

# Assessment of Agricultural Production and Vulnerability to Conflict among Rural Households in North Central Nigeria

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## ABSTRACT

Conflict connotes disagreement, dispute, or controversy in ideas or viewpoints held by two or more individuals/group which ends up in disharmonious interpersonal relationship. It has a major impact on agricultural production in Nigeria. Communal clashes are one of the major conflicts that are dominant and it affects food production in North Central Nigeria. This study was therefore designed to examine the vulnerability of rural households to conflict; assess the impact of rural households' vulnerability to conflict on agricultural production.

Data used for this study were obtained from a total of 179 households through a three-stage sampling technique. The first stage was the purposive selection of 10 crisis prone local government areas. Second stage was the selection of one village each from each crises prone local government areas. The third stage was random selection of 25 households. Major tools of analysis for this study included descriptive statistics, vulnerability index, and correlation analysis.

Farming households have conflict vulnerability index of between 58 and 63%. Farming households had a loss of 2467.25 Kg (grain eq.) which constitutes 36% of total output per annum to conflict, the coping strategies adopted by the rural household during conflict included relying on less preferred food as first and borrowing of food as fifth. Correlation analysis also revealed that 100% increase in output will lead to 16% increase in vulnerability to conflict among rural households.

It can therefore be concluded that rural households in North Central Nigeria are vulnerable to conflict. It is therefore recommended that farmers should be trained and supported on the use of improved varieties to increase yield without increasing the size of land so as to avoid vulnerability to conflict.

**Keywords:** Assessment; Agricultural production; Vulnerability; Rural households

## INTRODUCTION

Nigeria's major problems of food and agricultural production include poverty, ignorance, illiteracy, use of manual farm tools, lack of food storage facilities, lack of scientific and technological knowhow, lack of good leadership and non-colonialism, industrialization and privatisation, global warming and insecurity due to conflict. Conflict situation including ethnic, religious, herder-farmer, communal, and indigene/settler which threatens farmers' sustainable livelihood have become brazen characteristics of Nigeria.

The concept of vulnerability refers to the long existing factors which affect the ability of a community or a household to respond to the events taking place during a conflict. They may be understood in terms of physical deprivation and material poverty. How people in the society view themselves and their

ability to influence their environment also affects their degree of vulnerability. Some societies may be more susceptible in conflicts. For instance, the way a society is organized can affect its ability to cope with such situations [1].

Armed conflict usually gives rise to a change or an increase in needs. In this case, "needs" refers to the immediate requirements for survival or recovery from the calamities. The distinction between vulnerability and needs is relevant for several reasons: vulnerabilities generally precede disasters, contribute to their severity, impede effective disaster response and may continue afterwards. Needs, on the other hand, often arise out of the crisis itself, and are relatively short-term. Most disaster relief efforts tend to concentrate on meeting immediate needs, rather than on addressing and lessening vulnerabilities.

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## Statement of the problems

Conflicts cause serious dislocations, suspend or destroy income opportunities, create food insecurity, damage the environment, and frequently result in the loss of lives and property. Poor households who dominate small scale agricultural production bear the heaviest burdens of land-related conflicts for the simple reason that their daily needs and livelihoods are directly tied to their property rights. Conflicts have not only heightened the level of insecurity, but have also demonstrated high potential to exacerbate the food crisis in Nigeria and other affected countries due to loss of farmer lives, animals, crops and valuable properties.

There is however little location-specific information on the vulnerability of rural households to conflicts in most states of Nigeria including Nasarawa State.

## Justification for the study

In view of the fact that conflicts have led to grave consequences like deaths, starvation, poverty, social unrest and unquantifiable losses among rural farmers. There is therefore, a pressing need for agriculturist to study and understand the effect of conflict on rural livelihood. The intensity of the conflict in Nasarawa State, where the study location is, calls for a need to measure the effect of frequent conflict occurrences that displace local farmers from their farms as well as claim lives and crops. The relevance of the study transcends mere theoretical disciplinary scope. It touches human life and various activities (within agricultural scope) especially in the interiors where farming activities are consistent. It can be useful to farmers to help them discover coping strategies

to use during conflict, the government can use for a rehabilitation strategies and priority setting, the most severe of support to the people, it helps us to know the adequacy of measures to be put in place and also provide information to stakeholders on post conflict issues and take measures [2].

## MATERIALS AND METHODS

Data used for this study were collected over a period of two months. This ranges between January 2017 and December 2017. This enabled the researcher obtain information on the vulnerability of rural households to conflict. The main data for this study were generated through primary sources. This was obtained through the use of a structured questionnaire (Appendix 1) administered by trained enumerators. Data relating to the socio-economic and demographic characteristics of the rural households, effect of conflict on agricultural production, income, and food expenditure consumption was obtained.

## Analytical techniques

Descriptive statistics such as measures of central tendencies, which comprise mean, mode, standard deviation, frequency distribution and percentages, was used to describe the socio-economic and demographic characteristics of the rural households in the study area. Other tools of analysis employed to be used in this study will include:

Vulnerability Index, Descriptive statistics, Correlation analysis, Likert type scale, and and stepwise regression analysis (Table 1).

