ANALYSIS OF FOOD SECURITY COPING STRATEGIES AMONG FARMING HOUSEHOLDS IN YAGBA EAST LGA, KOGI STATE

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ABSTRACT
The study analysed the food security coping strategies among farming households coping strategies in Yagba East Local Government of Kogi State. Two stage sampling procedures were used to select two hundred and twenty-five (225) rural farming households. A structured questionnaire with an interview schedule was used for data collection. The data were analysed using frequency counts, and percentages, food security index and logit regression model. The result revealed that 77.3% of farming households were male with a mean age of 43.8 years. The farming experience and average household size of the respondents were 12.6 years and 7 persons respectively. Over 60% of the households were food insecure with a mean per capital expenditure of N126,264.444 and a food security line of N84,176.3 per annum. The coefficient of age (-0.0818006), household size (-0.0883087), educational level (0.36731) and annual income (0.4168275) affected the household's food security. The most common food insecurity coping strategies adopted by the respondents were reduced intake of expensive food (93.3%), using savings to buy food (92.9%) and reduction in daily food intake (89.3%). The constraints to food security were insufficient credit ($\bar{x}$=2.66), limited access to land ($\bar{x}$=2.46) and poverty ($\bar{x}$=2.36). The biggest constraints to household's food security were insufficient credit, limited access to farmland and poverty. It is recommended that more farmlands be devoted to farming to address the problem of the food shortage. Also, household should be trained by extension specialists on how to make better opportunities from the coping strategies available. Proper methods of pest and disease control should be prioritized to reduce farm and post-harvest losses.

Keywords: Coping, strategies, Constraints, Food security, Rural households, Yagba East Local Government

INTRODUCTION
Household food security is the access, at all times, to adequate food for an active and healthy life, which includes access to nutritionally safe foods and assured ability to acquire foods in socially satisfactory ways (Food and Agriculture Organisation, 2011). Food security is defined in terms of availability, accessibility, utilisation and suitability over time (Peng and Berry, 2019). A country is said to be food secure when the inhabitants have adequate and highly nutritious food to eat without the fear of starvation. A household is food secure when it can reliably gain access to sufficient food quality and quantities for a healthy life (Usman *et al.,* 2021a). Food insecurity is the process by which households fall below the required threshold of food intake. That is the inability of an individual or household to meet the consumption levels in the face of fluctuating production, prices and income as well as poor market and other infrastructure to transport food commodities from producers to consumers (Usman *et al.,* 2021b). Food insecurity exists when individuals or households lack secure access to sufficient quantities of safe and nutritious food for normal growth and development (Eneyew, 2012). A household is said to be experiencing food insecurity when it cannot have physical and economic access to food. Food insecurity may occur in rural households' populations because of inability to produce adequate food and lack of purchasing power. Baruwa and Adesuyi (2018), defined coping strategy as "all the strategically selected acts that individuals and households in a poor socioeconomic position use to restrict their expenses or earn some extra income to enable them pay for the basic necessities (food, clothing, shelter) and not fall too far below their society's level of welfare". According to Abimbola and Adejare (2013), coping strategies are mechanisms through which households or community members meet their relief and recovery needs, and adjust to future disaster related risks by themselves without outside support. Households adopt and develop diversified coping strategies as a response which people use at the time of a decline in food availability. Food insecurity persists in Nigeria despite the engagement of many people in either part-time or full-time farming. Food insecurity over the years has worsened as a result of farmers–pastoralist conflict, climate change and poor government policies (Suleiman and Kasimu, 2022). Food insecurity among rural households have increased due to households' poor attitude to diversification, inadequate access to credit facilities

and lack of insurance among the rural farming populace (Chiemela *et al*. 2022). The effects of food insecurity are mostly felt in the Northern part of Nigeria where hunger and starvation are serious menace. Lack of adequate access to nutritious and rich diet foods has also contributed to tropical diseases and serious challenges in Nigeria. Adoption of coping strategies is vital tool to food security in Nigeria. The objectives of the study are to: describe socio-economic characteristics of the respondents in the study area, determine the level of food security of rural households, determine the effects of the socio-economic variables on the respondents' food security status, identity food security coping strategies and examine the constraints to the household food security.

