



**FOOD INSECURITY AND COPING STRATEGIES AMONG RURAL FARMERS IN
RINGIM LOCAL GOVERNMENT AREA OF JIGAWA STATE, NIGERIA**

¹Kabara, A. M., ²Rabi'u, I. ³Ibrahim, U. and ³Adamu, H. A.

¹Department of Agricultural Economics and Extension,
Aliko Dangote University of Science and Technology, Wudil.

²Agricultural Education Department, Jigawa State College of Education, Gumel, Jigawa State, Nigeria

³Department of Agricultural Extension and Rural Development,
Abubakar Tafawa Balewa University, Bauchi

Corresponding Author's Email: kabaramuazzam95@gmail.com,

GSM: 08031823077, 08136091784

ABSTRACT

The study aimed to analyze food security and coping strategies among rural farmers in Ringim Local Government Area of Jigawa State, Nigeria. The objectives of the study were to describe the socio-economic characteristics of the respondents, determine the food security status of rural farmers, determine factors influencing food security status among the rural farmers, identify coping strategies employed by the respondents, and identify food security constraints faced by the respondents. The study employed a three-stage random sampling technique in the selection of respondents. Data collected from primary sources were analyzed using descriptive statistics, logistic regression, and the food security index. Farm size, farm income, access to credit facilities, household size, were found to be significant determinants of food security status among rural farming households at 10%, 5%, 1% and 5% respectively. R-Square value was found to be 469, which means that 46.9% variation in the households' food security status is explained by the variables captured in the model. Major coping strategies employed by the respondents include skipping meals (26.4%), reduction in quality and quantity of food consumed (17.9%), and sales of assets (19.3%). Major constraints faced by the rural farming households were inadequate supply of farm inputs (14.3%), pests and diseases (9.3%), and limited access to credit (7.1%). The study concluded that the majority of the rural farming households in the study area were food insecure. The study recommends that the government ensure an adequate and timely supply of farm inputs like seeds, chemicals, fertilizers, etc. It also recommends that the Government should ensure the control, eradication, and maintenance of good surveillance of the major economic pests and diseases whose outbreaks are responsible for large-scale damage/loss to agricultural production.

Keywords: Food, Insecurity, Coping, Strategy, Rural.

INTRODUCTION

It is a widely accepted fact that food is a basic necessity of life. Its importance at the household level is obvious since it is a basic means of sustenance. Adequate intake of quality food is a key requirement for a healthy and productive life. Ojaleye (2014) asserted that food is useful for maintaining political stability and ensuring peace among people, while food insecurity can result in poor health and reduced performance of children. Food security in a broad sense consists of having at all times an adequate level of basic products to meet increasing consumption demand and mitigate fluctuations in output and prices. According to Abraham (2012), food security is widely seen as access by all people at all times to enough food for an active life, while food insecurity is the inability of a household or individuals to meet the required consumption levels in the face of fluctuating production, price, and income. At the national level, food security exists when all people at all times have the physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for active and healthy life, while at the household level, food security implies physical and economic access to food that is adequate in terms of quantity, safety and cultural accessibility, to meet each person's need (Ada, 2016). There exist four major elements in assessing food security, namely: availability, accessibility, utilization, and sustainability. While availability indicates the physical presence of a large quantity of food, accessibility implies that there is the ability to acquire the required



quantity; utilization means sufficiency in both quantity and quality of food; and sustainability means access at all times and not losing such access (Donavan, 2015).