**Table 1:** Vulnerability indicator.

Indicator	Description of indicator	Threshold for vulnerability	Literature
Average annual income per capital	Average annual household income per capita	Annual income per capita less than USS and 456.25 based on PPP exchange rate USS 1 and=AFS 20.50	WDR 1990 chen and sangraula (2008)
Number of income sources	Measure diversity of income	House income derived from less than 2 sources	Morduch and Sharma (2001), Varsa (2004) Dercon (2000)
Frequency of problem satisfying food needs	Sometimes measure problems satisfying food need up to six times a year often measures problem satisfy food need frequently during a month	Sometimes and often	Human development report, human development index
Access to dweller	Measures whether household has a dwelling or not	No access to dwelling	Moser(1998)
Indicators of exposure to risk			
Average frequency of income received	Measures the member of months income from the main source is received throughout the year	Income received for less than eight months	Morduch (1995), morduch (1999)
Condition of house	Good quality includes all windows doors and non-leaking roof condition, temporary securities	Poor condition of housing	Moser (1998)
Inability to make payment for housing	Measures outstanding debt that has accrued due to acquisition of housing	Yes	Moser (1998)
Type of sanitation	Household with no toilet facilities, the open field and bushes. Unsafe toilet facilities include open area in compound but not pit, open pit and traditional covered latrines, safe toilet facilities include improved and flush latrines	Access to No or unsafe toilet facilities	Doyal and Gough (1991). The distinction between safe and unsafe water situation has been compiled based on W.H.O guideline on water quality (2005, 2009)

Source of water	Unsafe water includes shallow open wells (public) shallow open wells (in compound) public hand pumps, hand pumps located on compound, unprotected springs, rivers, lakes, canals, kanada and drainage safe water include bored wells (hand pump) bored wells (metorised) piped water (municipal) and water tank	Access to unsafe drinking water	
Reliability of source of fuel	Formal fuel includes electric heater, gas heater, charcoal and kerosene. Informal: firewood, stoves, burning straw	Informal	Human development report/human development index
Proof of ownership	Measures whether households have registered deeds proving ownership of dwellings deeds can be registered in a court, in local official record.	Household that have no proof of ownership of dwelling	Moser (1998)
Access to credit	Measures whether households have access to financial capital or not	No access to credit	Darson (2000)
Access to land	Measure whether household have access to productive land or not	No access to land	Shorgi (2008)
Educational attainment of household head	Measures the maximum education attained by household head	Houshold head has more or primary education	Morser (1998) Human development report .MDC, requirement
Reading ability	Measures the number household member who can read as a percentage of household member over six years of age.	No member neither household has reading abilities.	Human development report
Number of people available to work	Measures the number of able bodies household members between 12 and 55years of age. The threshold for this indicator is relative for this indicator is relative for Afghanistan derived for the data	Less than 47% members per household , The number 47 is the medium of the indicator and it better represent population	Shoji (2005) Valsa (2004)
Access to Livestock	Measures whether household have access to livestock or not ,	No	Moser(1998)
Source of credit	Informal sources includes family/ friends in Afghanistan ,family /friends outside Afghanistan ,shop keepers,traders refer to Havala system formal sources of credit are micro finance institution and banks and mortgage credit is accessed through Mortgage of land	Credit is used for emergency or informal expenditure.	
Number of children enrolled in primary schools.	Count the number of children between ages 6 and 11 with a household that are enrolled in primary school,	Household with no children enrolled	MSC,
Membership in community organisation	Measures the extent of social; capital in local communities through membership in village level organisations including shura and CDC,	Household has membership in no community organisation	Morduch (1995) Sharma (2001) Narayan et al (2000)
Access to social networks	Measures whether or not a household receives help from other community members, family, friends, or others.	No help receives from fellow community members	Morduch (1995)
Indicator	To measure	Exposure	To risk
Main source of information	Informal source of information include relatives, friends,neighbour ,community leaders. Formal sources includes local newspaper,national newspaper, representatives of Govt,NCSO, internet ,radio and television	None of informal Source of Information	Max Neef (1989)
Frequency of help received through informal arrangement	Measures how often households receive support through informal source of other community members	No support received throughout the year	Max Neef (1989)
Availability of physical infrastructures	Measures the type of infrastructure used to approach dwelling including footpath, roads and paved road	Dwelling accessed only by footpath	Bradham (1995)
Indicators	To measure	Exposure to	Risk
Access to education	Measure those households, where children are unable to enrol in schools because they are unable to access educational institutes	Distance to school is too long	Human development index

$$Y=f(BX_i, e)$$

Where Y=level of Vulnerability (%)

B is the coefficient

$X_i$  is the vector of socioeconomic characteristics

Where:

- $X_1$ =Total household income
- $X_2$ =household size (number)
- $X_3$ =age of household head (years)
- $X_4$ =Education level of household head
- $d_1$ =Place of Agric as source of income
- $d_2$ =Sex of the household head

Following Madu and Gutu level of vulnerability to conflict was determined by rating the vulnerability indicators of the rural households which include sources of income, access to credit, period of food satisfaction, housing facility, and highest education, source of fuel, water and toilet. This was carried out as follows:

**Source of income:** Access to other non-agricultural income sources=1, 2 otherwise;

Access to Credit=1, 2 otherwise; Source of water: Use of pump and borehole=1, 2 otherwise; Source of fuel: Use of charcoal and stove=1, 2 otherwise; Source of toilet: Use of flush toilet=1, 2 otherwise; Highest education qualification of household head: Tertiary=1, 2, 3 otherwise and Period of food in satisfaction less than 6 months 1, 2 otherwise [3].

