CAUSES OF FARMERS/PASTORALISTS CRISIS AND FOOD INSECURITY IN SOUTHERN TARABA STATE, NIGERIA

***Adi, A. Z. and **Gidado, A. S.**
**Agricultural Economics and Extension Department, Taraba State University, Jalingo, Taraba State Nigeria*
***Agricultural Economics and Extension Department, Bauchi State University, Jama'are Campus, Bauchi State Nigeria*
Correspondence Email: xengxyadi@gmail.com

Abstract
This study examined the causes of farmers'/pastoralist crisis and food security in Southern Taraba State. A multi-stage random sampling procedure was used to select 180 respondents. Primary data were collected using a pre-tested and structured (Likert scale type) questionnaire. Descriptive statistics and Logit regression model were employed in data analysis. Result shows that majority of the respondents (36%) were within the age of 31-40 years. Also, 43% of the respondents had household size of between 11 and 20 people. The results further revealed that majority of the respondents (29%) had between 30 and 40 years of farming experience while 56% of them had no formal education. Factors influencing the crisis in the study area discovered by research include low educational level (43%), large household size (21%), grazing on farmers' crops (39%) and farming on cattle/grazing routes (29%). The result of the Logit Regression shows that Mac Fadden (R^2) was 0.87 implying that about 87% of the respondent's experienced crisis. It also indicates that hash climate, grazing on farmers' crops, farming on grazing routes; desertification and farm size had influenced farmers'/pastoralist crisis in the study area leading to negative effects on food security. In order to minimize farmers'/pastoralist crisis and improve the level of food security in the study area the study recommends implementation of modern pastoral/grazing systems in the area and the country generally by establishing ranches and grazing reserves in all states in Northern Nigeria where the pastoral/nomadic system is dominant, followed by appropriate compensation of losses to reduce impact of the crisis and resettlement of the farmers/pastoralist affected.

Keywords: Causes, Crisis, Farmers, Pastoralists and Food Security

INTRODUCTION

The influence of growing water demand and global climate change has caused concerns about increasing drought conditions in the future. There is possibility that climate change will affect food production which in turn affects peoples' livelihood (IPCC, 2014). Rain-fed farming is the dominant source of food production and means of livelihood for many poor rural farmers in Sub-Saharan Africa including Nigeria (Cooper *et al.,* 2008). Universally, the pastoralists depend on moisture and vegetation in the right place, time, quantity and quality. It is generally known that there are competing uses of resources between pastoral and crop-farmers this then leads to conflict. The most frequent causes of conflict between crop farmers and pastoralist as identified by Gefu and Gills (1990) are crop damage caused by animals that belong to herdsmen, such conflict have arisen from farm encroachment on cattle routes and sometimes water points. Other crisis sources include grazing of harvested crops. There are certain instances where deliberate encroachments of cattle routes were done by farmers to bait herds' men into trouble. This is a very common phenomenon. Pastoralists are usually on the receiving end in such instances as they are often incriminated for crop destruction.

Crisis tend to affect food security by creating food shortages, which disrupt both upstream input markets and downstream output markets, thus

deterring food production, commercialization and stock management. Depending on the location of the fights in a country, crops cannot be planted, weeded or harvested, decreasing dramatically the levels of agricultural production. 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 regions but also in neighboring regions. These predatory activities diminish food availability and food access directly, because both militias and regular armies in the field tend to subsist by extorting the unarmed populations for food and any other productive resources. Any food that the militias and armies cannot use immediately in the contested areas will be destroyed to prevent their adversaries from accessing it (Pierre and Hitzhusen, 2006).

The concept of food insecurity includes not only the lack of availability, access, and utilization or use of food (for example, food preparation and intra-household food distribution), but also perceptions (for example, that food is insufficient, inadequate, unacceptable, uncertain, or unsustainable), Wolfe and Frongillo (2001). However, food insecurity as experienced in other locations is likely to be different but will include similar components that go beyond availability and access as food insecurity affects dietary intake and ultimately, nutritional status and physical well-being of the people.

Food security, on the other hand, refers to the condition in which all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 1996). Food availability, stability of supplies and food access are related determinants of food security. At the household level, food security implies an adequate access to food over time. This is possible when there is adequate food availability to the household, and an adequate income capacity for the purchase of the available food. Stability of food implies that the food availability is not affected by any shocks or risks affecting food production at all times. Food access has three components: 1) physical access to food, 2) economic access to food, and 3) sustainable access to food. Physical access implies food availability or food supply to the household, as there might be food available at the national level which, however, may not trickle down to the household level (Oluwatayo, 2009).