METHODOLOGY

This study was carried out in Yagba East Local Government Area of Kogi State, Nigeria. Yagba East has 21 Local Government Areas with the headquarters in Isanlu. The LGA is between Latitude 8° 16'60.00" North and Longitude 5° 49'59.99" East. The Local Government was created in 1991 with an area of 1396 km^2 and an estimated population of 199,300 (NBS, 2017). The people of Yagba East Local government live in various rural villages and their, the major occupation is farming and trading practised at a subsistence level. The soil is viable for growing crops such as yam, maize, cassava, sorghum, cashew, cocoa, oil palm and coffee. Data were collected by the researcher assisted by trained enumerators using well-structured questionnaires. Two stage sampling technique was employed for this study. The first stage involved random of six (6) villages in the study area. The second stage involved the proportional selection of 10% of the rural households. Primary data was used for this study. The data was collected using questionnaire. Data were collected on the respondents' socio-economic characteristics, the level household food security, coping strategies of food security, effects of socio-economic factor on household food security and constraints to household's food security using a well-structured questionnaire. Data were analysed using descriptive statistics such as frequency counts, percentage, mean, and food security index and logit regression model.

Table1: Sample Frame

Yagba East	Communities	Population	Sample size (10%)
	Ife-olukotun	658	66
	Odo Ponyan	422	42
	Ijowa	309	31
	Mopo	341	34
	Alu	301	30
	Ilafin	222	22
Total	6	2253	225

Analytical technique

Food security Index

The food security index is based on whether the household is food secure or insecure ($F_i \geq 1$=food secure household and $F_i < 1$=food insecure household).

Food security model:

$$Fi = \frac{per\ capita\ food\ expenditure\ of\ ith\ household}{\frac{2}{3} mean\ per\ capita\ food\ expenditure\ of\ all\ household} \quad (1)$$

Where:
Fi = food security index
Decision Rule:
When Fi ≥1, it implies that ith household is food secure, but when Fi< 1, it implies that the ith household is food insecure.

Logit regression index

Socio-economic factors influencing food security among rural households were achieved using logit regression, both the implicit and the explicit models are specified below

Food security (Y) is a function of =f(X_1, X_2, X_3, X_4, X_5, X_6, X_7.....X_n)

$Y = (b_o+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7+U)$

Y = Food security (1 if secure and 0 otherwise)
X_1 = Age (years)
X_2 =Household size (number)
X_3 = Farming experience (years)
X_4= Education (years)
X_5 = Annual farm income (N)
X_6 = Income from other sources (N)
X_7= Extension contacts (number)

RESULTS AND DISCUSSION

Socioeconomic characteristics

The result in Table 2 revealed that 77.3% of the respondents were male while 22.7% were female. More males might be attributed to involvement of women in domestic activities and may also be because majority of the households in Nigeria were headed by men. The mean age of the respondents was 43.8 years. It implies that most of the respondents are at the productive age and are expected to engage in productive and viable

enterprises to reduce food insecurity. The mean household size was seven (7) persons. This implies that the household had large family size. This could hurt food security considering the present inflation rate across Nigeria. The average farming experience of respondents was 12.7 years, implying that the household have been practicing farming for a long time. A reasonable number of years in farming might have equipped the households with proper and improved farming skills that could have positive effect on food security. Over 80%of the respondents were literate. The high literacy could motivate the adoption of new practices and increase farm output. This finding agrees with Usman *et al.* (2021) that households will high literacy tend to be more innovative in the accessing information for improved livelihood.

Table 2: Distribution of respondents according to socioeconomic characteristics (n=225)

Variables	Frequency	Percentage	Mean
Sex			
Male	174	77.3	
Female	51	22.7	
Age			
≤30	13	5.8	43.8
31-40	135	60.0	
41-50	56	24.9	
>50	21	9.3	
Household size			
1-5	67	29.8	
6-10	136	60.4	7
11-15	22	9.8	
Farming experience			
≤10	56	24.9	
11-20	134	59.6	12.6
21-30	33	14.7	
>30	2	0.9	
Educational level			
Non formal	23	10.2	
Primary	78	34.7	
Secondary	101	44.9	
Tertiary	23	10.2	

Sources: Field survey, 2021

Food Security Status

The result in Table 3 revealed that the farming household's mean per capita expenditure was N126264.444 while the food security line was N84176.30. The study shows that most (68.9%) were food insecure. This might be attributed to the inability of the households to venture into viable enterprises and the poor attitude towards diversification among the rural farming populace. This contradicts the findings of Usman *et al.* (2021), who reported that most farmers in Niger State of Nigeria were food secure.

Table 3: Distribution of respondents according to food security status (n=225)

Variables	Frequency	Percentage
Food secure	70	31.1
Food in secure	155	68.9
Minimum	15000	
Maximum	380000	
MPCFE	N126,264.444	
Food security line	N84,176.3	

Sources: Field survey, 2021

MPCFE=Mean per capital food expenditure of all households

Socioeconomic factors influencing food security

The result in Table 4 revealed that age (r=-0.08; p<0.1) and household size (-0.09; p<0.05) negatively influence household food security. This implies that as household heads advance in age, their food security reduce. Also, an increase in household size will reduce the food security status. This finding agrees with that of Akanji *et al.* (2020) that large household sizes negatively influenced food security among women farmers in Oyo State of Nigeria.

