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RESEARCH PAPER

An empirical assessment of the constraints affecting farmers' livelihood security in the North-Eastern region of Nigeria

O. Gwandi*, K. A. Adewuyi **and** Samuel John
Department of Agricultural Technology, Federal Polytechnic, Mubi, Adamawa State, Nigeria
(Email: godoffer2010@gmail.com)

Abstract : Any government interested in the welfare state of its citizen, the subject of improving livelihood security for the people of the North-Eastern part of Nigeria is an issue of great importance. Food and livelihood security is an important need, as it is indispensable for the maintenance of human life. This research focuses on the empirical assessment of farmers' livelihood security in the north-eastern region of Nigeria. The objectives of the study were to identify the socio-economic characteristics of farmers and identify the constraints militating against livelihood security among farmers in the study area. Data were collected from 435 randomly selected farmers in three states of the North-Eastern region with the aid of structured questionnaires. Data analyses were carried out using descriptive statistics involving the use of frequency distribution, percentages, mean and standard deviation, and inferential statistics involving the use Garret ranking technique. The results revealed that male farmers constituted the majority (73.17%) of the respondents, married with a mean age of 41 years. Most of them (78%) had formal education. The respondents were mostly small-scale farmers, and they cultivated an average of 3.5 hectares of farmland using personal savings. The results of the garret ranking technique revealed that a wide range of constraints militates against the livelihood security of the farmers in the study area. These include variability of rainfall, shortage of labour, and inadequate farm credit facilities as the first three production constraints. Lack of good roads, poor storage facilities, and lack of mobility were rated the 1st, 2nd, and 3rd as the infrastructural constraints. Inadequate access to credit and high-interest rate charge on the loan and high rate of tax were rated the highest among the financial constraints. The study recommended thatfarmers should be aided with sound irrigation facilities and the formation of cooperative organization that will ease the accessibility of infrastructural, financial and production facilities.

Key Words : Empirical assessment, Farmers, Livelihood security

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INTRODUCTION

Agriculture in Nigeria has a significant history. Demographically, agriculture and allied sectors is the broadest economic sector and plays a significant role in the overall socio-economic fabric of the country. Agriculture and Allied Sector consists of four subsectors namely (i) Crop sector, (ii) Livestock, (iii) Forestry and (iv) Fisheries. Nigeria is still essentially an agrarian

***Author for correspondence:**

country, in spite of the importance of petroleum in the economy. Before independence, Nigeria's economy was largely sustained through agricultural exports.

Taiwo (2020) reported that in over the pastseven years (2013 – 2019), agriculture remains the largest sector in Nigeria contributing an average of 24% to the nation's GDP. In addition, the sector employs more than 36% of the country's labour force, a feat which ranks the sector as the largest employer of labour in the country.

Agriculture used to be the prime mover of the Nigerian economy, especially upto the 1970s before petroleum became important. Agricultural exports drove the economy forward. However, even at that time, the food sub-sector was stagnating. Subsequently, stagnation and decline covered the whole agricultural sector. Thus, for much of the period from about 1970, agriculture has been unable to spear-head the development of the Nigerian economy. Even, the structural adjustment policy (SAP) of the 1980s was not able to bring about development in agriculture.

While one cannot blame agricultural neglect alone for the nation's dwindling export trade in agricultural commodities, other factors such as increase in industrial activities in the country, government policies on local value added commodity processing, finance, pricing, insurgency, banditryetc., have all contributed to the weakening of the nation's capacity to participate effectively in the commodity export trade. Moreover, factors on the side of demand and supply indicate the nature of the problems of the Nigerian agriculture. These include low incomes which create the vicious circle of low food demand leading to low production and output, which again results in low incomes. There are also related factors such as poor or traditional technologies, including the use of hoe and cutlass for production which poses an increase to output and income. For instance, the average farm size hardly exceeds 1.5 hectares in Nigerian agriculture, (Maxwel, 2004).

