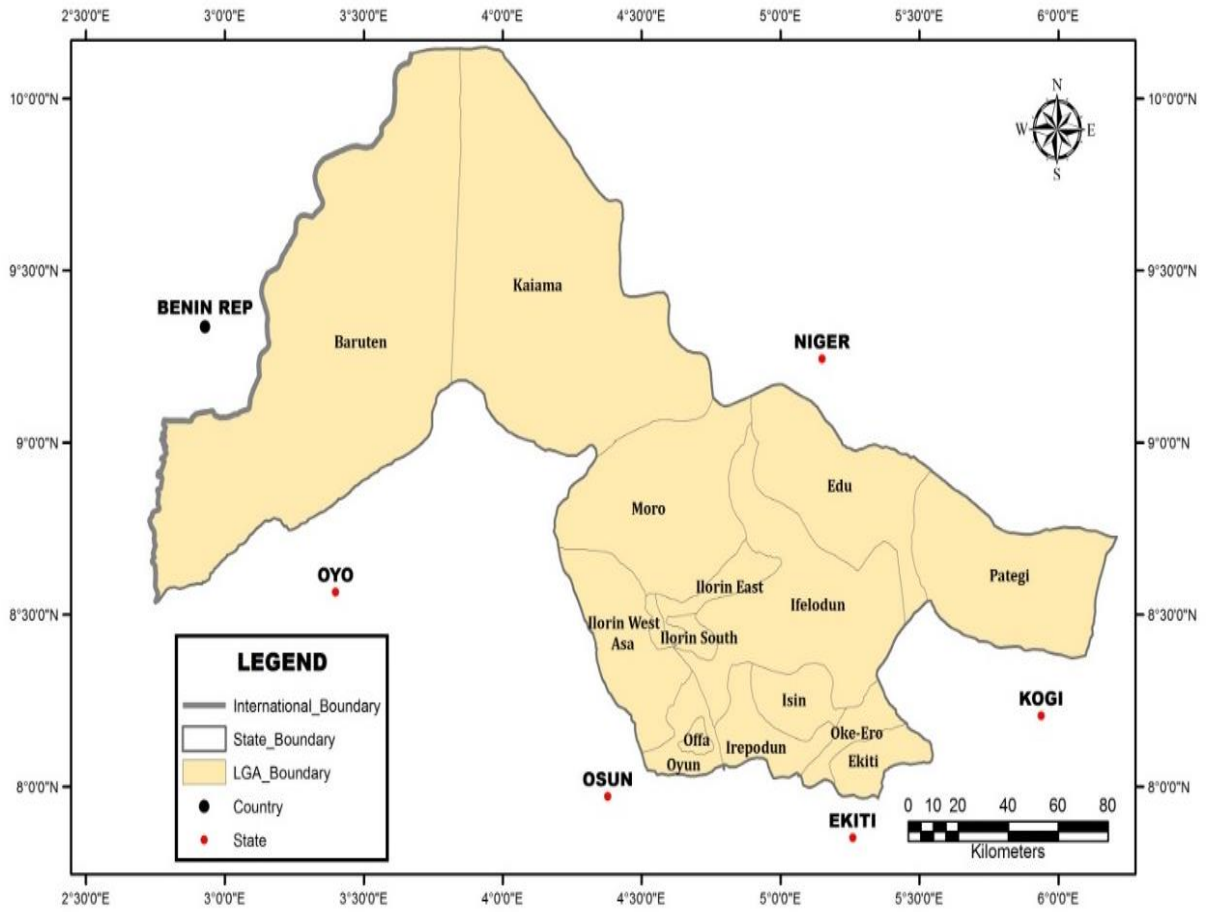

Figure 1: Map of Kwara State showing the Local Government Areas

Source: Adapted from Ibiremo *et al.* (2010)

2.2. Data collection and sampling methods

Kwara State is one of the states in Nigeria that have recorded a high incidence of pastoralist-crop farmer-conflict. Out of the 16 local government areas (LGAs) in the state, 10 are most associated with pastoralist-crop farmer conflict (Adisa, 2012). Out of these 10, 6 LGAs were randomly selected namely: Asa, Patigi, Ifelodun, Ekiti, Isin, and Oke-EroLGAs in the first stage. Secondly, communities, where the conflicts are well pronounced, were purposively selected in each LGAs. These communities are Alapa in Asa LGA, Oro Ago in Ifelodun LGA, Motokun in Patigi LGA, Obbo Aiyegunle in EkitiLGA,Isanlu-Isin in Isin LGA and Odo-Owa in Oke-Ero LGA.The lists of all affected farmers were obtained through the village head. This was followed by the proportional selection of respondents from the affected communities to make a total of 200 respondents as shown in Table 1.

