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ANALYSIS OF FOOD SECURITY STATUS OF FARMING HOUSEHOLDS IN TARABA STATE, NIGERIA

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Abstract

The study analyzed food security status of farming households in Taraba State, Nigeria. A multi-stage sampling technique was used in selecting 398 farming households for the study. Data were collected through the use of questionnaire and analyzed using descriptive statistics and food security index, The result revealed the mean age, mean households size, mean farming experience and mean monthly household income of the respondents in the study area as 43.8 years, 9 persons/households, 18.5 years and N64,334 respectively. Estimates from food security index shows that more than half (52.3%) of the households were food insecure with food security index of 0.75, food insecurity gap and severity indices of 0.398 (40%) and 0.158 (16%), respectively. The leading causes of food insecurity identified were 'high food prices' (92.7%), 'high price of agro inputs' (90.7%), and 'high fuel price/transportation cost' (86.4%). The study concludes that the ratio of mean household monthly income of N64,334/month to the mean of 9 persons per household which is N266.7/capita/day is insufficient to guarantee food security, given the acceptable living standard of $1.25/capita/day (equivalent of N2062/capita/day at $1 = N1650). Similarly, the available kcal/capita/day for food insecure households was 1,643 which is far below the recommended level of 2,730kcal/capita/day. It is therefore recommended that appropriate policy interventions should focus on parameters that promote food security such as support and investment in skill-base education and income frontiers, financial inclusion and institutional support to foster human capital development. In addition, farmers are encouraged to diversify their revenue streams, improve in their savings and reinvestment to build up their food and asset base to assist their households to live beyond daily calorie requirement.

Keywords:

Analysis, food security, farming households, Taraba State.

INTRODUCTION

In spite of the world's ability to feed everyone, progress towards food security is still under threat (FAO, 2022). The daunting question of access and/or equitable distribution accounts largely for the high incidence of food insecurity in many parts of the globe, especially in developing countries where easy access to food is abysmally beyond the reach of many

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citizens (GIZ, 2024). This scenario reaffirms Sen's position as to why people die of hunger not just from lack of food, but due to lack of entitlement or access to food (Ahungwa *et al*., 2023). In Nigeria, food security is ranked topmost amongst the recurrent development challenges and the pursuit of food security is considered as the current fundamental objectives of development policies (FAO *et al*., 2023). Despite the nation's abundant natural and human resources, available indicators attested that food security is prevalent in Nigeria. For instance, in the 2024 Global Hunger Index, Nigeria was ranked 109th out of 125 countries (The Economist, 2024)

Taraba State as an agrarian State has about 85% of its population residing in rural areas where majority of them (90%) derive their livelihood from farming (NBS, 2023). Despite the agricultural potentials and importance of farming in the State, there is significant concern regarding food security status of the farming households in the State (Sanusi *et al.*, 2023). Farming households in the State face numerous challenges, including climate variability, flooding, high cost of food and farm inputs, farmers-herders' conflict, tribal conflict and poor post-harvest loses (Egbeadumah *et al*., 2025).This scenario define most of the farming households to be seasonally or perpetually food insecure.

Although several studies have examined household food security status in Nigeria, there is limited recent evidence on the food security studies of farming households in Taraba State. Existing studies have often focused on other regions, relied on single measures of food security and paid insufficient attention to the underlying causes of food insecurity. This knowledge gap necessitate an empirical investigation into the food security status and causes of food insecurity among farming households in Taraba State. The specific objectives of this study were to:

i. describe the socioeconomic characteristics of the farming household heads in the study area.
ii. examine the food security status of the farming households in the State.
iii. identify the causes of food insecurity among the farming households.