Historically, rates of poverty reduction have been very closely related to agricultural performance – particularly to the rate of growth of agricultural productivity. In simple terms, this indicates that the countries that have increased their agricultural productivity they must have also achieved the greatest reduction in poverty.Drinkwater (1992) defined household livelihood security as adequate and sustainable access to income and resources to meet basic needs (including adequate access to food, potable water, health facilities, educational opportunities, housing, time for community participation and social integration). Livelihoods can be made up of a range of on-farm and off-farm activities that together provide a variety of procurement strategies for food and cash. Thus, each household can have several possible sources of entitlement which constitute its livelihood.

Entitlements include the rights, privileges and assets that a household has, and its position in the legal, political, and social fabric of society.

The risk of livelihood failure determines the level of vulnerability of a household to income, food, health and nutritional insecurity.

The greater the share of resources devoted to food and health service acquisition, the higher the vulnerability of the household to food and nutritional insecurity. Therefore, livelihoods are secure when households have secure ownership of, or access to, resources (both tangible and intangible) and income earning activities, including reserves and assets, to off-set This study aims at the assessment of constraints militating against farmers' livelihood security in the North-Eastern region of Nigeria. The specific objectives are to examine the socio-economic characteristics of the farmers and to identify the constraints militating against farmer's livelihood security.

MATERIAL AND METHODS

The study area :

The study was carried out in the North Eastern states of Nigeria comprising Borno, Adamawa, Taraba, Adamawa and Gombe State. These are states in the

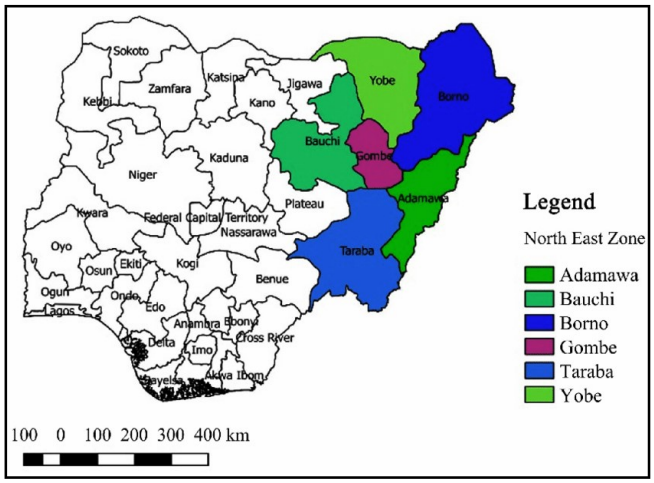

Fig. A : Map of Nigeria showing the North Eastern States

northern parts of Nigeria that suffer most from insurgent activities, farmers/herdsmen clash recently. They are notable for the cultivation of annual crops such as maize, millet, cowpea, groundnut etc. majority of farmers in these areas rear live-stocks such as cattle, goats, sheep, poultry etc.

Sampling technique :

Primary data for this study was collected through the use of structured questionnaires. Four hundred and fifty (450) questionnaires was distributed by enumerators using multi-stage sampling survey for the study. The first stage involved purposive sampling of three States within the Region that are most hit by insurgency, communal crisis and farmers/herdsmen clashes in recent times *i.e* Taraba, Adamawa and Gombe State. Secondly, two Local Government Areas was randomly selected from each of the sampled states. The third stage involved random sampling of seventy five farmers from each of the Local Government Areas to give one hundred (150) per state. Thus, a sum of four hundred and thirty-five (435) farmers were contacted for the survey.

Analytical framework :

Data obtained from the field survey were analyzed using both descriptive and inferential statistics which include frequency distribution, means and standard deviation.

Garret ranking technique :

Information in respect to the problems faced by the farmers as they struggled to achieve livelihood security. Identified problems or constraints were asked through questionnaire schedule for the farmers to rank the problems proposed to them based on their view of the severity of the problem. The advantage of the Technique is that it provides the chance to order the constraints based on severity and is scored numerically. The main advantage of the Technique over the simple frequency percentage is that the problems/constraints are set out based on their gravity from the way the farmers sees them to affect them. Different rank is given on a situation where the same number of respondents are on two or more constraints. The formula for Garret that convert ranks into percent is given as follows:

$$\text{Per cent position} = 100 * (Rij - 0.5)/Nj$$

where,

Rij = Rank given for ith constraint by jth individual;

Nj = Number of constraint ranked by jth individual.

