

## Effect of banditry on rice production in northern agricultural zone of Benue state, Nigeria

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### Abstract

The study examined the effect of banditry on rice production in northern agricultural zone of Benue State, Nigeria. A sample of 156 rice farmers from 3 L.G.A (Buruku, Katsina-Ala, Gboko) were selected using multi-stage sampling technique. Primary data were collected using structured questionnaire. Descriptive statistics, gross margin and multiple regression analysis were used to analyze the data. The results showed that majority (59.00) of the respondents were female, 35.3% had a family size of 6-10 persons. About 39% of the respondents had a formal education. About 38% also showed that the major occupation of rice farmers is farming. Half 50.0% of respondents were in the business of rice cultivation for 11 to 15year. The average variable cost incurred per hectare was ₦321,680 with the total revenue was ₦623,000.11, total fixed cost ₦ 93,320.00 with a gross margin of ₦338,560.11. and net farm income of ₦245,240.00. The minimum net farm income was ₦169, 556.00 and the maximum was ₦274,394.00 which indicated that, some farmers with low net farm income were been affected by banditry activities. The return on each naira invested by the rice farmers was ₦0.50. The elasticity of production with respect to each of the corresponding variables: farm size, labour, fertilizer, seed and marital status, educational qualification, major occupation, farming experience and distance to farm. Thus, for farm size is 0.924. Banditry has a detrimental effect on numerous rice-growing enterprises and having a negative influence on food security, health, education, eating habits, and a host of other socioeconomic activities in the study region. The study recommended that government should promote community-based organizations that can collaborate with authorities to facilitate early warning system, share information on banditry incidents, and promote measures to protect farmlands and livelihoods. Also, Non-governmental Organization should provide financial support i.e implement programs that offer financial assistance, such as loan and grant to farmers affected by banditry.

**Keywords:** Effect; Banditry; Rice; Production

## 1 Introduction

### 1.1 Background of the Study

A bandit is a robber or outlaw belonging to a gang, who uses weapons to steal or rob from the people and typically operating in an isolated or lawless area of a country. Banditry has existed in parts of Chad and around Lake Chad and they also have significant presence in parts of Southern Africa. In West Africa, the prevalence and severity of banditry has contributed to the rising increase in regional insecurity with a potential threat to regional integration of the sub-region (Abdullahi, 2019). In Nigeria, banditry came as a result of nearly four decades of unresolved conflicts between settled cultivators and nomadic herding communities that wander on the high plains of northern Nigeria particularly the North West geo-political zone in states such as Zamfara. Banditry in Zamfara State started since around 2009 and increased in 2011 especially after the general elections (Anka, 2017). In fact, Zamfara State has been the epi-center of

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banditry in Nigeria, where most of the bandit's leaders were based and from Zamfara State forests they would move riding on motor cycles to other states such as Benue, Katsina, to operate and return to their forest dens (Farouq and Chukwu, 2020). Therefore, by the 2014, banditry had started in Benue State primarily in some local government area (LGAs) where several people were killed and property destroyed.

Since banditry involved acts of robbery and violence on the people, particularly rural dwellers who mainly engage in farming, cattle rearing and other food production activities, it is bound to affect on food security, Food security according to the World Food Summit 1996, "exists when all people at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and preferences for an active healthy life" The Food and Agriculture Organization simply defines food security as the availability of food in terms of production, distribution and consumption.

The United Nations in September 2020 observed that attacks by Al- Shabaab insurgent group will deepen food insecurity into the year 2021 in Mozambique (Bellinger, & Kattelman, 2021). In Nigeria, the Federal Government has realized that banditry has posed a serious threat to farming communities in the northern parts of the country. Therefore in April 2017, the Minister of Agriculture and Rural Development in conjunction with the Minister of Interior initiated the formation of a special unit of Agro- Rangers Corps to protect farmers and farming.

