



EFFECTS OF FARMERS-PASTORALISTS CONFLICTS ON FOOD SECURITY IN TWO LOCAL GOVERNMENT AREAS OF KADUNA STATE, NIGERIA

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ABSTRACT

This study examined the effects of farmers-pastoralists conflicts on food security in two Local Government Areas (LGAs) of Kaduna state, Nigeria. Multiple stage random sampling procedure was used to select 110 respondents. Primary data were collected using a well-structured questionnaire. Descriptive statistics and Logit regression model were employed in data analysis. In addition, United States Department of Agriculture (USDA) approach was used to measure food security status of the respondents. Result show that 62.5% of crop farmers and 53.3% pastoralists were within the age class of 39-59 years. Also, about 37.5% crop farmers and 40.0% of pastoralists had household size of between 10 and 15 people respectively. The results further reveal that 42.5% of the crop farmers and 26.67% of the pastoralists had between 11 and 30 years of farming experience. About 32.5% crop farmers and 30.0% of the pastoralists, representing 62.5% of respondents had no formal education respectively. Lack of compensation was the most critical constraint as 34.0% of crop farmers and 30.0% of pastoralists implicated it. Factors influencing conflicts include inadequate grazing land (87%), climate change (66%) and suspicion (60%). The result of logit regression analysis shows that age (-2.17), marital status (3.15) and farm size (10.91) influenced conflicts. Also, conflicts had a positive and significant effects on food security ($p < 0.05$). In order to minimise conflicts between crop farmers and pastoralists, the study recommends appropriate compensation and implementation of modern grazing technology by government so as to reduce frequent conflicts between farmers and pastoralists.

Keywords: Effects of conflicts, farmers-pastoralists, food security

INTRODUCTION

Despite Nigeria's great potential to increase agricultural productivity and food production particularly in northern regions, serious crises of conflicts in these areas have worsened the already existing challenges to production, such as climate change, poor soils and lack of access to credit and extension services. In Nigeria, for example, various violent conflict over land resources have led to decreased agricultural production, food insecurity and hunger, the clashes between various ethnic, occupational and resident groups usually result to destruction of livestock and farmland. With the destruction of crops on farmers' farmland and in some cases retaliation by the farmers by killing livestock owned by the herdsman hampers the overall food production, both in crops and meat. This implies increased hunger disease and malnutrition. The incessant resource conflicts witnessed in the tropics (Muhammed, 2008) have resulted in loss of lives, properties and environmental degradation. Furthermore, Obioha (2005) observed that persistent conflicts over land resources have caused population displacement which, as a result, changed the fabric of custom and habitual behaviour in the northeast Nigeria.

Conflict, according to Rashid (2012) appears to be an international feature of human societies, likely to occur at anytime and anywhere. For instance, a study conducted on environment induced conflict in Kwara state by Adebayo (1997) show that farmers were displaced as a result of the destructions inflicted on their crops by cattle, while only 39 per cent of the respondents were not

displaced. This resulted in a very low yield of crops in the study area. Hussein (2000) also found that, in a border between Nasarawa and Benue states, nomadic pastoralists and farmers' conflict left not less than 50 persons dead, over 10 villages sacked and over 200,00 persons both nomads and farmers displaced. In addition, In research conducted by Muhammad (2008), Fulanis have continued to clash with sedentary farming communities in Plateau, Ogun, Oyo, Sokoto, Nasarawa, Benue, Rivers, Bauchi states and federal capital territory. Also, Abbass (2012), in his study of major sources of conflict between the Fulani pastoralists and farmers shows that land related issues especially over grazing fields accounted for the highest percentage of the conflict.

Various cases of conflict in northern Nigeria involving the Fulani pastoralists and farmers conflict form significant variables in economic, in areas of stiff competition for grazing land but the degree of intensity differs from state to state depending on the ecological location and the community involved. Abbass (2012) asserts that in Bauchi State for example, areas mostly affected include Jama'are, Gamawa, Misau, Zaki and Kirfi local government areas among others. These local government recorded serious cases of conflict for survival between pastoralists and farmers, which led to loss of lives destruction of properties with the emergence of insecurity due to the continuous desire for vengeance. The conflict between these two groups has led to loss of properties worth millions of naira and the death of hundreds of thousands of lives. Despite all these, there seems to no solutions in sight (Abubakar, 2012).



A common source of conflict (Adamu, 2007), is crop damage. Access to land is another major cause of conflicts between pastoralists and farmers depending on economic, environmental and other factors for example, increases in the herd sizes, due to improved conditions of cattle can compelled the pastoralists to search for more pastures beyond their limited range. In addition, conflicts according to Ekong (2003) tend to affect crop output by creating food shortages, which disrupt both upstream input markets and downstream output markets, thus deterring food production, commercialization and stock management. In conflict situations, food producing regions experience seizing or destroying of food stocks, livestock and other assets, interrupting marketed supplies of food not only in these Local Government Areas but also in neighbouring regions. In this study, the authors examined the degree to which the prevalence of conflicts affects food security, analysed factors promoting conflicts and identified constraints influencing farmers - pastoralists' conflicts in two LGAs of Kaduna State.

