



## EFFECTS OF COVID-19 ON RICE PRICE IN NORTHERN AGRICULTURAL ZONE OF BAUCHI STATE

<sup>1</sup>Abba, K. Z. <sup>2</sup>Hamidu, B. and <sup>2</sup>Danwanka, H. A.

<sup>1</sup>Department of Agricultural Economics and Extension, Faculty of Agriculture  
Federal University Gashua, Yobe State, Nigeria.

<sup>2</sup>Department of Agricultural Economics, Faculty of Agriculture and Agricultural Technology,  
Abubakar Tafawa Belawa University Bauchi, Bauchi State, Nigeria.

**Corresponding Author's E-mail:** Khamisuabbazaki@gmail.com **Tel.:** 07061908411

### ABSTRACT

This study examined the effects of covid-19 on rice price in northern agricultural zone of Bauchi State, Nigeria. A multi-stage random sampling technique was used in selecting 180 respondents from the study area. Data were collected through the use of structured questionnaire. The result of the study shows that majority (87.8% and 84.4%) were male and married, with about 56.1% of them having tertiary education. The result also revealed the mean age, mean household size and mean household head income as 46 years, 8 people per household and ₦150,000 respectively. The market price trend of rice in the study area shows that rice was sold in August at an average cost of ₦1,320/tiya in urban area, while in the rural area it was sold at an average cost of ₦1,310/tiya within the same period. The result of the regression analysis is revealed that, age of the household head and income were significant ( $P \leq 0.05$ ) factors influencing food security in the study area. The study however, discovered that the major constraints faced by the respondents during the pandemic were high price of rice (38.3%), lack of credit (35.0%), lockdown (34.4%), high price of input (32.2%) and lack of alternative employment (29.4%) respectively. The study concluded that the spread of the Covid-19 pandemic had ensued several negative effects such as high price of rice and causes many people to lost their means of livelihood which had directly and indirectly threatened food security in the study area. The study therefore recommends that, Farmers should be encourage to go into more production of rice so that there should be more supply of the commodity to the market. Government should also provide more palliative to household to cushion the effect of the pandemic. There is also the need by Government/NGOs/ Stakeholders to create more employment opportunities in the study area.

**Keywords:** Covid-19, Price, Food security, Respondents, Rice.

### INTRODUCTION

The 2019 corona virus disease (COVID-19) which is a severe respiratory infectious disease caused by the novel corona virus and firstly identify in Wuhan city of China, has been a global pandemic. Due to its strong infectiousness, it has been transmitted to almost all the countries in the world (Verity *et al.*, 2020). According to FAO (2020a), the Covid-19 pandemic is global crisis which is already hitting the food and agricultural sector. The issue of food insecurity was a major and urgent challenge for agriculture (Abdelhedi and Zouari, 2020)

Global cereal stocks are at near record levels and world food commodity prices overall fell in the initial months of the pandemic. However, the overall food price index trends mask wide variability in food commodity prices in the wake of the lockdowns. Initially, prices for meat, dairy, sugar and vegetable oil fell sharply, while prices for cereal grains remained steady. As the pandemic deepened, price trends have shifted, with meat prices rising, for example, as meatpacking workers experienced high rates of illness in some countries and meat-processing



plants closed temporarily in order to halt transmission of the disease in worker communities (Waltenburg *et al.*, 2020).

The Covid-19 pandemic has already negatively affected agricultural production, sales, prices and farmers' income in Nigeria, causing huge disruption to the country's food systems and livelihoods. Nigeria has therefore, not been able to produce enough rice for domestic consumption consequent to the mass rice importation with its unattractive consequences on the nation's economy. The covid-19 impact on food prices is likely to depend on crops or other items, as well as the extent to which food supply chains are disrupted (Laborde *et al.*, 2020). The broad objective of the study is to assess the effect of covid-19 on rice price in northern agricultural zone of Bauchi State. While the specific objectives were to (i). Describe the socio-economic characteristics of the respondents in the study area; (ii) determine the effects of socio-economic characteristics on food security status of the respondents; (iii) examine the rice price trend during the pandemic; and (v). Find out the constraints faced by the respondents during the pandemic.