Bearing these risks in mind, the farming populations tend to flee, decline or stop farming. Agriculture may be reduced to subsistence and survival production by farmers who manage to stay, because there is no incentive to invest deeply in production. The recruitment of young male On the basis of the foregoing background the research proposed to determine the causes of farmers'/pastoralist crisis and food insecurity in the study areas as well as to find the remote and immediate causes of the crisis. Thus, in view of this the study proposed to answer the following questions:

Research Questions

I. what are the socio-economics characteristics of the respondents in the study area?

ii. what are the causes of conflict between the respondents in the study area?

METHODOLOGY

The Study Area

The southern geopolitical zone of Taraba State covers close to one-third (14,000km^2) of Taraba land area (59400km). It comprises five (5) Local Government Areas which includes Wukari, Takum, Ibi, Ussa, Donga and one development area, Yangtur. According to NBS report (2011), the areas have a total population of 704,900. The National Population commission had a projected annual growth rate of 3.5%, which brought the population figure to 729,572 as at 2015. The zone is situated between latitude 8^0 30 '0' N and 9^0 30'0" E of the equator and between longitude 8^o30 '0" N and 10^0 30 '0"E of the Greenwich meridian. Additionally, the zone shares local boundaries with Gassol, Bali, Kurmi, Gashaka and Ardo-kola local government areas in the North, Nasarawa state and Plateau to

the North-west and Republic of Cameroon in the south-east. It has a tropical wet and dry seasons, well drained alluvia soil and characterized by both savannah and rainforest vegetation. It dry season last for a minimum of four months (December to March) while, the wet season starts early April to late November. The main annual rain fall of the area is 1800mm.

The area is predominantly rural with an estimated 80% of the population engaged in rain-fed agriculture. The climate, soil, and hydrology of the area are suitable for the cultivation of food crops such as yam, maize, cassava, guinea corn, sesame and rice. Grazing of animals, fresh water fishing and forestry are other agricultural activities taking place in the area.

The main ethnic groups found in the area are Jukun (Kuteb, wapa, wanu, kpanzun and Ichen). Others are Tiv, Chamba, Hausa and Fulani.

Sampling Technique and Sample Size

A multi-stage and simple random sampling technique was adopted in the selection of respondents for the study. The First stage involved the purposive selection of three Local Government Areas, namely viz: Wukari, Ibi and Takum. This is because these Local Government Areas were worst hit by the conflict. In the second Stage, a purposive selection of five wards was carried out from the selected Local Government Areas. The third Stage is the purposive selection of two villages from each ward within the selected LGAs. A total of 180 respondents were selected in a ratio proportional to the sizes of their population.

Distribution of the Respondents in the study area

	Selected LG	Selected wards	Numbers of villages selected	Total numbers of respondents per village
	Wukari	Bantaje	2	13
		Akwana	2	15
		Kente	2	14
		Jibu	2	10
		Chunku	2	18
	Ibi	Sarkinkudu II	2	13
		Sarkinkudu II	2	10
		Danpar II	2	12
		Nwunyu	2	10
		Rimi Uku	2	12
	Takum	Chanchangi	2	12
		Dutse	2	14
		Rogo	2	13
		Manya	2	14
		Kashimbila	2	12
Total		**15**	**30**	**180**

Data Collection To generate data to address the objectives of the research, primary and secondary sources were used. The primary sources of data collection included personal observation of destroyed farmlands, oral interviews, self-administered questionnaire and group discussions. Secondary data were collated from available published materials such as Journals, periodicals, newspaper conference proceedings and internet.

Method of data Analysis
Descriptive statistics such as frequency, percentage and means were employed to address objectives I, while, Inferential statistics such as Logit regression, was used to analyze the relationship between food insecurity status and factors influencing crisis among the respondents.

Model specification for Inferential Statistics Causes of farmers'/pastoralist crisis and food insecurity were analyzed using Logit regression model. The general purpose of Logit regression was to know the relationship between several independent or predictor variables and a dependent variable. The dependents variables values lie between 0 and 1. Specifically, the model's implicit form is as follows:
The logits regression model used is as follows:
It is applied when the dependent variable (e) is a dummy (binary variable). It is based on the cumulative logistic regression model.The general model specification for the logit regression is as follows;

$$(i) \quad Li = \ln\frac{Ai}{1-Ai} \; Zi = \beta_o + AiXi + \ldots\ldots + AnXn + e$$

$$(ii) \quad Li = \ln\frac{Ai}{1-Ai} = Z_i = b_0 + b_iX_i + b_2X_2 + b_3X_3 \ldots\ldots + b_{11}X_{11} + e$$