Generally, food production in the global south has not kept pace with population increase as reflected in the increasing levels of food (especially rice) importation and under-nourishment in countries such as Nigeria. In Nigeria, rice is both a key staple food and also a major source of livelihood for a significant proportion of the farming population but its production is still unable to meet the demand for local consumption, hence the importation of rice is a major factor in depleting Nigeria's foreign reserve. Currently, the Federal Government of Nigeria (FGN) through the Central Bank of Nigeria (CBN) is seeking to boost agricultural production with rice highly prioritized. Several studies (Ujoh., Igbawua,, & Ogidi Paul., 2019) have suggested that the declining yield of crops particularly rice in Nigeria is attributable to several factors such as fluctuating climatic parameters, pressure on land due to population growth and attendant declining size of farm holdings, instability, and migrations resulting from ethnic conflicts and Bandit crises, and inability of the peasant farmers to access fertilizers. These are in addition to conservative attitudes towards extension services, and market forces that are disincentives, soil quality and terrain/relief, low capital base of farmers, pests and diseases, field operations, timing of planting, and superimposed on these is a fluctuating climate regime and weather elements.

## 1.2 Statement of the Problem

According to FEWS NET (2019), intense banditry attacks in the northeast Nigeria have led to increased displacement of persons with attendant food needs. Also, many households are negatively impacted by farmer/herder conflict in central and northern states of Zamfara, Katsina, Kaduna, Taraba, Plateau, Benue, Nasarawa and Adamawa. The attacked did not allow the households to engage in normal livelihood activities including farming with no access to market and income opportunities (FEWS NET, 2019; 2020).

Benue is one of Nigeria's most resource-endowed states with a large landmass. Popularly called 'Food Basket of the Nation' but the reverse seems to be the case, with the upsurge in violent crimes in recent times. That affect the security of lives and property in the different communities of the State. Since the past decade, the major security challenges confronting the State are banditry and communal clashes. This unfortunate development is gradually killing Benue's major industry, rice milling (Akighir, Ngutsav & Asom, 2011),

More so, the number of people who have lost their lives and are displaced, and the amount of property lost as a result of the banditry in Benue State is frightening, thousands of people have become refugees in their own country leading to as many social problems as starvation, illiteracy, high mortality rate, and spread of diseases.

## 1.3 Objectives of the Study

The broad objective is to examine the effect of banditry on rice production in northern agricultural zone of Benue state, Nigeria. The specific objectives are to:

- Describe the socioeconomic characteristics of rice farmers in the study area;
- Determine the costs and returns of rice production;
- Determine the effect of banditry on rice production;

## 1.4 Justification of the Study

The study examined the causes of banditry in the study area, it provides information on the perceived effects of rural banditry on the rural economy as well as communal and government efforts to curb the issue of insecurity in the study area. This study encourages the farmers in the study area to go back to their various farm land without any fear. The research will benefit other researchers and students to further their study.

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## 2 Methodology

### 2.1 The Study Area

Benue State, the Food Basket of the Nation, is a predominantly lowland area (averaging 100–300 m above mean sea level) within the lower River Benue trough in the Middle Belt region of Central Nigeria. The study was conducted in three Local Government Areas of Benue State, namely, Gboko, Buruku and Katsina – Ala. Gboko Local Government Area is located between latitudes 6° 3' and 8° 1' N, Equator and longitudes 8° and 10° E of the Greenwich Meridian (Upev, *et al.*, 2016).

Gboko Local Government Area occupies land mass of 2264sq km<sup>2</sup> and based on the 2006 census, the local government area has a population of 361,325 people (NPC, 2010) and is projected to be 521,700, using 2.3% annual population changes (NPC, 2022), is the most populous Local Government Area in Benue State. The annual rainfall is in the range of 1500 mm to 1800 mm. The dry season begins in November and ends in March, the Harmattan wind that blows from across the Sahara. The temperature fluctuates between 23 °C and 35 °C. Because the soil is rich, sandy loamy and very fertile for most savannah food crops, Gboko farmers produce root crops such as yams, cassava, and sweet potatoes in large quantities beyond subsistence level.

The second L.G.A of study Buruku Local Government Area located at the East-north of Benue state occupies land mass of 1,246sq km<sup>2</sup> and based on the 2006 census, the local government has a population of 206,215 people (NPC, 2010) and is projected to be 297,700, using 2.3% annual population changes (NPC, 2022). The area is bounded by Katsina-Ala Local Government Area, Logo Local Government Area, then Taraba and Nassarawa States. Buruku Local Government has a longitude of 9°13'23.3"East and a latitude of 7°25'4.23"North.

Buruku hosts of one of the longest stretches of river systems in the country with great potential for a viable fishing industry, dry season farming through irrigation and for an inland waterway. The temperature of Buruku town fluctuates between 25 °C to 31 °C.