## **MATERIALS AND METHODS**

### **The Study Area**

The study was carried out in three local government of Northern Agricultural zone of Bauchi State. Namely Katagum, Jama'are and Zaki Local Government. The zone lies between latitudes 9°3' to 12°3' north of the equator and longitude 8°50' to 11°0' east of the Greenwich meridian (BSADP, 2010). According to Annual Population Change (APC, 2017) with recent increase in the rate of population growth (3.46% per annum), the study area has a total estimated population of 2,660,534.93 and land mass of 12,020 square kilometers (BSADP, 2010). The zone is located in the Northern Guinea Savanna region with scattered trees, grasses and shrubs and also received average rainfall of 600mm per annum, the temperature ranges from minimum of 25.12°C to 27.5°C in December/January to maximum of 32.6°C to 35.0°C between April/May (BSADP, 2010). The zone is bordered by four (4) states and Two (2) local government areas of Bauchi State, Yobe and Borno states to the north, Jigawa and Kano to the east, Dambam and Misau local government area of the state to the central. The zone consists of Hausa, Fulani and Kanuri, all of them speaking Hausa as a common language of communication. The people of the zone are involved in trading, fishing and farming which is predominant as occupation. The zone produces both livestock and field crops. The major livestock produce includes cattle, goats, sheep, and poultry, basically chicken. The major crop grown includes millet, sorghum, cowpea, groundnuts, while tomatoes, pepper, onion and leafy vegetables are under irrigation (BSADP, 2010).

### **Sampling Procedure**

A multi-stage sampling technique was used to select three (3) local government randomly out of the seven (7) local government area of the zone, two (2) markets one urban and one rural was purposively selected from each of the 3 selected local governments, sixty (60) respondents were randomly selected from each local government, 30 from urban market and 30 from rural market making a sample size of 180 respondents. Data were collected through the use of structured questionnaire.

### **Method of Data Analysis**

The Data were analyzed through descriptive and inferential statistics. The descriptive statistics used includes frequency, percentages, means and standard deviation while the inferential statistics used includes multiple regression analysis. The multiple regression model is specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + e$$



where;

Y = Food security status (2= food secured, 1= not food secured)

X<sub>1</sub> = Marital status (single=1, married=2, widow=3),

X<sub>2</sub> = Age of the Household head (years)

X<sub>3</sub> = Household size (number of persons),

X<sub>4</sub> = Educational level (Not educated=1, Adult literacy=2, Qur'anic education=3, Secondary education = 4, Tertiary education =5)

X<sub>5</sub> = Primary occupation (artisan=1, civil servant=2, farming=3, business=4)

X<sub>6</sub> = Secondary occupation (artisan=1, civil servant=2, farming=3, business=4)

X<sub>7</sub> = Location (Katagum=1, Jama'are=2, Zaki=3)

X<sub>8</sub> = Price of rice(₦/tiya)

X<sub>9</sub> = Sources of loan (no=1, yes=2)

X<sub>10</sub> = House hold income(₦/month)

β<sub>1</sub>-β<sub>10</sub> = Coefficient of the regression model

e = Stochastic error term.

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of the Respondents

Table 1 shows the distribution of the respondents according to socioeconomic characteristics. The result revealed that majority (87.8%) of the respondents were male with about 12.2% females. This result agrees with the findings of Hamidu (2018) who found that majority of the meat consumers in Bauchi state were male. This also suggest the dominance of male gender as household head in the study area. The table 1 also shows that majority (84.4%) of the household head where married while, 10.6% were single and about 5.0% where widowed. The result further revealed that majority (56.1%) of the respondents had tertiary education, about 24.4% had secondary education with the remaining having different level of education among others. The result on the primary occupation of the household head revealed that 41.1% were civil servants with majority (55.6%) having farming as a secondary occupation.