Where, $i = 1\ldots\ldots\ldots n$

n = number of variables

Z_i = logit or log of odds (dummy)

A_i = Experience of Food Security (1= experience and 0, otherwise)

Y = Z= dependent variable (Food security)

a = regression Constant

b_1 b_2 ..... b_7 = regression coefficient attached to independent variables x_1.....x_7 and,

X_1=educational level

X_2 = household size

X_3 = hash climate in the north

X_4 = cattle grazing on framer's crop

X_5= farming on grazing route

X_6= desertification

X_7 = farm size

RESULTS AND DISCUSSION
It was clear that majority (72%) of the respondents were men, implying that more men participates in agricultural activities than females in the study area. The male dominance in farming activities as source of livelihood indicates the laborious nature of farming operations. This is in accordance with study carried out by Adamu (2007), which stated that males participate more in agricultural activities than females, and it is common features in agricultural production in most parts of Nigeria.

It was revealed by study that, substantial numbers (41%) of the respondents were above 40 years old followed by 30-40 years who constituted about 31%. This implies that members of these age groups dominate in farming activities in the study area and have strength to do farm work. The findings are in congruent with the work of Adamu (2007), who revealed that youths do have the requisite energy to carry out more farming operations.

Furthermore, it was discovered by the study that, majority of the respondents (63%) are married, implying that people who are married take farming as source of livelihood in the study area and this is in line with the research carried out by Olaguji and Ololade (2013), which explained that married people are more involved in agricultural activities and could be as results of physical support they receive from their family members.

The results from the table reveal that only 44% of the respondents had formal education, while others (56%) attained non-formal type of education. This means there is likely tendency the type of education practiced in the area, which is, non-formal education could have a negative consequence on the coexistence of the people in the study area.

The study discovers that, about 50% of the respondents are Christians, 28% were Muslims, while the few (22%) practice tradition religion. This implies that Christianity is widely practiced by people in the area, though notable communities of Muslims live in the area for many decades, and it is apparent that all the three major religions in Nigeria are been practice in the area.

Substantial number of the respondents (28%) and (29%) had farming experience of 21-30 years and 31-40 years respectively.

Socioeconomic characteristics of respondents

Gender	**Frequency**	**Percentage (%)**
Male	101	72
Female	39	28
Age		
< than 18	9	6
18-20	11	8
21-30	19	14
30 -40	44	31
Above 40	57	41
Marital Status		
Single	39	28
Married	89	63
Widow/widower	12	9
Education		
Formal	61	44
Non-formal	79	56
Religion		
Christianity	70	50
Muslim	39	28

Traditional worshiper	31	22
Farming Experience(years)		
1-10	10	7
11-20	21	15
21-30	39	28
31-40	41	29
41-50	15	11
Above 50	14	10
House hold Size		
1-10	40	28
11-20	60	43
Above 20	40	29
Total	**140**	**100**

Source: Author's survey, 2018

Causes of Farmers/pastoralist Crisis

A logit regression model comprises of seven (7) independent variables as stated in methodology was used to evaluate the cause of crisis and food security in the study are. A Macfadden R-square value of 0.87 was obtained implying that about 87% of the respondents' experienced crisis.

The results in the table below shows that Hash climate in the north at 5% ($p<0.05$), cattle grazing on farmers' crops at 10% ($p<0.1$), farming on grazing routes 10% ($p<0.1$), desertification at 5% and farm size at 5% significant were factors influencing crisis. Hash climate (variable X_3) in the north had negative coefficient and statistically significant at 5% probability level, implying that hash climate had inverse relationship with crisis in the study area. Increase in hash climatic condition will increase the chances of conflict reoccurrence in the area. The study findings are in line with the work done by Catterson, (1990) which warned that climate change is disrupting, and will continue to disrupt the earth's hydrological cycle, changing the distribution of available freshwater resources in unexpected ways. The negative coefficient of cattle grazing on crop variable ($\mathbf{X_4}$) meat that it had inverse relationship with the crisis. This implies that conflict persists in the area due to increase in invasion of farm crops by pastoralists. Thus, agreed with theory postulated by Ikezue & Ezeah (2017), who stated that due to restricted access, the herdsmen resorted to taking the laws into their hands by forcing their animals into people's farmlands thereby destroying farm produce in the process. The pastoralists believed that they should have unhindered access to grazing routes which they see as their God's given right and any attempt to deny them this right will be challenged. On the other hand, farmers may not be willing to allow the pastoralists access to their farmlands and may always resort to violence to challenge the excesses of the herdsmen. The negative coefficient of farming on grazing route variable (X_5) means that it had inverse relationship with crisis. Increase in farming on grazing route will increase the probability of recurring conflict. It further revealed that, though it has a negative influence in enhancing crisis, it gives room for dialogue and reconciliations. Desertification (variable X_6) had a negative coefficient implies that it has inverse relationship with crisis. Given that it had a significant effect at 5% level, implying that