The third L.G.A of Study are, Katsina-Ala, created in 1976 is situated within the lower River Benue valley in Central Nigeria. It lies between longitude 9° 15' and 9° 56' East and Latitude 6° 55' and 7° 36' North and occupies land mass of 2688.64sq km<sup>2</sup> and based on the 2006 census, the local government has a population of 225,471 people (NPC, 2010) and is projected to be 325,500, using 2.3% annual population changes (NPC, 2022). The main indigenes of Katsina-Ala LGA are Kpav, Gaambe-ya, Tongov and Ikyurav-tiev. The inhabitants of the area are mostly farmers, whose major crops are yams, rice, millet, etc.

### 2.2 Sampling Procedure

Multi-stage sampling technique was used in selecting the respondents for the study. The first stage: three (3) local government areas were selected from the Northern zone. The second stage: three (3) districts were selected from each local government area, based on the intensity of farmers – banditry experienced. Third stage: three (3) villages were randomly selected from each district using the list of affected villages prepared by Benue State Agricultural Rural and Development Authority.

Final stage: 7% of rice farmers were randomly selected from each village. The sample size was determined using the Yamane (1964) sample size formula which is given as: The researcher used formula adopted by Cochran to determine the sample size at 7% level of significance;

$$n = N / [1 + N (e)^2]$$

Where;

n – Sample size

N – Population size

e – Level of significance

$$n = 5942 / 1 + 5942 (0.07)^2 = 198$$

**Table 1** Sample Size distribution

L.G.A	District	Ward	Sample frame (N)	Questionnaire Distributed	Questionnaire retrieved
Gboko	Gboko	Mbadim	812	27	22
		Gboko East	509	17	14
		Yandev North	950	32	26
Katsina- Ala	Tiv	Mbacher,	450	15	12
		Ikyurav-Tiev II,	782	26	21
		Tongov	365	12	11
Buruku	Buruku	Mbaazagee	890	30	21
		Mbaya	673	22	18
		Mbakyaan	511	17	11
<b>Total</b>			<b>5,942</b>	<b>198</b>	<b>156</b>

Source: Field survey (2021)

### 2.3 Method of Data Collection

Primary data were obtained from the farmers on the following: age, sex, marital status, level of education, factors causing banditry in the study area, the type of crimes committed by bandits in the study area, cost and return of rice production and effects of banditry on rice production in the study area.

### 2.4 Data Analysis

Descriptive statistics was used to describe the characteristics of farmers. Quantitative and qualitative data analysis methods were used. This involves the use of tables, percentages and means. Descriptive statistics was used to analyzed specific objective i, Inferential statistics (multiple regression model), was used to analyze objective ii, to determine the effect of banditry on rice production. While Gross margin (GM) analysis was used for objective iii to examine costs and returns in rice production.. The difference between the total revenue and total variable cost was the gross margin.

#### 2.4.1 The multiple regression model is specified as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11} + b_{12}X_{12} + b_{13}X_{13} + e_i$$

Where:

Y = Rice output (tons/ha)

a = Constant

$b_1 - b_{15}$  = Regression coefficients

$X_1$  = Age (years)

$X_2$  = Sex (M= 1, F = 0)

$X_3$  = Marital status (Single = 1, married = 2, widow = 3, divorced/separated = 4)

$X_4$  = Education (years)

$X_5$  = Farming experience (years)

$X_6$  = Household size (number)

$X_7$  = Farm size (hectares)

$X_8$  = Labor cost (₦)

$X_9$  = Low income of the rice farmer (Naira)

$X_{10}$  = Awareness of bandit attack (Yes = 1, No= 0)

$X_{11}$  = Transportation cost (₦)

$X_{12}$  = High cost of labour (₦)

$X_{13}$  = Variable Inputs (Kg/Naira)

$e_i$  = Error term

### 3 Results and discussion

#### 3.1 Socio-economic Characteristics of the Respondents

The socio-economic characteristics of the respondents revealed that 59% were female, this indicated that more female involved in rice farming activities in the study area more than male. This may implies that due to the attacked faced by different households in the study area. Many women had to be widower . The finding shows that 26.6% of respondents were within the age bracket of 46-50 years, while 21.8% , 20.5% and 18.6% of the respondents were within the age of 41-45 years, 36-40 years and 51-55 years. Only 6.4%, 4.5% and 1.9% of the respondents were within the age bracket of 20-35 years, 56 and above and 20-30 years of age in the study area. The majorities of the farmers were still within their active age and effectively used their energy for agricultural and other economic activities.