**Table 1:** Distribution of respondents according to Socio-economic characteristics

Variables	Frequency	Percentage
<b>Sex</b>		
Male	158	87.8
Female	22	12.2
<b>Total</b>	<b>180</b>	<b>100</b>
<b>Marital Status</b>		
Single	19	10.6
Widow	9	5.0
Married	152	84.4
<b>Total</b>	<b>180</b>	<b>100</b>
<b>Educational Level</b>		
Not educated	4	2.2
Adult education	16	8.9
Quranic education	9	5.0
Primary education	6	3.3
Secondary education	44	24.4
Tertiary education	101	56.1
<b>Total</b>	<b>180</b>	<b>100</b>
<b>Primary occupation</b>		
Artisan	8	4.4
Civil servant	74	41.21
Farming	64	35.6
Business	34	18.9
<b>Total</b>	<b>180</b>	<b>100</b>
<b>Secondary education</b>		
Artisan	6	3.3
Civil servant	24	13.3
Farming	100	55.6
Business	50	27.8
<b>Total</b>	<b>180</b>	<b>100</b>

Source: Field Survey, 2021

### **Descriptive Statistics on Age, Household Size and Household Income**

Table 2 result shows the descriptive statistics on Age, Household size and Monthly household head income of the respondents in the study area. The results revealed that the minimum age of the respondents was 24 years and the maximum age was 79 years with the mean age of 46 years. This finding is not in agreement with the findings of Hamidu (2018) on his studies on consumers demand on meat in Bauchi State who stated that majority of respondents in his study had the mean age of 41 years. The result also reveals the mean household size and mean monthly household head income of the respondents as 8 person per household and ₦150, 000:00 respectively. The findings agree with the findings of Hamidu (2018) who found the mean household size of 8 person per household on his studies on consumers demand on meat in Bauchi State.



**Table 2:** Descriptive statistics on Age, Household size and Monthly household head income.

Variables	Min	Max	Mean	Std. Dev.
Age	24	79	46.94	12.24458
Household Size	2	25	8.52	4.393279
Monthly Household head Income	33,000	520,000	150,000	94.744434

Source: Field Survey, 2021

### Determinants of food security status

Table 3 shows the result of the regression analysis on determinants of food security status during the pandemic. The result revealed that age and household head monthly income were the significant ( $<0.05$ ) determinant of food security status of the respondent in the study area. The coefficient of age was found to be negative but significant ( $<0.05$ ) determinant of food security status indicating that younger household head were more likely to be food secured than older household. This is in accordance with a priori expectation that younger household are expected to be more productive than older ones. The coefficient of household head income was also found to be positive and significant ( $P<0.05$ ) determinant of food security status. This indicates that the higher the income the more food secured. It also shows that household with higher source of income were more likely to be more food secured than household with lower income. This is also in agreement with a priori expectation. It is also in agreement with the findings of Abdullahi *et al.* (2019).

**Table 3:** Regression analysis on effect of socio-economic characteristics on food security status

Variables	Coefficient	Std. Error	t-value	Sigt. level
Constant	1.112	.437	2.546	0.012**
Marital status (X1)	-0.059	.049	-1.215	0.226
Age of the household head(X2)	-0.010	.004	-2.461	0.015**
Household size(X3)	0.002	.011	.202	0.840
Level of education(X4)	0.028	.023	1.233	0.219
Primary occupation(X5)	-0.002	.039	-.064	0.949
Secondary occupation(X6)	-0.050	.044	-1.144	0.254
Location(X7)	-0.048	.039	-1.219	0.225
Price of rice(X8)	0.001	.000	1.477	0.142
Access to Loan(X9)	0.024	.074	.328	0.743
Monthly household head income(X10)	1.973E-6	.000	5.694	0.000***
R2- Value	0.23			
R2-Adjusted	0.18			