METHODOLOGY

The Study Area

Taraba State is located in the North-Eastern region of Nigeria between Latitudes 6.25` and 9.30` North of the Equator and Longitudes 9.30` and 11.45` East of the Greenwich Meridian (CDF, 2016). The State shares boundaries with Gombe and Bauchi States in the North, Adamawa State in the east and Cameroon Republic in the south. The State is bounded along its western side by Plateau, Nasarawa and Benue States. The State has a land area of 54, 428km$^{2.}$ However, the 2016 estimates put the population of the State at 3,438,204 million people (NPC, 2016) with estimated total farm-families of 625,336 (Ahmed *et al* 2015). The estimated population of the state from 2016 to date (2025) at the current growth rate of 3.5% is 4,685,913 million. Taraba State has 16 Local Government Areas; Yoro, Ardo-Kola, Karmi Lamido, Lau, Zing, Gashaka, Sarduna, Bali, Kurmi, Gassol, Wukari, Takum, Donga, Ibi, Ussa and Jalingo as the State capital. The state is located in the Northeastern part of the country where majority of the population are heavily dependent on farming for food supply and income generation (Johnson & Jackson, 2020). The region benefits from a favorable climate and fertile soil, which support the cultivation of various crops such as maize, yam, rice, cassava, millet, sorghum, ground nuts and vegetables. Livestock rearing, including cattle, goats, and poultry, also contribute to the agricultural production in the area (Grace & Martina, 2020).

Sampling Procedure and Sample Size

A multi-stage sampling technique was used in selecting 398 farming households for the study. Yamane's formula for determining sample size at 5.5% margin of error was used to select sample households (Yamane, 1967), while the Bowley's proportion allocation formula was used to establish the sample size at each stratum. In the final stage, a total of 398 farming households were selected randomly as presented in Table 2. The household heads or any delegated member(s) of the household was interviewed (Vhurumuku, 2024) to elicit the needed information for the study (Table 2).

Table 1: Sampling Frame and Sample Size Selection Matrix

Zone	LGA	No. of Wards	Wards selected (17%)	Villages selected	No. of households	Sampled households
Southern	Wukari	17	Kente	Chinkai	62	17
				Sondi	49	14
			Bantaje	Gindin Dorowa	47	14
				Bantaje	59	17
			Rafin Kada	Kpanawa	61	18
				Rafin Kada	86	25
	Takum	11	Dutse	Dutse	68	20
				Tampa	43	12
			Chachanji	Dogon Gawa	71	21
				Yelwa	52	15
Central	Bali	11	Suntai	Garin Garba	60	17
				Gobir	44	13
			Ganglari	Gankida	63	18
				Jangare	49	14
	Gashaka	10	Jamtari	Mayo Jamtari	39	11
				Adda Goro	47	14
			Mayo selbe	Goje	65	17
				Mayo Jarandi	59	17
Northern	Gassol	12	Gunduma	Garin Garba	50	14
				Lariski	44	13
			MutumBiyu	Kachela	61	18
				Mutum Biyu	67	20
	Lau	12	Garin Dogo	Lushi	31	07
				Minda	41	12
			Jimlari	Ardido	42	12
				Lubbe	33	08
Total	**6**	**72**	**13**	**26**	**1393**	**398**

Source: Field Survey, 2023

Method of data Collection

The demand for data in this study was satisfied by primary source. Primary data was collected mainly from the respondents with the aid of questionnaire which was designed into the following sections: **Section A**: Socioeconomic characteristics of the farming household head; **Section B:** Information on household food consumption, with particular emphasis on the type of food, form and quantity consumed, detailing the amount of food available at the disposal of the household in comparison to food requirement; **Section C:** Information pertaining to the potential causes of food insecurity as perceived by the respondents;

Data Analytical Techniques

Data collected were analyzed using descriptive statistics and Food Security Index (FSI) estimation

Household food security index

To establish food security status of farming households in the study area, the study constructed Food Security Index (*Zi*) and determined the food security status of each household based on the food security line using the Recommended Daily Calorie Required approach as used by Mequanent *et al.,* 2023. Households whose Daily Calorie Intake were equal or higher than Recommended Daily Calorie Required (2,730 kcal) were considered food secure households and those whose Daily Calorie Intake were below the Recommended Daily Calorie Required were considered food insecure households.