By making reference to the table given by Garrett and Woodworth (1969), the position of each rank was converted into scores. The operation of the Technique follows that the scores of individual respondents for each of the factors, was added together and divided by the total number of the respondents for whom scores was added. The problems or constraints was ranked by arranging the mean scores for all the constraints in descending orders.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Socio-economic characteristics :

Socio-economic characteristics is the combination of an economic and sociological total measure of a person's economic and social position that is relative to others, based on gender, age, marital status, household size, education, experience, etc. These are discussed below as it relates to the respondents in the study area.

Gender distribution of the respondents :

The findings of the result of the respondents by gender is presented in Table 1. Table 1 shows that 75.17% of the respondents were males, while 24.83% were female respondents. This implies that male gender dominates farming activities in the study area. This may be due to the fact that the responsibility of feeding and catering for the family is mainly the duty of male gender, and socio-cultural factors may be the explanation of low percentage of women participation in farming. This is in confirmation with the report of Jibowo (1992) and Atibioke *et al.* (2012) that male gender has always dominate the agricultural activities. Studies have also pointed out that the gender of the household head is associated with the possibility of accessing better livelihoods. This is to say, it has been suggested that the household headed by female gender are poorer and are

Table 1: Respondents base on gender distribution

Gender	No.	Percentage (%)
Male	327	75.17
Female	108	24.83
Total	435	100.00

Source: Field survey 2021

more food insecure compared to households headed by male gender. This implies that women are more vulnerable than male as a result of lack of support and lack of labor supply. The household head as an important role in the decision making concerning resource allocation that improves the welfare of the household. Hebinck and Lent (2007) posit that the core of the decision making in the rural household are made by women and consequently become the principal providers as most of the income generating activities are done by them while the men have freedom of participating in different programmes.

Age of respondents :

The result of the age of the respondents in Table.2 reveals that both young and old people are involved in farming activities. The distribution shows that majority (29.66%) of the respondents were between the ages of 31 to 40 years. The mean age of the respondents is 41.69 years with standard deviation of 13.40. This implies significant variation in age of the respondents and it shows that they are relatively young and physically active. Gwandi (2012) and Mustapha *et al.* (2012) reported that gender plays a vital role in influencing farmer's adaptive capacity to better farming strategies and also is an important factor in agriculture because of its crucial part in the determination of farming activities.

Table 2: Age distribution of respondents

Age (Interval) Years	Number	Percentage (%)
≤20	18	4.14
21 – 30	87	20
31 – 40	129	29.66
41 – 50	106	24.37
≥51	95	21.84
Total	435	100
Average	41.69	
Standard deviation	13.40	

Source: Field survey 2021

Respondents marital status :

The findings in Table 3 reveals that 70.34% of the respondents were married while 22.30% 0f the respondents were single. The involvement of married household farmers in agricultural production can be explained in terms of labor supply for agriculture. The family labour offered would be more when family heads are married.

Table 3: Respondents distribution by marital status

Marital status	Number	Percentage (%)
Single	97	22.30
Married	306	70.34
Divorced	9	2.87
Widow/widower	23	5.29
Total	435	100

Source: Field survey, 2017

Household size :

The findings of the result of size of household is given in Table 4. The findings of the result in Table 4 reveals that majority (51.95%) of the respondents have household size between 6 and above people, while 27.13% have household size of 4 to 5 people. The mean household size is 6.75 while the standard deviation is 4.38, justifying the fact that majority of the respondents are married. The number of people in families is very important for determining the availability of labour for agricultural work. It also affects household income and household food requirements. Gwandi (2012) reported that greater family size increases efficiency because most farmers are financially constrained and thus, the availability of family labour will ease hiring of labour. Generally, families that are large requires more resources to meet their subsistence needs and they will consequently have higher propensity to consume. Furthermore, large families will have more labor that will be mobilize for agricultural activities. The number of individuals residing in the household of respondent is what constitute a household size.It was found by Chedchuchain and Otsuka (2006) that the size of household capture the quantity of human capital. This implies in a practical way that the availability of labor will serve as a basis for a household to decide whether to participate or not to participate in several income generating activities. Machinery are not readily available for rural farmers. Human labor therefor serve as the only substitute and most income generating activities in the rural areas are heavily dependent on family labor because of their inability to buy modern machinery or even higher it.