Food insecurity poses a fundamental challenge in Jigawa State, while the task of providing enough food for the population has attracted considerable government policy intervention. The growth rate of food production in Jigawa State is, nevertheless, far below the population growth rate, with adverse consequences on the state's food security status (Jameel, 2015). In Jigawa State, food insecurity as a form of deprivation has been shown to affect many dimensions of well-being. Children from food-insecure households are more likely to have poor growth attainment, recurrent infections, inadequate energy and nutrient intakes, compromised learning ability, and psychological problems (Ibrahim, 2015). Jigawa State is facing worsening food insecurity as noted by FAO (2010), and this has led to a high incidence of malnutrition-related diseases, which not only undermine health but also hinder agricultural production in the State. As part of the state's contribution to increase food production, the Jigawa State Government implemented a Special Mass Food Production Program (SMFPP) between 2010 and 2013 to stimulate sustainable growth in agricultural production and enhance food security for the teeming population (JARDA, 2016). The study aimed at analyzing food insecurity status and coping strategies among rural farmers in the Ringim Local Government Area of Jigawa State.

MATERIALS AND METHODS

The study was conducted in the Ringim Local Government Area (LGA) of Jigawa State, Nigeria. It is located at a latitude of 12.1540° N, and a longitude of 9.1622° E. According to the 2024 National Population Commission (Web) and National Bureau of Statistics (Web) projections, Ringim local government has an estimated population of 598,567. Data was collected from a primary source. The data was collected with the aid of questionnaires that were administered using an interview schedule to the selected respondents.

A three-stage sampling procedure was employed to obtain the sample size in the study area. Stage one of the sampling procedure involved the random selection of five out of the 10 wards in the study area. Stage two involved random selection of 20% of the villages from the list of villages in each of the selected wards. The third stage involved random sampling of 20% of the population of the rural farming households from each of the villages selected in stage two, in proportion to the number of farmers per village.

Descriptive statistics (percentages and frequencies) and inferential statistics (food security index and logit regression analysis) were used to analyze the data. Logit regression model is a statistical method for analyzing a data set in which there are one or more independent variables that determine an outcome. The outcome was measured with a dichotomous variable (in which there are only two possible outcomes). In logit regression, the dependent variable is dichotomous or binary, i.e., it only contains data coded as 1 (food secured) or 0 (food insecure) (Girma, 2012). The model was specified as

$$Y_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e \dots (1)$$

Where:

Y_i = Food security status of the i th household (1= food secured), (0= food insecure)

x_1 = Household size (no)

x_2 = Farm size (hectares)

x_3 = Age of household head (Years)

x_4 = Access to extension service (yes = 1, 0 = otherwise)

x_5 = Years of farming experience

x_6 = farm income (in Naira)

x_7 = Household head access to formal education (yes = 1, 0 = otherwise)

x_8 = Household head membership of cooperative (yes = 1, 0 = otherwise)

x_9 = Household head access to credit (yes= 1, 0 = otherwise)

α = constant term

e = error term



The food security index was used to measure the household food security status. The households were classified into food-secure and food-insecure households using the food security index, where the food security line was estimated as two-thirds of the mean per capita expenditure of all the farmers. The formula was expressed as:

$$FSi = \frac{\text{per capita food expenditure for the } i\text{th household}}{\frac{2}{3} \text{mean per capita food expenditure of all households}} \dots (2)$$

Where:

FSi = food security index

FSi \geq 1 = food secure ith household

FSi < 1 = food insecure with household

A food-secured household is one whose per-capita food expenditure is above or equal to two-thirds of the mean per-capita food expenditure, while a food-insecure household is one whose per-capita monthly food expenditure falls below two-thirds of the mean monthly per-capita food expenditure (Tafida *et al.*, 2018).

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents

The result in Table 1 revealed that 30.7% of the respondents were between the ages of 30 and 39, 25.7% were between the ages of 40 and 49, while 14.3% were between the ages of 20 and 29 years. This indicates that the majority of the respondents were predominantly in their economically active age, hence they are energetic to cultivate large-sized farms for increased food production and engage in off-farm jobs to increase household income and food security. Things being equal, this age group was supposed to contribute positively to food security. However, if the youth are not participating in farming activities, the expected farm output cannot be achieved, and this can contribute negatively to food insecurity. The mean age of the household head was 43. According to Salisu (2017), younger household heads are in their active work life and can engage in diverse income-generating opportunities.