METHODOLOGY

The study was carried out in two Local Government Areas (LGAs) of Kaduna State, namely Giwa and Soba LGAs. The State lies between latitude 09° 02' and 11° 32' North of the equator and 06° 15' and 8° 50' East of the prime meridian (Kaduna State Agricultural Development Project, KSADP, (2011). The LGA is characterized by pre-dominant small scale farmers who are engaged in agricultural production and significant parts of the populations are involved in livestock keeping which depends on grazing. The nomadic Fulanis predominantly do the grazing and livestock rearing (KSADP, 2011).

Three stage sampling was used to select the respondents. Two LGAs were purposefully selected in the State due to preponderance of farmers-herdsmen conflicts. Eight communities were randomly selected from the two LGAs. Thereafter, 80 crop farmers and 30 herdsmen were also randomly selected which result to a sample size of 110 respondents. This study was carried out between April and June, 2016. Descriptive statistics such as frequencies and percentages were used to describe the socioeconomic characteristics of the respondents while Logit Regression analysis was used to analyse food security status and factors influencing conflicts among the respondents.

Logit model is useful in that it involves dichotomous dependent variables or binary choice

response variables. The dependent variable takes values that lie between 0 and 1. Specifically the model takes the implicit form as follows:

The logit regression model for crop farmers; This was represented as:

$$Y_{cp} = a_0 + a_1X_1 + a_2X_2 + \dots + a_6X_6$$

Where: $Y_{cp} = \begin{cases} 1 & \text{if the crop producer has experienced conflict with pastoralists} \\ 0 & \text{otherwise} \end{cases}$

- X_1 = Age (years)
- X_2 = Sex (male or Female)
- X_3 = Level of Education
- X_4 = Farm Size (ha)
- X_5 = Farm Distance (km)
- X_6 Marital status
- a_0 = Constant term

$a_1 - a_6$ = Coefficients to be estimated

ii. The logit regression model for pastoralists This was represented as:

$$Y_p = \beta_0 + \beta_1Z_1 + \beta_2Z_2 + \dots + \beta_6Z_6$$

Where: $Y_p = \begin{cases} 1 & \text{if the pastoralists has experienced crop producer - pastoralists conflict} \\ 0 & \text{otherwise} \end{cases}$

- Z_1 = Age (years)
- Z_2 = Marital Status
- Z_3 = Level of Education (years)
- Z_4 = Herd Size (1 tropical livestock unit x number)
- Z_5 = Sex (male or Female)
- Z_6 Period of Residency
- β_0 = Constant term

$\beta_1 - \beta_6$ = Coefficient to be estimated

Fig. 1: Household food security approach

	0 - 2.32	2.33 - 4.56	4.57 - 6.53	6.54 - 10.0
	Food insecurity			
Food security	Food insecure without hunger	Food insecure with hunger "moderate"	"severe"	

Source: Oyakhilomen, 2015

RESULTS AND DISCUSSION

Socioeconomic characteristics of respondents

The result in Table 1 reveals that 11.25 % of crop farmers and 20.0% pastoralists fell within the age class of less than 20 years. Most (62.5%) of crop farmers and 53.33% pastoralists were within the age class of 39-59 years. This class constituted majority of the respondents who are in their active productive age. While more than 18.0% crop farmers and 26.7% pastoralists fell within the age class of greater than 69 years. The findings agreed with the work of Adamu (2007), in the analysis of farmers-pastoralists.

**Table 1: Distribution of respondents by their socioeconomic characteristics**

Characteristics	Farmers		Pastoralists		Pooled	
	Frequency	%	Frequency	%	Frequency	%
Age						
< than 20	1	1.25	2	6.67	3	2.72
20-29	8	10.0	4	13.33	12	10.90
30-39	20	25	6	20.0	26	23.64
40-49	16	18.75	6	20.0	22	20.0
50-59	15	18.75	4	13.33	19	17.27
60-69	13	16.25	5	16.67	18	16.23
>than 69	5	6.26	3	10.0	8	7.27
Household size						
1 – 5	24	30.0	7	23.33	31	28.18
6-10	19	23.75	8	26.67	27	24.55
11-15	11	13.75	4	13.33	15	13.55
16-20	13	11.4	7	23.33	21	19.09
21-25	10	12.5	3	10.0	13	11.89
26-30	3	3.75	Nil	Nil	Nil	Nil
> than 30	Nil	Nil	1	3.33	1	0.90
Farming/Nomads Experience						
1-10 years	22	27.5	9	30.0	31	28.18
11-20 years	19	23.75	5	16.67	24	21.89
21-30 years	15	18.75	6	20.0	21	19.09
31-40 years	11	13.75	5	16.67	16	6.8
41-50 years	8	10.0	4	13.33	12	10.90
51-60 years	5	6.25	1	3.33	6	1.9
Educational level						
No formal education	26	32.5	9	30	35	31.89
Primary education	23	28.75	5	16.67	28	25.45
Secondary education	22	27.5	7	23.33	29	26.56
Tertiary education	9	11.25	9	30.0	18	16.36
Total	80	100	30	100	110	100

It was concluded that the productive age group constitutes 67.4% of the respondents which depends largely on physical and mental labour productivity of crop farmers and herdsmen. About 37.0% of crop farmers and 39.0% of the pastoralists had household size of between 10 and 15 members per household in line with study of Basset, (1988). The result further reveals that about 33.0% of the crop farmers and 30.0% of pastoralists had no formal education, while others

attained different levels of education. The respondents have an ample experience in farming and herding with an average experience of between 10 and 15 years respectively.