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Table 4 : Size of household

Household size	No.	%	Adult male		Adult female		≥ 15 children		≤ 14 children	
			No	%	No	%	No	%	No	%
≤ 1	56	12.87	202	46.44	203	46.67	281	64.60	248	57.01
2-3	35	8.05	168	38.62	165	37.93	91	20.92	106	24.37
4-5	118	27.13	56	12.87	47	10.80	40	9.20	64	14.71
≥ 6	226	51.95	9	2.07	20	4.60	23	5.08	17	3.91
Total	435	100	435	100	435	100	435	100	435	100
Mean	6.75									
Std. ev	4.38									

Source: Field survey 2021

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Education of respondents :

This is an important factor that determines the ability of an individual to understand and adopt policies/ programmes that affect him/her. The educational distribution of the respondents is presented in Table 5. The finding reveals that majority (91.03%)of the respondents had formal education, while only 8.97% had no formal education. The mean years of formal education is 2.61 while the standard deviation is 1.20, which indicates that majority of the respondents have attained at least a primary education.This study reveals that the level of literacy is high among respondents and this could have consequences for agricultural production in the areas. Formal education is a serious element in influencing farmers' ability to adopt new agricultural innovations effectively, as reported by Mustapha *et al.* (2012). One of the factors that enable farmers to acquire necessary information and process it for effective use is educational attainment. The possibility of educational level to influence the livelihood strategies of household farmers and to determine the income they derive from various activities undertaken by them is high. These collaborate with the suggestion of Yunez and Taylor (2001) that educational attainment by farmers is necessary for raising their economic productivity and efficiency in agricultural production which in turn will go a long way in combating poverty,

Table 5: Respondents educational attainment

Educational level	Frequency	Percentage (%)
No formal education	39	8.97
Primary education	49	11.26
Secondary education	248	57.01
Tertiary education	99	22.76
Total	435	100
Mean	2.61	
Standard deviation	1.20	

Source: Field survey 2021

Respondents primary occupation :

The main occupation of the respondents in the Study areas is presented in Table 6. The result from the table shows that majority (62%) of the respondents were full-time farmers and majority (66.90%) of the respondents also indicated farming as their secondary occupation. The remaining were in to other occupation other than farming. This shows farming activities is the most

Table 6: Respondents main occupation

Type of occupation	Primary occupation		Secondary occupation	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Farming	273	62.76	291	66.90
Civil service	97	22.30	47	10.80
Business	57	13.10	93	21.38
Others	8	1.84	4	0.92
Total	435	100	435	100

Source: Field survey 2021

common occupation in the study areas. This implies that the respondents the study areas depend on agriculture for their livelihood.

Respondents experience of farming :

Presented in Table 7 is the farming experience of the respondents in the study area. From the result it can be seen that majority (38.40%) of the respondents had between 1 to 10 years of experience in agricultural production, the mean years of farming experience 18.78 years while the standard deviation is 13.06.

Table 7: Respondents farming experience

Farming experience (years)	Frequency	Percentage (%)
? 10	167	38.40
11 -20	139	31.95
21 -30	51	11.72
31 – 40	52	11.95
? 41	26	5.98
Total	435	100
Mean	18.78	
Standard deviation	13.06	

Source: Field survey 2021

Respondents size of farm :

The finding of the result of the respondent's distribution based on farm size in Table 8. Table 8 reveals that majority (44.4%) of the respondents cultivated 2 to 3 hectares of farm land, while 20.46% and 21.83% cultivated $\leq$1 and between 4-5 hectares, respectively. The mean farm size of the respondents is 3.53 hectares and the standard deviation is 3.14. Farm size or land holding is possibly the most important single resource as it is a base for any economic activities especially in rural and agricultural sector. Farm size influence household's decision to partake or not to participate in different livelihood expansion activities.