extension in desert encroachment could bring about likely increase in probability of crisis in the area. Farm size had positive coefficient and statistically significant at 5% probability level, implying that farm size had direct relationships with crisis in the area. Increase in farm size of the respondents will increase the enhancement of crisis between pastoralists and 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 0.10 implies that 10% of the variation in the factors influencing farmer-pastoralist crisis in the area.

Determinants of Causes Crisis and Food Insecurity

Variables	Coefficient	Std. Error	Z-Statistic	Prob.
C (Constant)	3.826864	1.684305	2.272073	0.0231
Educational Level (X_1)	0.000332	0.000895	0.370739	0.7108NS
Household Size (X_2)	0.009319	0.021104	0.441594	0.6588NS
Hash Climate (X_3)	-0.548197	0.229587	-2.387753	0.0022**
Cattle Grazing on Farmers' Crop (X4)	-0.124820	0.028943	-4.312614	0.0001***
Farming on Grazing Route (X_5)	-0.388255	0.084677	-4.585129	0.0004***
Desertification (X_6)	-0.006102	0.003028	-2.014996	0.0439**
Farm Size (X_7)	0.100289	0.044564	2.250448	0.0037**

Source: Author's Survey, 2018 * *

Significant at 5% *** Significant at 10%

Summary/ Conclusions

From the foregoing, adverse effect of farmers-pastoralists crisis in the study area, some causes of crisis are identified. The analytical tools used to achieve the objectives for the study were Descriptive statistics and Logit Regression model. The data for the study were collected mainly from primary and secondary sources. Multistage, purposive and simple random procedures were adopted in selection of respondents. A total of 180 respondents were randomly selected for the research.

This study has examined the causes of farmers'/pastoralist crisis and food security in three LGAs of Taraba State. The study revealed that both farmers/pastoralist were in their productive age with modal household size of between 11 and 20 members per household but majority had no formal education. The study concluded that farmer and pastoralist crisis contributed significantly to the food insecurity in the study area. Factors influencing crisis include educational level, household size, farm size, desertification, farming on grazing route, grazing on farmers' crops and hash climate.

Recommendations

The study therefore made the following recommendations as panacea to achieving peace In the zone:

i. Both farmers/pastoralist 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.

ii. Implementation of modern grazing technology by government so as to minimize frequent crisis between farmers/pastoralist.

iii A strong political will from governments at all levels is fundamental to resolving the farmers/pastoralist conflict across the country.

v. Nigerian Government should make policies on grazing. There should be the establishment and operation of contemporary grazing reserves in the affected zones.

vi. Law enforcement agencies should be alive to their constitutional roles and government must strengthen the security around the farmers and herders across the country by providing necessary training and state-of-the-art equipment required anytime there is conflict.

REFERENCES

Adamu, M. M. (2007). Colonial origins of post-colonial conflicts between cattle rearers and farmers in Katsina State. In historical perspectives in Nigeria's post-colonial conflicts.

Buhari, A. M: *Address at Round table on Herdsmen/farmers Clashes and Border Security in North-East Zone*, Borno, Nigeria April 16 (1998).

Cooper, P.J.M., Dimes, J., Rao, K.P.C., Shapiro, B. and Twolmlow, S. (2008) Coping better with current climatic variability in the rain-fed farming systems of sub-Saharan Africa: An essential first step in adapting to future climate change? *Agriculture, Ecosystems and Environmen*t, **126** (1-2): 24–35.

Gefu, J. O. and J. L. Gills (1990) Pastoralists, Ranchers and the state in Nigeria and North America: A comparative Analysis. *Nomadic Peoples*, Nos. 25-27, pp.34-49.

Oluwatayo IB (2009). Poverty and Income Diversification among Households in Rural Nigeria: A Gender Analysis of Livelihood Patterns**,** IESE Conference Paper (CP No. 41) April 2009 at Maputo, Mozambique.

Pierre and Hitzhusen (2006). Washington, D.C.:: Food and Nutrition Technical Assistance Project, Academy for Educational Development.

Intergovernmental Panel on Climate Change (IPCC). (2014) *Climate Change 2001—Impacts, Adaptation, and Vulnerability*: Summary for Policymakers and Technical Summary of the Working Group II Report. IPCC, Geneva, 89 pp.