The marital status of the respondents indicated that 54.5% of them were married, 28.2% widowed, 14.7% single and 2.6% of the respondents divorced. This indicates that families with large number of members would use their own labour instead of hiring labour to produce rice, which would minimize costs and maximize profits. The percentage of Also 35.3% had household size of 6-10 person while 28.2% had 1-5 household size. The result of 10 persons per household is relatively high enough as source of family labour to avoid high spending on hiring labour which is scarce and often expensive which is similar to the findings of Osondu *et al.* (2015), who found that in the presence of limited farm labour availability, large households tend to use family members as sources of labour. The result revealed 38.5% of them have high school education only, 12.2% are holders of tertiary education certificates, 28.8% of them are Primary school certificate holders, 20.5% had never been to school or rather had no educational background. This shows that the farmers in the study area had formal education. It agreed with Dimelu *et al.* (2017) who reported 70% of crop farmers had educational attainment which is expected to affect positively the productivity of rice farmers.

Average Farming experience of the farmers showed; 11-15year was 50.0%, implying that half of the respondents had more experience in their rice farming activities. As the years of experience increased, it was expected that majority of the respondents would have been impacted in their decision making processes, managerial skills and awareness of other related profitable information. According to Okuthe *et al.* (2013), farming experience influences the knowledge in terms of farm management and tends to enhance farmers understanding of environmental and socio-economic factors that affect farming.

**Table 2** Socio-economic Characteristic of Rice Farmers (n=156)

Characteristic	Frequency	Percentage	Mean
<b>Sex</b>			
Male	64	41.00	
Female	92	59.00	
<b>Age group</b>			
20-30yrs	3	1.9	
31-40yrs	42	26.9	39 years
41-50yrs	75	48.1	
51-60yrs	36	23.1	
<b>Marital Status</b>			
Married	85	54.5	
Single	23	14.7	
Widowed	44	28.2	
Divorced	4	2.6	

<b>Household Size</b>			
1-10	99	63.5	
11-20	50	32.0	12.3 persons
21-30	7	4.5	
<b>Educational Qualification</b>			
Tertiary	19	12.2	
High School	60	38.5	
Primary	45	28.8	
Non education	32	20.5	
<b>Major Occupation</b>			
Civil servant	21	13.5	
Farming	59	37.8	
Trading	38	24.4	
Student	6	3.8	
Others	32	20.5	
<b>Farming Experience</b>			
1-10	51	32.6	
11-20	87	55.8	13 years
21-30	14	9.0	
>30	4	2.6	
<b>Distance to the Farm</b>			
1-10	83	53.2	
11-20	53	34.0	
21-30	18	11.5	8.9km
>30	2	1.3	
Total	156	100.0	

Source: Field Survey, (2022)

### 3.2 The Effect of Banditry on Rice Production

Table 3 presented the regression coefficients, standard error and t- value of the explanatory variables. The coefficient with respect to a particular variable explains the variation in dependents variables. The study indicated that, the coefficients with respect to all variable are positive which indicates that an increase in any of the variables holding other variables constant will lead to an increase in output. The t-value ratios were used to test significance of the coefficients at various probability levels. The regression coefficients represent the elasticity of production with respect to each of the corresponding variables: farm size, labour, fertilizer, seed and marital status. Thus for farm size is 0.924, implying that any 1% increase in farms size holding other factors of production constant will increase the out of rice production by 0.90kg. Married people significantly ( $p < 0.01$ ), earned more on average than unmarried people (0.090), while holding other variables constant. A unit increase in variable inputs increased total revenue by 0.511log naira ( $p < 0.05$ ). Meaning as cost of running the farm increases, selling price of rice per bag also increases. ( $p < 0.001$ ). Farmers affected by Banditry have suffered a decrease in total revenue, (-0.027 log naira,  $p = 0.048^*$ ). The difference was significant at 5% level.