Table 8: Respondents farm size

Farm size	Frequency	Percentage (%)
? 1	89	20.46
2 – 3	192	44.14
4 – 5	95	21.84
? 6	59	13.56
Total	435	100
Mean	3.53	
Standard deviation	3.14	

Source: Field survey 2021

Constraints to livelihood security of farmers in North-Eastern States, Nigeria :

The analysis of constraints faced by the respondents in achieving their livelihood security is presented in this section. Garrett ranking technique was used to analyse the factors militating against livelihood security of the respondents in the study area. Farmers were asked to rank according to severity the problem they face as they struggle to achieve better livelihood.

The result from Table 9 reveals that variability in the amount of rainfall with average score of 50.35 scored the highest problem faced by the respondents in the study area. Shortage of labour with average score of 49.12 is ranked second, while low inadequate farm credit was ranked third by the respondents. Pest and disease was ranked the fourth with average score of 45.73. Other production problem faced by the farmers were loss of farm land due to insurgency(44.38), low yield of crop (42.92), cattle rearers/bird infestation (40.60), inadequate research and extension support (36.03), land tenure/poor land fertility (35.28), lack of good storage facilities (31.39) and lack of access to fertilizer ranked as 5^{th} ,6^{th}, 7^{th} ,8^{th} , 9^{th} , 10^{th} and 11^{th} respectively. All these problems put together if not properly manage can impede the production capabilities of farmers and of course affect their struggle for better livelihood, considering the fact that agriculture is the hope and stay of the rural populace. This is in agreement with the study conducted by Gwandi (2019) on comparative study of farmers' livelihood

Table 9: Production constraints

Constraints	% Position	Garret score	Total value	Average value	Rank
Inadequate farm credit	3.85	84	21392	47.54	3
Loss of farmland due to insurgency	11.54	74	19971	44.38	5
Shortage of labour	19.23	67	22103	49.12	2
Variability in amount of rainfall	26.92	62	22658	50.35	1
Pests and diseases	34.62	58	20577	45.73	4
Low yield of crop	42.31	54	19314	42.92	6
Cattle rearers/Birds infestation	50	50	18271	40.60	7
Inadequate research and extension support	57.69	46	16215	36.03	8
Land tenure/ poor land fertility	65.38	42	15874	35.28	9
Lack of good storage facilities	73.08	38	14125	31.39	10
Low price of food crop	80.77	33	11223	24.94	12
Lack of access to fertilizer	88.46	26	13868	30.82	11
Increase in food security due to insurgency	96.15	14	9008	20.02	13

Source: Field survey 2021

strategies in Eastern Uttar Pradesh, India and Adamawa State, Nigeria.

The result in Table 14 shows the garret score of the infrastructural constraints and the corresponding rank as indicated by the respondents in the study area. The findings revealed thatlack of good road with average score of 57.24 was ranked first andpoor storage facilities with average score of 52.02 was ranked the second. Provision of good storage facility and good road is necessary for farmers because this infrastructure when properly provided will save the farmers from selling the farm product out of distress and pressure of the fear of losing the farm product thereby getting the best return from their farm activities. Other infrastructural problems were lack of mobility with average score of 51.92, absence of marketing network (42.35), and lack of irrigation facility (35.54) was ranked the 3rd, 4th and 5th, respectively. Infrastructural facilities are essential for better net returns and improve agricultural activities (Gwandi, 2018). Good infrastructure helps in raising

Table 10: Garret score and corresponding ranking of the infrastructural constraints by the respondents

Constraints	% position	Garret score	Total value	Average value	Rank
Lack of good roads	7.14	78	25760	57.24	1
Poor storage facilities	21.43	66	23411	52.02	2
Lack of mobility	35.71	57	23366	51.92	3
Absence of marketing network for farm produce	50	50	19056	42.35	4
Lack of irrigation facility	64.29	43	15995	35.54	5
Unstable electricity	78.57	35	13867	30.82	6
Lack of access to water	92.86	22	10832	24.07	7