The Food Security Index is given as:

$$Z_i = \frac{Yi}{R} \quad \ldots(1)$$

Where;

Z_i = Food Security Index of i^{th} household,

Yi = Estimated Daily Calorie Intake of i^{th} households

R = Recommended Daily Calorie Requirement of i^{th} household.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Farming Households

Results of socioeconomic characteristics investigated in this study were presented in Table 2. These include age, household size, farming experience and household monthly income. The distribution of the age of household heads showed that 32.4 and 29.1% of the sampled household heads were within the age category of between 41 and 50, and between 31 and 40 years respectively. Furthermore, 16.6 and 15.6% were in the age categories of between 51 and 60 and 21 and 30 years, respectively. However, only 6.3% of the sampled household heads were above 60 years of age. The distribution of age in this manner is an indication that, majority (61.5%) of the household heads in the State spanned across the age limit of 31 - 50 years, which could be regarded as agriculturally active age. Averagely, 43.8 years characterize the totality of the household heads age. This result is in harmony with Ahmed *et al*., (2024), where 41.73 years was reported as the average age of farming household heads in Northern Nigeria. This implies that household heads in the State are active, productive and virile to engage in farm work, but are skewed to the verge of declining agricultural productivity. The aggregate

household size in Table 2 showed that, 46.0 and 23.9% of the households had between 6 and 10 members, and 1 and 5 persons respectively, while only 15.6 and 14.7% of the households had between 11 and 15 and 16 and 20 persons respectively. On the average, the household size of 8.7 members was obtained, connoting large household sizes that exceeded the prevailing national average of 4.6 persons per household (FAO *et al*., 2023). This implies that the presence of relatively large number of household members will place high demand on available calorie and other household resources.

Table 2: Descriptive Statistics of Age, Household Size, Farming Experience and Monthly Income of the Respondents (n=398)

Variable	Frequency		Percentage
Age (Years)			
21 – 30	62		15.6
31 – 40	116		29.1
41 – 50	129		32.4
51 – 60	66		16.6
>60	25		6.3
Household size (No.)			
1 – 5	95		23.9
6 – 10	183		46.0
11 – 15	62		15.6
16 – 20	58		14.7
>20	0		0
Farming experience (yrs)			
1 - 10	154		38.7
11 - 20	96		21.1
21 - 30	77		19.3
31 - 40	65		16.3
>40	6		1.5
Monthly income (Naira)			
≤ 50,000	179		45.0
50,001 – 100,000	121		30.4
100,001 – 150,000	65		16.3
150, 001 – 2000,000	21		5.6
> 200,000	12		3.0
	Max.	**Min**	**Mean**
Age	**73**	**22**	43.8
Household size	**18**	**4**	8.7
Farming experience	**44**	**5**	18.5
Monthly income	**270,000**	**34,000**	64,334

Source: Field Survey, 2025

Table 2 further expressed that, about 38.7 and 24.1% of the household heads had farming experience between 1 and 10 and 11 and 20 years respectively. Furthermore, about 19.3 and 16.3% of the household heads had farming experience between 21 and 30, and 31 and 40 years respectively. However, only 1.5% of the household heads had farming experience above 40 years with an average of 18.5 years of farming experience. This result indicated that

farmers in the study area have moderate experience in farming activities. Moderate experience suggests that most producers are relatively new to farming business, possibly due to growing interest in farming business or economic necessity. While newer entrants may lack deep technical experience, they may be open to innovation. Training and mentoring programs are critical to help them scale production and enhance food security (Dearsley and Enganya, 2024).

The distribution of households' per capita monthly income among the sampled households revealed that 45.0% of the household heads earned N50,000 and below per month. Furthermore, 30.4 and 16.3% of them earned income between N50,001 and 100,000; and between 100, 001 and 150,000 per month, However, very few (5.3 and 3.0%) of the sampled household heads earned income between 150,001 and 200,000; and above 200,000 naira per month respectively with N64,334 naira per month on the average. This average monthly income when equated to the mean of 9 persons per household which is N266.7/capita/day is insufficient to guarantee food security, given the acceptable living standard of $1.25/capita/day (equivalent of N2062/capita/day at $1 = N1650)

This result shows similarity with the findings of Yunusa *et al.* (2023) who enunciated that more than half of the households in northeastern Nigeria earned less than 50,000 naira/month (1,785 naira/day). This situation describes a poverty trap in which extremely low income may inhibit even the deployment of coping options and purchasing power that can enhance the food security status of the households.