**Table 3** Effect of Banditry on Rice Production

Variables	Coefficients		t-value	Sig
	B	Std. Error		
(Constant)	5.366	0.093	57.466	0.000***
Gender	0.010	0.030	0.342	0.733 <sup>NS</sup>
Age (Years)	0.006	0.013	0.467	0.642 <sup>NS</sup>
Marital Status	0.900	0.031	2.946	0.004**
Education level (Years)	-0.004	0.017	-0.259	0.796 <sup>NS</sup>
Farming Experience (Years)	-0.018	0.012	-1.492	0.138 <sup>NS</sup>
Variable Inputs (seed, fertilizer)	0.511	0.000	4.516	0.000***
Average farm size	0.924	0.017	16.953	0.001***
Banditry Awareness	-0.027	0.014	-1.994	0.048*
<i>Adj. R<sup>2</sup>=76.5%. F (8,147) =61.526</i>				

Sources: Field survey (2022); \*\*\*Significant  $P \leq 0.01$ , \*\* Significant  $P \leq 0.05$ , \* Significant  $P \leq 0.10$ , NS= Not Significant

### 3.3 The Cost and Returns of Rice Production

The gross margin analysis is presented in Table 4. The result revealed an average cost of seed ₦53,680.00, average cost of transportation was ₦23,000, average cost of herbicides was ₦76,000.00, average cost of fertilizer application was ₦56,000.00, average cost of planting was ₦48,000.00. Finally, the average cost of harvesting, threshing, winnowing was ₦65,000.00. The total variable cost incurred per hectare was ₦321,680 while the total revenue was found to be ₦623,000.11, total fixed cost ₦ 93,320.00 with a gross margin of ₦338,560.11. and net farm

Income of ₦245,240.00. The return per naira invested was ₦ 0.50 that is on each naira invested by the rice farmers there is profit of 50k profit this implies that rice farming in the study area was profitable.

The gross margin with a minimum value of ₦222,286.00 and maximum value of ₦454,204.00 were presented. The net farm incomes of minimum and maximum were revealed in the Table 8. Some rice farmers in the study area had low net farm income minimum of ₦169, 556.00 and maximum of ₦274,394.00. This implies that some farmers with low net farm income were been affected by banditry activities.

**Table 4** Gross Margin of Rice Farmers in the Study Area

Items	Minimum Naira	Maximum Naira	Average Amount in ₦
<b>Variable Cost of Items</b>			
Cost of seedling	66,000.00	120,000.00	53,680.00
Cost of Herbicide	40,000.00	98,000.00	76,000.00
Cost of fertilizer Application	100,000.00	195,000.00	56,000.00
Cost of Planting	35,000.00	90,000.00	48,000.00
Cost Harvesting Threshing Winnowing	50,000.00	118,000.00	65,000.00
Cost Transportation	12,000.00	75,000.00	23,000.00
Total variable Cost (TVC)	303,000.00	696,000.00	321,680.00
<b>Fixed cost</b>			
Land Rent	22,180.00	110,830.00	49,490.00

Cutlass	1,750.00	6,450.00	2,800.00
Hoes	1,300.00	4,830.00	2,900.00
Wheelbarrow	10,550.00	17,800.00	13,380.00
Shovel	4,600.00	10,500.00	5,700.00
Knapsack (sprayers)	10,250.00	21,150.00	15,800.00
Rake	2,100.00	8,250.00	3,250.00
Total Fixed Cost (TFC)	52,730.00	179,810.00	93,320.00
Total cost of production	355,730.00	875,810.00	415,000.00
Total Revenue (TR)	525,286.00	1,150,204.00	623,000.11
Gross Margin (GM)	222,286.00	454,204.00	338,560.11
Net Farm Income (NFI)	169,556.00	274,394.00	245,240.00

Source: Field survey (2022)

#### 4 Conclusion

Rice farming in the study area was dominated by women; accordingly banditry has a disastrously detrimental effect on numerous rice-growing enterprises and having a negative influence on food security, health, education, eating habits, and a host of other socioeconomic activities in the study region.

#### *Recommendations*

One of the main obstacles to rice production as a result of banditry has been the decline in rice farming output in Benue state's Northern Agriculture Zone. Rice farmers in the research area will produce more rice if these problems are addressed and overcome. The study recommended that, Government should promote community-based organizations that can collaborate with authorities to facilitate early warning system, share information on banditry incidents, and promote measures to protect farmlands and livelihoods. Non-governmental Organization should provide financial support i.e implement programs that offer financial assistance, such as loan and grant to farmers affected by banditry. Government should improve rural infrastructural development such as roads, irrigation systems and storage facilities to improve agricultural productivity and minimize the potential for bandit attacks so that rice farmers can have access to market and reduce post-harvest lost.

#### Compliance with ethical standards

#### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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