Education level (r=0.37; p<0.05) and annual income (r=0.42; p<0.05) of the respondents positively influence household food security. This implies that literacy level of the respondents increases food security while increase in income will enhance the food security status of the household. This finding is in consonance with that of Godwin and Aondonenge (2016) who reported that a higher literacy and annual income increases food security of rural and urban households in Benue State, Nigeria.

Table 4: Distribution of respondents according to socio-economic factors influencing food security (n=225)

Variables	Coefficients	Std. Err	Z-value
Age	-0.0818006	0.0463889	-1.76*
Household size	-0.0883087	0.042063	-2.10**
Farming experience	0.609266	0.3750739	1.62
Education level	0.36731	0.1797006	2.04**
Annual farm income	0.4168275	0.2077937	2.01**
Income from other sources	0.2665	0.283865	0.94
Access to extension	0.4378218	0.4532703	0.97
Constant	3.662307	4.035122	0.91
Log likelihood	-111.53311		
Chi2	24.92***		
Pseudo R2	21.0%		

Sources: Field survey, 2021

** Significant at 5% level of probability, *=Significant at 10% level of probability

Food security coping strategies

Table 5 indicated that majority (93.3%) of the respondents reported that reduce intake of expensive food was the most coping strategy used for food security while 92.9% save up to buy food. This implies that reduction in the intake of expensive foods and diverting saving to purchase food are the frequently used coping strategies for curbing food insecurity by the respondents. This finding agrees with Baruwa (2018) who reported that a reduction in food intake and diversion of funds in purchasing food are part of the coping strategies for food insecurity in Nigeria. Also, 89.3% of the respondents also indicated that reduction in daily food intake also help them to cope with food insecurity. This finding is in agreement with the study of Sambo *et al.* (2020) who stated that reductions in both daily food intake and amount of food consumed are strategies used by rural populace in Kaduna State of Nigeria to address food insecurity. In addition, 80.9% and 80.8% of the respondents indicated that selling of stored farm products to purchase other food items and borrowing money to purchase food respectively were coping strategies for food security. The least coping strategies for food insecurity were selling households' assets, borrowing money from spouses and relying on their relatives to feed families. The finding supports that of Akanji *et al*. (2019) who stated that coping strategies are important measures to address shortage and inadequate access to food among women farmers in Ogbomoso Agricultural Zone of Oyo State, Nigeria.

Table 5: Food security coping strategies (n=225)

Variables	Frequency	Percentage	Ranking
Reduce intake of expensive food	210	93.3	1st
Using saving to buy food	209	92.9	2nd
Reduction in daily food intake	201	89.3	3rd
Selling stored farm products to purchase other food items	182	80.9	4th
Borrowing money to purchase food	182	80.8	5th
Sale of livestock	167	74.2	6th
Bowing of food from family and friends	129	56.0	7th
Selling of household assets	111	49.3	8th
Borrowing money from spouses	98	43.6	9th
Relying on relatives to feed the family	37	16.4	10th

Sources: Field survey, 2021

Constraints to household's food security

The major constraints to household's food security among the respondents in Table 6 were insufficient credit ($\bar{x}$=2.66), limited access to farmland ($\bar{x}$=2.24), poverty($\bar{x} = 2.36$), poor nature of the soil ($\bar{x} = 2.23$), and poor weather condition($\bar{x} = 2.23$). This implies that inadequate credit facilities are a serious challenge to food security. This finding agrees with Godwin and Aondonenge (2016) who reported inadequate credit

as one of the major problems to food security in Benue State of Nigeria. Limited access to farmland has increased over the years due to the activities of herders and depletion in soil fertility of the available lands. Poverty has increased due to poor output and a lack of access to job opportunities among the youths. Overgrazing of the land by pastoralists most times has affected the structure and texture of the soil thereby leading to land fragmentation.