## RESULTS AND DISCUSSION

As shown in Table 2, the most severe of the types of conflict experienced by the rural household in the study area is the Farmer/herdsmen conflict which 91.06% of the respondents

experienced it in an highly severe manner followed by the ethno religious which was highly severe in 7.09% of the respondents and the communal conflict is mostly not severe. The finding of this study is supported by Adisa and Adekunle which showed that farmers' most widely experienced material losses as a result of farmer-herdsmen conflicts were losses of crop yield and farm income (Table 2).

### Vulnerability of rural households to conflict

Issues affecting rural household to conflict such as period of food insatisfaction, source of fuel, source of water, type of toilet, farm size and housing condition are discussed in this section. Distribution of the respondents according to issues affecting the vulnerability of the rural households to conflict is as presented (Table 3).

Household whose farm size is less than 2 hectares are likely to be more vulnerable to conflict than those with larger farm size. Also, those with less than 6 months of food in satisfaction are considered to be less vulnerable to conflict than those with higher number of months of food in satisfaction [4,5].

Furthermore, households with firewood as their source of fuel may be more vulnerable than those with charcoal and stove because they have to go into the farm to get firewood and may encounter clashes which make them more vulnerable to conflict, so also those who have to go to the stream or rivers may encounter clashes on their way which make them more vulnerable than those whose source of water are pump, well and borehole [6,7].

Further analysis of issues affecting vulnerability based on the rating of the socioeconomic characteristics of rural households which include sources of income, access to credit, period of food satisfaction, housing facility, and highest education, sources of fuel and water as well as toilet facilities available to the rural households reveals the level of vulnerability of rural households to conflict [8] (Table 4).

**Table 2:** Distribution of rural households according to severity of different types of Conflict.

Severity of Conflict	Freq	Percentage	Mean	Rank
Ethnoreligious			3.36	
Highly severe	13	7.26		
Severe	7	3.91		
Moderately severe	5	2.79		2 <sup>nd</sup>
Not severe	40	22.34		
Not experienced	114	63.69		
Communal			1.67	
Highly severe	2	1.18		
Severe	1	0.56		
Moderately Severe	2	1.18		3 <sup>rd</sup>
Not Severe	1	0.56		
Not Experienced	173	96.65		
Farmers/Herdsmen			4.83	
Highly severe	163	91.06		
Severe	2	1.13		
Moderately severe	4	2.24		1 <sup>st</sup>
Not severe				
Not experienced	10	5.59		

**Table 3:** Distribution of rural household according to issues affecting vulnerability.

Issues relating to conflict vulnerability	Freq	Percentage
<b>Period of food insatiation (months)</b>		
≤ 3	39	25.17
4 to 6	82	52.91
7 to 9	32	20.65
10 and above	26	14.53
<b>Source of fuel</b>		
Charcoal	36	20.11
Firewood	124	69.27
Stove	19	10.61
Total	179	100
<b>Type of toilet</b>		
Flush	12	6.7
Latrines	167	93.3
Total	179	100
<b>Farm size (ha)</b>		
Farm size	14	7.82
less than or equal to 1	32	17.88
1.01-2.00	105	58.66
2.01- 3.00	28	15.64
3.01 and above		
<b>Source of water</b>		
Borehole	29	16.2
Pump	36	20.11
Water tank	66	36.87
Well	43	24.02
Stream	5	2.79
Total	179	100

**Table 4:** Level of Vulnerability of Rural Households to Conflict (%).

Level of vulnerability	Freq	Percentage
<=59.00	4	2.23
59.01 - 60.00	45	25.14
60.01 - 61.00	77	43.02
61.01 -62.00	45	25.14
62.01-63.00	7	3.91
>63.00	1	0.56

## CONCLUSION

Conflict has adverse effect on the rural household in the country. Conflict is a major challenge in agricultural production in Northern Nigeria. In view of the agricultural dependent economy of the rural household in the region, conflict has negative implication on agriculture. All the respondents have not only experienced conflict but have been undergone diverse personal sufferings due to conflict. They have come up with some coping strategies; most of the strategies used by the farmers can only be effective for a short period of time, some of which cannot effectively reduce the effect of the conflict. Descriptive evidences indicate that all the rural households experienced conflict at one point over a specified period of four years ranging between 2011 and 2015. Farming as major source of income for majority of the rural household increases the level of vulnerability to conflict in the study area due to the reduction in agricultural production as a result of farmers/herdsmen conflict.

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