Table 1: Number of sampled respondents in each Local Government Areas

S/N	Local Government Area	Name of the Community	No of affected farmers in each LGA	No. sampled respondents
1	Asa	Alapa	57	36
2	Ifelodun	Oro-Ago	52	32
3	Patigi	Motokun	67	42
4	Ekiti	ObboAiyegunle	84	52
5	Isin	Isanlu-Isin	36	22
6	Oke-Ero	Odo-Owa	25	16
	Total		321	200

Source: Own field survey results, 2019

2.3. Data analysis

Descriptive statistics, food security index and logistic regression were employed to achieve the research objectives. The socio-economic features were explained using descriptive statistics while the critical coping strategies adopted by respondents were explained using a three-point Likers scale. The respondents were grouped into food secure and food insecure households using food security index.

$$Fi = \frac{\text{PCFE}}{\frac{2}{3}\text{MPCFE}} \quad [1]$$

Where:

Fi = Food security index
PCFE = Per capita food expenditure
MPCFE = Mean per capita food expenditure

Note: ifFi> 1= Food secure i^{th} household and if Fi < 1= Food insecure i^{th} household

A situation where the per capita monthly food expenditure (PCMFE) of a household is larger or equal to two-third of MPCFE the household is food secure. On the other hand, a food-insecure household is a situation where the PCMFE is smaller than two-third of MPCFE (Salau*et al.*, 2019).

To ascertain the influence of pastoralist-crop farmers' conflict on households' food security, a binary logistic regression model was employed, which indicated below.

$$Z = \text{mo} + m1X1 + m2X2 + \cdots + mkXk + u \quad [2]$$

Where

Z = the binary outcome of food security status where food-secure household takes the value of 1and 0 if otherwise
mo= Constant
m_1, m_2,…,m_k = the regression coefficients, which interpret the effect of X on Z
X = explanatory factors
k = number of explanatory factors
u = error term

The explanatory factors are:

X_1 = Pastoralist-crop farmers conflict (proxy by total loss due to conflict in Nigerian Naira)
X_2 = Household size (adult equivalent)
X_3 = Farming experience of the household head (years)
X_4 = Gender of household head (D=1 for male; D=0 for female)
X_5 = Household distance to the farm (km)
X_6 = Co-operative membership (Yes = 1; No = 0)

To militate against the effect of conflict, coping strategies of respondents were measured with 15 items on a 3 point Likert-type scale. These include 10 problem-oriented coping strategies (POCS), three avoidant (or emotion-oriented) coping strategies (EOCS) and two social support seeking strategies (SSCS) as indicated by Adisa (2012).

3. Results and Discussion

3.1. Socioeconomic characteristics of respondents

The majority (52.5%) of the respondents were males with a mean age of 46.7 years. This suggests that most of the respondents were still in their active age (Table 2). Age is a critical variable which can affect the ability and agility with which the head provides the food needs of the household. An old household head is more likely to have a larger family size and may lack the energy required to work for the upkeep and sustenance of the family. Furthermore, 51% of the household heads had access to one form of co-operative or the other. About 12% of the household heads had tertiary education. Hence, the respondents are supposed to be able to make good decisions which will likely enhance their food security status (Babatunde*et. al.*, 2007).The respondents operate at a subsistence level with a mean farm size of 3.96 hectares. The size of cultivated farmland cultivated may affect production and consequently food security of the respondents (Akinsanmi and Doppler, 2005). Furthermore, the study revealed that the mean monthly income of the household was ₦92, 0500 from agricultural and non-agricultural related jobs. Households that could work harder and have higher monthly incomes are more likely to cope with conflict than those with lower monthly incomes. The average household size was six persons among the respondents. Their polygamous way of life probably accounts for the large family size documented in the area.

Table 2: Socioeconomic characteristics of the respondents

Variable	Frequency	Percentage	Mean
Age of the household head			
1- 30	39	19.5	
31-60	114	57.0	46.7
61-90	47	23.5	
Sex of the household head			
Male	105	52.5	
Female	95	47.5	
Level of education of the household head			
No formal education	55	27.5	
Primary	55	27.5	
Secondary	67	33.5	
Tertiary	23	11.5	
Marital status of the household head			
Single	15	7.5	
Married	121	60.5	
Divorce	19	9.5	
Separated	45	22.5	
Household size			
1-5	75	37.5	
6-10	113	56.5	6.43
11-15	12	6.0	
The main source of income			
Agriculture	112	56.0	
Salary	55	27.5	
Trading	33	16.5	
Access to Co-operative			
Yes	102	51	
No	98	49	
Household monthly income (Nigerian Naira)			
50,000 - 100,000	138	69.0	
101,000-150,000	54	27.0	92,500
151,000-200,000	8	4.0	
Farm size (hectares)			
1 – 5	165	82.5	
6 -10	31	15.5	3.96
11-15	4	2.0	

Source: Own field survey results, 2019

Table 3: Households' food security status

Item	Food secure (%)	Food insecure (%)	All
Proportion of households	54.5	45.5	100
Number of households	109	91	200

Source: Own field survey results**,** 2019

3.2 Food security status of farming households

The calculated mean per capita monthly food expenditure (MPCFE) was ₦4213.622. Households whose per capita food expenditure falls below and above ₦4213.622 were designated as food insecure and secure households, respectively (Salau *et al.*, 2019). Hence, 54.5% and 45.5% of the farming household were food secure and food insecure respectively (Table 3).