The majority of the respondents (33.6%) had secondary education, primary education (17.1%), tertiary education (16.4%), adult education (2.1%), and Quranic education (17.1%). About 13.6% of the respondents had no education at all. It also indicated that 36.4% of the respondents had household sizes of 6-10 persons, 24.3% of the respondents had household sizes of 11-15 persons, and 15.7% had household sizes of 16-20 persons. The size of the household affects its food expenditure and consumption patterns, hence its food security status. The average household size was found to be 13 persons. This implies that most of the rural farmers had large household sizes. Increasing family size could exert more pressure on the level of consumption since food requirements tend to increase with the number and composition of persons in a household. Distribution of the respondents according to their years of farming experience showed that 19.3% of the respondents had 16-20 years of farming experience, 18.6% had 6-10 years, and 12.1% had 21-25 years. The more experience a farmer has, the more efficient and effective that farmer is likely to be. Further, the majority (81.4%) of the respondents had farm sizes of 1-3 hectares. In the study area, population growth has led to a high level of farmland fragmentation; hence, acquiring large plots of farmland for farming is becoming a difficult task. The results further revealed an average farm size of 3 hectares. This indicates that the majority of the respondents are small-scale farmers; hence, food production is at the subsistence level. This may affect their agricultural output since food production increases extensively through the expansion of areas under cultivation.

The distribution of the respondents according to cooperative membership, as it can be seen by the result, showed that the majority (79.3%) of the respondents were non-members of the cooperative, and only 20.7% were cooperative members. The result further noted that the majority (94.3%) of the respondents had no access to credit facilities. This was due to the non-availability/accessibility of credit sources as well as their inability to meet the conditions in terms of interest rates and payment periods, hence affecting their food security status. Lack of access to credit sources has negative impacts on households' income and food demand in the short and long run (Ahmad, 2015).



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Lastly, it was revealed that the majority of the respondents (65.7%) had no contact with extension agents. Lack of contacts with extension agents could be attributed to the inadequate funding of extension in Nigeria by the government, and this may reduce the chances of households having access to better crop production techniques, improved inputs, as well as other production incentives provided by extension agents. Poor access to extension agents could pose constraints to households in achieving sustainable food security (Gabriel, 2010).



Table 1: Distribution of Respondents According to their Socio-Economic Characteristics

<i>Varibales</i>	<i>Frequency</i>	<i>Percentage</i>
Age (Years)		
20-29	20	14.3
30-39	43	30.7
40-49	36	25.7
50-59	19	13.6
60 and above	22	15.7
Gender		
Male	137	97.9
Female	3	2.1
Level of Education		
Primary	24	17.1
Secondary	47	33.6
Tertiary	23	16.4
Adult	3	2.1
Quranic	24	17.1
Never been to school	19	13.6
Marital Status		
Single	0	0.0
Married	140	100
Widow	0	0.0
Divorced	0	0.0
Household Size		
1-5	15	10.7
6-10	51	36.4
11-15	34	24.3
16-20	22	15.7
21-25	8	5.7
26 and above	10	7.1
Years of Farming Experience		
1-5	14	10.0
6-10	26	18.6
11-15	14	10.0
16-20	27	19.3
21-25	17	12.1
26-30	14	10.0
31 and above	28	20.0
Farm Size		
1-3	114	81.4
4-6	21	15.0
7-9	4	2.9
10-12	1	0.7
Cooperative Membership		
Yes	111	79.3
No	29	20.7
Access to Credits		
Yes	132	94.3
No	8	5.7
Access to Extension Contacts		
Yes	132	94.3
No	8	5.7
Total	140	100

Source: Field Survey, 2024



Food Security Status of the Respondents

The result in Table 2 indicated that the majority of the respondents (76.4%) were food insecure, while only 23.6% were found to be food secure. Food insecurity is a reflection of poor economic growth in any state or nation, and it can lead people to a state of poverty and destitution. Implicitly, if a household is poor, the effect may trickle down to the last member of that household. If a household is food insecure, the consequence may reflect on all the members of that household in terms of their health, welfare, and education, among others, which can greatly affect their well-being being thereby affecting the entire community. The high incidence of food insecurity among the respondents conforms to several research works that there is a high incidence of food insecurity in rural Nigeria (Ahmad, 2010; Tahir, 2012; Idrisa, 2020 Adegbenga, 2014; and Ada, 2016).