\*\*\* Significant at 1% \*\* significant at 5%

Source: Field Survey, 2021

### Price Trend of Rice in Urban and Rural Areas

The trend in the price of indigenous rice in Katagum, Jamaare and Zaki from February 2020 to January 2021 is presented in Figures 1 and 2. Figures 1 and 2 below shows the price trend of rice in urban and rural areas of the study area. The trend reveals that price fluctuated from February 2020 to January 2021 and was at peak in August 2020 with an average of ₦1,320.00 per kg in Katagum local Government market while ₦1,310.00 per kg in Jamaare

and Zaki Local Governments, respectively. The trend analysis shows that there has been a growth in the price of indigenous rice, especially as government ban the importation of foreign rice, this will increase consumption and this makes the price very high. This policy of the federal government yielded a positive result in terms of increased production and processing capacity of local rice producers and value chain actors (Udumezue, 2018).

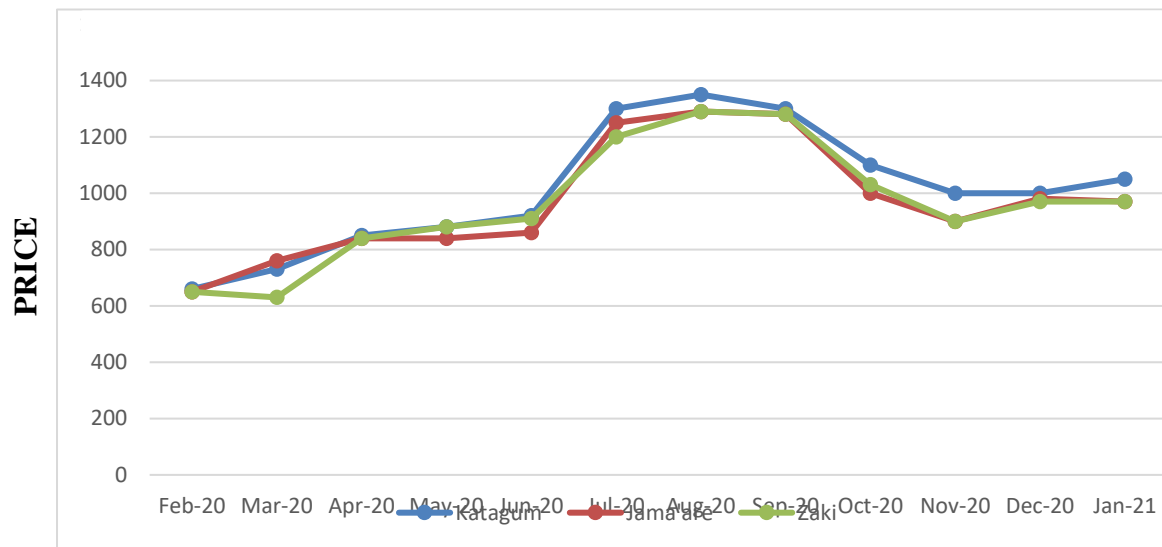


Figure 1: Price Trend of Rice in Urban market

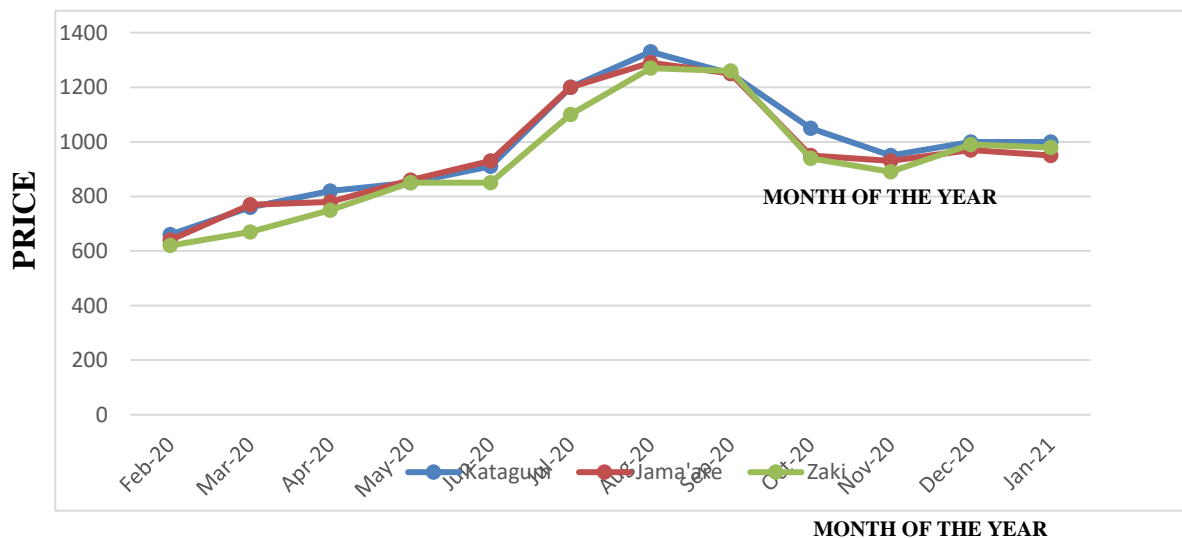


Figure 2: Price Trend of Rice in Rural market

### Constraints faced by the Respondents During the Pandemic

Table 3 shows the distribution of the respondents according to the constraint encountered by the respondents during the pandemic. The result revealed that the major constraints faced by the respondent during the pandemic were high price of rice (38.3%) which ranked 1<sup>st</sup> followed by lack of credit (35.0%) which ranked 2<sup>nd</sup> and lockdown (34.4%) which ranked 3<sup>rd</sup> causes many people to lost their means of livelihood which have directly and





indirectly threatened food security. Other constraints were high price of input (32.2%), lack of alternative employment (29.4%), lack of infrastructure (28.8%), inputs unavailability (26.6%) and illness (25.5%). The findings are in agreement with the findings of Sani *et al.* (2017) that the major problems faced by farmers were high cost of input, high cost of labour and low and unstable produce price.