Table 6: Constraints to household's food security (n=225)

Variables	Very serious	Serious	Not serous	Sum	Mean	Decision
Insufficient credit	165 (73.3%)	43 (19.1%)	17 (7.5%)	598	2.66	Serious
Limited access to farmland	150 (66.7%)	28 (12.4%)	47 (20.8%)	553	2.46	Serious
Poverty	123 (54.7%)	59 (26.2%)	43 (19.1)	530	2.36	Serious
Poor nature of the soil	86 (38.2%)	127 (56.4%)	12 (5.3%)	524	2.33	Serious
Poor weather condition	101 (44.9%)	74 (32.9)	50 (22.2%)	501	2.23	Serious
Pest and diseases infestation	127 (56.4%)	12 (5.3%)	86 (38.2%)	491	2.18	Serious
Crisis/war	71 (31.6%)	25 (11.1%)	129 (12.9%)	392	1.74	Not serious

Sources: Field survey, 2021

CONCLUSION AND RECOMMENDATIONS

It can be concluded that most of the respondents were males, they were young with large family sizes. Most of the rural households were food insecure. The coefficient of age, household size, education and annual farm income had influence on the food security status of rural households. The most common food security coping strategies adopted by the respondents were reducing intake of expensive food, use of savings to buy food and reducing the quantity of daily food intake. The biggest constraints to household's food security were insufficient credit, limited access to farmland and poverty. It is recommended that more farmlands be devoted to farming to address the problem of the food shortage. Also, household should be trained by extension specialists on how to make better opportunities from the coping strategies available. Proper methods of pest and disease control should be prioritized to reduce farm and post-harvest losses.

REFERENCES

Abimbola, A. O. and Adejare K. A. (2013). Food insecurity status of rural household, during the post planting season in Nigeria. *Journal of Agriculture and Sustainability*, 4 (1), 16-35.

Akanji, E. N., Okunade, E. O., Rahman, S. B. and Ayanwusi, A. K. (2020). Coping strategies off women farmers with households' food insecurity in Ogbomoso agricultural zone, Oyo State, proceedings of the 29th Annual National Congress of the Rural Sociological Association of Nigeria (RUSAN) held at Landmark University, Omu-Aran, Kwara State, 12th -16th October 2020, 71-74.

Chiemela, S. N., Chiemala, C. J., Apeh, C. J. and Ileka, C. M. (2022). Households Food and Nutrition in Security in Nigeria, *Journal of Agricultural Extension* 26 (2), 12-23

Eneyew, A. (2012). Determinants of Livelihood Diversification in Pastoral Societies of Southern Ethiopia. *Journal of Agriculture and Biodiversity Research*, 1(3), 43-52.

Food and Agriculture Organisation, Rome, Italy. Food and Agriculture Organization (FAO) (2011). *Proceedings Measurement and assessment of Food Deprivation and Under-nutrition*. *International Scientific Symposium*, Rome, June 26-28.

Godwin, A. A. and Aondonenge, S. (2016). Analysis of Factors Affecting Food Security in Rural and Urban Farming Households of Benue State, Nigeria, *International Journal of Food and Agricultural Economics,* 4 (1), 55-68

National Bureau of Statistics (NBS) (2017). Labor Force Statistics: Volume 1 Abuja: National Bureau of Statistics (NBS).

Peng, W. and Berry, E. M. (2019). The Concept of Food Security. In Ferranti, P., Berry, E. M., Anderson, J. R. (Eds), *Encyclopedia of Food Security and Sustainability*, 2, 1-7.

Sambo, A. S., Mustapha, A. & Suleiman, A. (2020). Analysis of Rural-Urban Migration on Food Security Status of Farming Households in Kaduna State, Nigeria, *African Scholar Journal of Agriculture and Agricultural Technology,* 19 (1), 235-254.

Suleiman, M. B. and Kasimu, S. (2022). Effects of climate change induced farmers-herder conflicts on socio-economic development of farmers in Giwa local government area, Kaduna state, Nigeria. *Dutse Journal of Pure and Applied Sciences*, 8 (4), 129-139

Usman, N. S., Tsado, J. H., Salihu, I. T., Ajayi, O. J., Alhassan, I. L., Isah, K. H., Pelemo, J. J., Jubrin, S. and Lawal, M (2021a). Assessment of Food Security and Livelihood Status of Rural Households Adopting Improved Rice Varieties in the North Central, Nigeria, *Proceedings of 30th*

Annual National Congress of Rural Sociological Association of Nigeria (RUSAN) held at Federal University of Agriculture, Abeokuta, 4th-8th October, Pp.29-30.

Usman, N. S., Tsado, J. H., Salihu, I. T., Ajayi, O. J., Aliyu, U., Pelemo, J. J., Alhassan, I. L, Isah, K. H. and Jubrin, S. (2021b). Assessment of Food Security and Livelihood Status of Rural Households Adopting Improved Rice Varieties in Kwara and Niger, Nigeria. *Baddegi Journal of Agricultural Research and Environment,* 03 (03), 80-87