Factors influencing conflicts

The result of factors influencing conflicts is presented in Table 2. Result showed that age ($p<0.05$), household size ($p<0.01$) and farm size ($p<0.01$) were factors influencing conflicts.

Table 2: Determinants of factors influencing conflicts

Variables	Coefficient	Std. Err.	t-value
Age	-.0120824	0.005	-2.17**
Education	0047281	0.026	0.18
Household	0401189	0.013	3.15***
Farm size	5368329	0.049	10.91***
Farming experienced	0029409	0.006	0.52
Extension contact	0800196	0.073	-1.09
Constant	11.02507	0.241	45.82

F-value = 38.20***; $R^2 = 0.72$; *** Significant at 1% and ** Significant at 5%

The significance of age implies that the respondents were in their active age which if properly harness could improve effective participation (Iro, 2011; Fiki. and Lee, 2004; Kehinde, 2011). This finding also corroborates

Gyong, (1998), who affirmed that one of the factors of consideration affecting conflicts is household size of farmers. The study also agrees with Sanni (2008), that the size of farm holding by members of cooperatives was generally small as



they are majorly small scale farmers having land size of about 0.1 to 5ha. The co-efficient of variation (R^2) of 0.72 implies that 72% of the variation in the factors influencing conflict was as a result of the specified socioeconomic variables and F- test which shows overall significance of the model at 1%.

Result in Table 3 shows the distribution of the respondents on their food security status across the groups of farmers - pastoralists. The result

shows that the 37.5% crop farmers and 40% pastoralists were food insecure with severe hunger in line with findings by Godswill, (2007). Whereas there were more crop farmers with food insecure without hunger than their counterparts (pastoralists) in terms of food insecurity with moderate hunger and food insecurity with severe hunger. As a whole, majority of the respondents were food insecure in line with the work of Blench, (2004).

Table 3: Distribution of respondents based on food security status

Food security status	Farmers		Pastoralists		t-stat
	Freq	%	Freq	%	
Food secured	11	13.75	4	13.33	2.21**
Food security without hunger	15	18.75	6	20.0	1.89
Food security with moderate hunger	24	17.5	8	26.67	4.15**
Food security with severe hunger	30	37.5	12	40.0	1.86**
Total	80	100	30	100	

** p<0.05; Note: The index was based on Fig. 1

Constraints perpetuating farmers – Pastoralists’ conflicts

The constraints that predispose farmers and pastoralists to conflicts in the study area are presented in Table 3. The result reveals that more than one-third (33.75%) of the crop farmers and about one-third of pastoralists (30.0%) indicated in adequate compensation as one of the major

constraints confronting the respondents. This was followed by inadequate capital (28.75%) of crop farmers and pastoralists (23.33%). Data also reveal that only 11.75% of crop farmers and 6.67% of pastoralists indicated inadequate extension services as constraint perpetuating conflicts among the respondents.

Table 4: Distribution of respondents based on major constraints

Frequency of conflict	Crop Farmers		Pastoralists	
	Frequencies	Percentages	Frequencies	Percentages
Lack of compensation	27	33.75	9	30
Inadequate capital	23	28.75	7	23.33
Inadequate information	11	13.75	7	23.33
Inadequate education	10	12.5	5	16.67
Inadequate Ext services	9	11.75	2	6.67
Total	80	100	30	100

CONCLUSIONS AND RECOMMENDATION

This study has examined the effects of farmers and pastoralists conflicts on food security in two LGAs of Kaduna State. The study revealed that both farmers and pastoralists were in their productive age with modal household size of between 10 and 15 members per household but majority had no formal education. The study concluded that farmers-pastoralists conflicts contributed significantly to the food insecurity of respondents in the study area. Factors influencing conflicts include age, household size and farm size.

The study therefore made the following recommendations:

1. Both farmers and pastoralists as well as their households should be encourage to acquire formal education as education could have multiplier effects on their mode of farming and pastoral activities.

2. In interim, farmer-pastoralists should organize themselves into groups in order to benefit from adult education in their various communities.
3. There is need for farmers-pastoralists collaboration and interaction through their community heads with representative of government and non-governmental organization.
4. Implementation of modern grazing technology by government so as to minimize frequent conflicts between farmers and pastoralists.
5. Adequate and timely compensation should be paid by the government to any victim of farmer-pastoralists conflicts
6. Adequate information about the implications of conflicts on food security should be disseminated to the farmer-pastoralists so as to avoid conflicts which



could lead to food insecurity and starvation.

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