Table 2: Distribution of the Respondents According to their Food Security Status

Food security status	Frequency	Percentage
Food secured	33	23.6
Food insecure	107	76.4
Total	140	100

Source: Field Survey, 2024

Factors Affecting Food Security Status among the Respondents

The result in Table 3 revealed that household size has a negative coefficient that was significant at 5% level, implying that as the household gets larger, the probability of food security decreases. Also, an increase in household size necessitates an increase in household food expenditure, especially in a situation where many of the other household members did not generate any income but only depended on the household head. According to Wiehl (2015), large-sized households are more likely to be food insecure than small-sized households. The coefficient of the variable (-.086) implies that 1% increase in the household size will reduce the likelihood of the household to be food secure by -0.08%.

Farm size was found to be positive and significant at the 10% level. This implies that the likelihood of households being food secure increases with an increase in farm size. Farmland holding is a basic asset in farming households' livelihood. The result indicates that households with larger farm sizes were likely to produce more food. It is expected that efficient use of land resources and modern agricultural practices will ensure food security in households. This result agrees with the findings of Salisu (2017), who found the farm size of the household head to be significant and positively related to food security. The coefficient of the variable (.450) implies that 1% increase in farm size will increase the likelihood of the household to be food secure by 0.45% (Salisu, 2017).

Household farm income was positive and significant at 1% level. This indicates that the higher the household income, the higher the probability that the household would be food secure. It is imperative, therefore, that an increase in household income, other things being equal, means increased access to food and is a sure way of combating food insecurity. This could be expected because increased income, other things being equal, means increased access to food. This finding buttresses the views of Suraj (2013). The coefficient of the variable (.5733) implies that 1% increase in household farm income will increase the likelihood of the household to be food secure by 0.57% (Suraj, 2013).

Household access to credit facilities is also a crucial factor in determining food security status, as it had a positive coefficient and was significant at 5% level. This indicates that access to credit facilities tended to positively influence the food security level of households. Credit is an important means of investment, and households that have access to credit can invest in preferred businesses and earn more income, resulting in increased financial capacity and purchasing power, thus reducing the risk of food insecurity. Simon (2012) noted that farming households with good access to credit facilities have a greater probability of being food secure than those without credit facilities. The coefficient of the variable (1.7987) implies that 1% increase in household access to credit facilities will increase the likelihood of the household to be food secure by 1.8%.

Table 3: Determinants of Food Security Status of the Respondents

Variables	B	SE	Wald	Df	Sig	Exp(B)
Constant	-.546	1.141	.229	1	.632	.579
Household size	-.086	.042	4.117	1	.042**	9.18
Farm size	.450	.253	3.157	1	.076*	1.568
Age	.001	.039	.000	1	.983	1.001
Extension contact	.907	.487	3.475	1	.062*	2.478
Farming experience	.058	.043	1.801	1	.180	1.060
Farm income	.5733	.0067	4.3590	1	.0010***	2.1000
Educational level	.166	.539	.095	1	.758	1.181
Access to credits	1.798	.756	5.656	1	.017**	6.040
Cooperative membership	-.70	.453	.024	1	.878	.933

Source: Field Survey, 2024

R-Square=.469, *** Significant at 1% level, **Significant at 5% level, *Significant at the 10% level

Food Security Coping Strategies

The result (Table 4) indicated that the major coping strategies employed by the respondents in the study area in cushioning the effects of food insecurity include skipping meals (26.4%), sales of assets (19.3%), and reduction in quantity and quality of food consumed (17.9%). Due to high food prices and lower income, households resorted to skipping meals as their major coping strategy to cushion the food insecurity. This result implies that it might affect their nutritional status, health, and well-being, thereby affecting their food security situations. This could also have a long-term negative effect on the food security status of households in particular and the entire society in general. Moreover, skipping and reducing food help farmers to maximize the utilization of available food for a relatively long period while they go through malnutrition.