Source: Field survey 2021

Table 11: Garret score and corresponding ranking of the financial constraints by the respondents

Constraints	% Position	Garret score	Total value	Average value	Rank
Inadequate access to credit	8.33	77	22908	50.91	1
High interest rate charged on loan	25	63	19606	43.57	3
High rate of tax	41.67	54	19696	43.77	2
Lack of collateral to secure loan	58.33	46	18575	41.28	4
High cost of farm land/ business premises	75	37	14043	31.21	5
High cost of labour	91.67	23	12367	27.48	6

Source: Field survey 2021

productivity and lowers the unit cost in the production activity of the farmers.

The garret ranking of the financial constraints is presented in Table 15. The result from reveals that inadequate access to credit was ranked the first with average score of 50.91 followed by high rate of tax was ranked the second with average score of 43.57. High interest rate charge on loan for farming with average score of 43.77 and Lack of collateral to secure loanwith average score of 41.28 was ranked 3rd and 4th, respectively. Gwandi, (2012) reported that lack of credit facilities can affect the farmer's productivity thereby making the farmers to continue to make use of local input leading to continuity in vicious cycle of income generation and poverty. This is also responsible for the small size of farmlands cultivated by the farmers. Hence, agricultural credit is a crucial input for increasing agricultural production and productivity.

Conclusion and recommendation :

Agriculture remains the core source of livelihood and employment in most emerging countries including Nigeria. It constitutes a significant sector in every economy and contribute immensely to national wealth. Rural households throughout the developing world depend on agriculture and other natural, non-cultivated resources to meet subsistence needs and generate a livelihood. The importance of agricultural growth to alleviating poverty and increase the livelihood of a household cannot be overemphasized. The research focuses on the empirical assessment of constraints affecting farmers' livelihood security in the north-eastern region of Nigeria. The objectives of the study were to identify the socio-economic characteristics of the farmers and to identify the constraints affectinglivelihood security of the farmers in the study area. The results revealed that male farmers constituted the majority (73.17%) of the respondents, married with a mean age of 41 years. The respondents were mostly small-scale farmers, and they cultivated an average of 3.5 hectares of farmland using personal savings. The results from the Garret Ranking Technique reveals that the most severe problem in term of production constraints was variability in the amount of rainfall with a mean score of 50.35, shortage of labour scored 49.12 average and inadequate farm credit with average value of 47.54. Lack of good roads with average score of 57.24, Poor storage facilities scored 52.02 average and lack of mobility (51.92) were the infrastructural constraints identified by the farmers in the study area as severe among others while inadequate access to credit with average score of 50.51, high-interest rate charge on loan (43.57) and high rate of tax (43.71) was the financial constraints.All these problems put together if not properly manage can impede the production capabilities of farmers and of course affect their struggle for better livelihood, considering the fact that agriculture is the hope and stay of the rural populace.

Based on the findings of these study the following recommendations were made:

– Since variability of rainfall was identified as the most severe constraints in the study area, farmers should be aided with sound irrigation facilities and the formation of co-operative organization that will ease the accessibility of infrastructural, financial and production facilities.

– It is recommended that growth-led development programmes should be provided for agricultural production where the majority of the poor people are more likely to get their incomes, and that will surely improve their livelihood security.

– Government and non-governmental agencies to provide productive technology and infrastructural facilities that will help in boosting the income and livelihood security of farmers.

– Loss of farmland due to insurgency and poor land fertility was also identified as the production constraint, security measure should be put in place to protect the farmers from insurgent activities and research efforts is therefore recommended to be intensified to prevent further depletion of land fertility and claim the rapid depletion of soil fertility dueto increasing activities on land by mankind. Furthermore, an adequate and timely provision of agricultural inputs is necessary for improving farmers' livelihoods security.

– Good infrastructure helps in raising productivity and lowers the unit cost in the production activity of the farmers.

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