3.3 Determinants of food security of households

The Nagelkerke R-value in the present study was 68.2% that indicated about 68% of the variations in the dependent variable were explained by the independent variables. Accordingly, factors that were influenced food security were pastoralist-crop farmers' conflict, family size, sex of the household heads, household distance to the farm and access to co-operative societies (Table 4)

The coefficient of pastoralist-crop farmers' conflict is positive and significant at 1% level of probability among the households. This suggests that the larger the percentage of conflict, the higher the chance of being food secured. This could probably because the affected households usually get some form of succor or help from relations, village leaders and governments when conflict occurs. It also suggests that the affected households usually engage in other non-farm related activities to beef-up the household income when conflict occurs. Household size was negative and was also important at the 1% level of probability. This suggests that larger households may be food insecure. These findings agree with those of Shehu*et al.* (2019).

Sex of the household head was positive and significant at 5% level of probability. This suggests that male-headed households may be more food secure than their female counterparts. These findings agree with that of Ifeoma and Agwu, 2014, who found out that households headed by males have a higher probability of being food secure than households headed by women. This may be as a result of the fact that in male-headed households, both heads and their spouse are involved in income-generating activities while in female-headed households, the head (who may be unmarried or widowed) solely provide necessities for the family. Household distance to the farm was positive and important at 5% level. This implies that the shorter the farm distance the more secure the households. Surprisingly, age was not the factor influencing food security of households in the study area.

Table 4: Logistic Regression Analysis

Food security status (Y_i)	Coefficient	Standard Error	Significance
Pastoralist-crop farmers conflict (X_1)	0.000	0.000	0.001***
Household size (X_2)	-0.336	0.100	0.001 ***
Age (X_3)	-0.023	0.105	0.125
Sex (X_4)	3.127	0.501	0.000 ***
Farm distance (X_5)	0.649	0.269	0.016 **
Access to co-operative (X_6)	2.049	0.466	0.000 ***
Constant	-4.128	1.522	0.007

Source: Own field analysis**,** 2019 **, *** = significant at 5% and 1% levels of probability

3.4. Coping strategies for conflicts among farming households

The results of the present study showed that farmers generally used various strategies to solve conflicts as indicated below (Table 5). Ten problem-oriented coping strategies (POCS) were identified, out of which working harder (M = 2.09), 'using of own job experience (M = 2.06) and early cropping (M = 2.08) were the most effective coping strategies employed among the farming households. These findings are in consonance to that of Adisa (2012) who found out that while farmers generally tended to use problem-oriented strategies, herdsmen used emotion-oriented strategies. This might be an indication of a strong emotional attachment to the cattle among the Fulani tribe in Nigeria. Similarly, the relatively more pronounced use of problem-oriented strategies among the farmers is an indication that they actively sought solutions to the problems arising from the destructions they encountered. Appeasing other parties was the most effective emotion-oriented coping strategies (EOCS). On the other hand, the widely used social support seeking strategies (SSCS) was sought for help from relatives, village leaders and governments.

Table 5: Conflict coping strategies adopted by the respondents

Coping strategy	Mean	STD
Problem-oriented coping strategies (POCS)		
Working harder	2.09*	0.602
Used of own experience	2.06*	0.696
Borrowing money	2.19*	0.752
Selling old farms	1.45	0.640
Early cropping	2.08*	0.694
Buying food	1.51	0.626
Using seeds for food	1.59	0.595
Using charms (traditional medicine)	1.40	0.576
Diversification of incomes	1.46	0.625
Fencing of farms	1.76	0.752
Emotion oriented coping strategies (EOCS)		
Accepting as fate	1.76	1.049
Praying for peace	1.65	0.591
Appeasing other parties	2.11*	0.689
Social support seeking strategies (SSCS)		
Requiring litigation	1.89	0.598
Seeking for help from relatives, village leaders and governments	2.15*	0.734

*Effective coping strategies

Source: Own field analysis **(**2019)

4. Conclusion and Recommendations

The conflict between pastoralist and crop farmers over the use of agricultural land is still pervasive in Nigeria, and portends grave consequences for rural development. This study assessed food security and examined the influence of conflicts of pastoralists and crop farming communities on households' food security in Kwara State, Nigeria. The study indicated that the majority of the respondents were food secure. Furthermore, the conflict between pastoralist and crop farming communities was found to be significant in explaining the food security of households in the state. Other important determinants of food security are family size, gender, farm distance and access to co-operative societies. Moreover, farmers generally used a combination of strategies, as no single strategy is enough to bring the needed succor caused by the conflict. The 'use of job experience, early cropping, appease other party and seeking for help from relatives, village leaders and governments were some of the effective coping strategies used by the respondents in reducing the effects of conflict. Pastoralist-crop farmers' conflict was a significant determinant of food security status of the farming households. Hence, there is a need for the government to encourage the establishment of cattle ranching and use of Rural Grazing Area (RUGA) in order to reduce conflict. Households should be advised to pool their resources together and form co-operative societies. Larger household size should be encouraged to diversify their income base to reduce food insecurity in the area.

Conflicts of Interest

The authors declare that there is no conflict of interest for publication.

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