Table 4: Distribution of Respondents According to Coping Strategies Employed in Cushioning the Effects of Food Insecurity.

Coping strategies	Frequency	Percentage	Rank
Borrowing money to buy food	15	10.7	4 th
Skipping meal	37	26.4	1 st
Consumption of less-prepared food	10	7.1	
Reduction in the quality and quantity of food consumed	25	17.9	3 rd
Sales of assets	27	19.3	2 nd
Begging for food on the street	12	8.6	5 th
Using money meant for other purposes to buy food	6	4.3	7 th
Purchasing food on credit	8	5.7	6 th
Total	140	100	

Source: Field Survey, 2024

Food Security Constraints

The result in Table 5 presents the constraints faced by the respondents as regards to food security in the study. The three major constraints, as indicated by the respondents in the study area, were inadequate supply of farm inputs (33.6%), pests and diseases (14.3%), and limited access to credits (13.6%). Other constraints were poor extension services (12.1%), lack of storage facilities (9.3%), flooding (7.1%), and farmers/herder conflicts (5.7%). Agricultural farm inputs are the bedrock of



farming. If they are found in adequate amounts, they can obstruct the government's objective of achieving food security. Pest and disease problems can significantly reduce farm output and pose a serious risk to primary producers as they can increase production costs. Limited access to credit facilities has a great influence on income-generating activities. Also, household purchasing power may be eroded in case of high costs of food items, thereby reducing access to food. This result is in agreement with that of Salisu (2017), who revealed that inadequate supply of farm inputs (41.8%), pests and diseases problems (20.1%), and limited access to credits (18.5%) as major constraints faced by his respondents as regards food security. Similarly, the results of Abimbola *et al.* (2020) found that inadequate supply of farm inputs (33%), lack of storage facilities (17%), pests and diseases (25%), and lack of extension agents' contact (10%) as major constraints to food security.

Table 5: Distribution of Respondents According to Food Security Constraints

Constraints	Frequency	Percentage	Rank
Pests and diseases	20	14.3	2 nd
Poor marketing facilities	4	2.9	8 th
Flooding	10	7.1	6 th
Drought	2	1.4	9 th
Lack of storage facilities	13	9.3	5 th
Farmers/herder conflicts	8	5.7	7 th
Poor extension services	17	12.1	4 th
Limited access to credits	19	13.6	3 rd
Inadequate supply of farm inputs	47	33.6	1 st
Total	140	100	

Source: Field Survey, 2024

CONCLUSION AND RECOMMENDATIONS

It can be concluded from the study that majority of the farmers were food insecure. Also, household size, farm size, access to credit facilities, farm income, and access to extension contact were significant determinants of households' food security in the study area. It can further be concluded that the 3 major coping strategies employed by the respondents in the study area in cushioning the effects of food insecurity include skipping meals, sales of assets, and reduction in quality and quantity of food consumed. With regards to constraints faced by the respondents as regards food security in the study area, it is concluded that the three most vital constraints as indicated by the respondents were inadequate supply of farm inputs, pests and diseases, and limited access to credit.

Based on the study findings, the following recommendations were made in an attempt to improve the food security status of the respondents in the study area: food insecurity coping strategies adopted by the respondents can only minimize the impact of food insecurity. Therefore, there is a need for households to adopt more sustainable approaches, such as engaging in income-generating activities, such as petty trading and other off-farm activities. Enlightenment programs on health education and birth control measures should be directed by the authority concerned to the respondents. This is aimed at reducing the large family size observed in the study area, which could have effects on household food security.

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