**Table 5:** Distributions of respondent according to Constraints

Problems	Frequency	Percentage	Ranking
High Price of rice	69	38.3	1 <sup>st</sup>
Lack of Credit	63	35	2 <sup>nd</sup>
Lockdown	62	34.4	3 <sup>rd</sup>
High price of input	58	32.2	4 <sup>th</sup>
Lack of alternative employment	53	29.4	5 <sup>th</sup>
Lack of infrastructure	52	28.8	6 <sup>th</sup>
Input unavailability	48	26.6	7 <sup>th</sup>
Illness	46	25.5	8 <sup>th</sup>

\*Multiple responses

Source: Field Survey, 2021

## CONCLUSION AND RECOMMENDATIONS

The study assessed the effects of covid-19 on rice in Northern Agricultural Zone of Bauchi State, Nigeria. About 46.1% and 30.6% were engaged in civil service and farming as a main source of income with majority (73.3%) being food insecure. The result of the regression analysis revealed that age of the household head and income were significant ( $<0.05$ ) factors influencing food security in the study area, the dominant determinant of food security was the socioeconomic status of the household head in terms of income and age. This suggests that older households head were disproportionately affected by the pandemic. The trend in the price of rice was peak in August 2020 at an average of ₦1320 in urban market while ₦1,310 in rural market before decreasing significantly. The study however, discovered that the major constraints faced by the respondents during the pandemic were high price of rice, lack of credit, and Lockdown enforced by the government. Base on the findings of the study, the following recommendations were made:

1. Farmers should encourage to produce more or go in to production of rice so that there should be more supply of the commodity to the market, there should be more incentive to farmers in terms of loan and inputs.
2. Government should provide more palliative to household and particularly older household head to cushion the effect of the pandemic.
3. There is the need by Government/NGOs/Stakeholders to create more employment opportunities.
4. The negative effect of age should also be taken in to consideration by recommending more studies on its implication in the future.

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