Food Security Status of Farming Households

The summary statistics of household calorie consumption survey (a measure of food security status) is presented in Table 3. Cursory view of the result, using the minimum caloric requirement of 2,730 kcal/capita/day as benchmark (in consonance with FAO expected target of 2010), revealed that 52.26% of the sampled households were food insecure. The reason for the prevalence of food insecurity could be attributed to the socio-economic factors that favor the odds of food insecurity among households and in addition, the seasonality of agricultural production that oftentimes interrupt food supply chain. This finding shows mark similarity with previous researches in other parts of Nigeria. For instance, Yahaya and Danmaigoro (2020) through the use of Dietary Diversity Score (DDS) established that 54% of the households in Kebbi state were food insecure. On the contrary, within the same Northern region, Olayemi (2020) through the use of Mean *per Capita* Expenditure (MPCE) discovered that about 55% of the households investigated in the Northeastern Nigeria were food secured. In Adamawa state, Haddabi *et al*., (2019) using FSI and Logit regression analysis attested that 74.1% of the households were food secure (using 2,122 kcal benchmark). These contrasting findings reiterate the need for continuous country or region-specific analysis of food security since the question of how people experience food deprivation can hardly be unanimously answered (FAO (2023).

Table 3: Summary Statistics of Food Security Indices (n = 398)

Food Security Indices	Food Secure Households	Food Insecure Households
Recommended Calorie Requirement	2730 kcal	2730 kcal
Frequency of Households	190	208
Percentage of households	47.7	52.3
Mean age of household head	40.8	47.6
Household size adjusted to adult equivalent	6.0	9.0
Per capita monthly household income	76,450	43,765
Mean food security index	1.21	0.75
Estimated household daily calorie availability (kcal)	19,544.9	14,624.5
Estimated household daily/capita calorie Availability (kcal)	3,257.5	1,643.2
Estimated household daily Calorie Requirement (kcal)	15,517.3	20,342.2
Surplus or Shortfall Index	**0.193**	0.398
Head Count Ratio/incidence	**0.477**	0.523
Food Insecurity Gap/depth		0.398
Severity of Food insecurity		0.158

Source: Field Survey, 2025 *Values in parenthesis are in percentages

The mean food security index for food secure households was 1.21 while the food insecure households had an index of 0.75 with the shortfall and surplus indices of 0.193 and 0.398, respectively. The implication of this result is that, the food secure households exceeded the food security line with a surplus of 527.5 Kcal (19.3%), and the food insecure households were 39.8% short of calorie availability to achieve the basic minimum calorie requirement of 2,730 kcal/day/person. It means that, lifting this category to the food security line will require additional 1,086.8 kcal/day/person. The depth of food deficit in this regard (1.086.8 kcal/capita/day) measures the difference between the estimated calorie intake of the food insecure households and their corresponding average calorie requirement. The daily per capita calorie availability for the food insecure household was 1643.2 kcal as against the daily requirement of 2,730 kcal benchmark and the food secure households on the other hand had 3257.5 kcal available per capita per day. Holistically, the total calorie availability of 2423.86 kcal/capita/day was ascribed to the entire households which is still less than the reported 3,728 kcal as reported by FAO (2023) in the Northern states of Nigeria. The result further show that food insecurity incidence (a = 0) of 0.523, indicating that 52.3% of the households were food insecure. The depth (a = 1) and severity (a = 2) of food insecurity were 0.398 and 0.158, respectively. This implies that the food insecure households needed up to 39% of the daily calories to be brought to the recommended food security line of 2.730 kcal. In essence, additional 1,062.46 kcal/capita/day is needed to lift the food insecure households out of food poverty. Conversely, the squared food insecurity gap, the severity of food insecurity in the State was 0.158, implying that about 16% of the sampled households are severely food insecure.

Causes of Food Insecurity

A better understanding of major barriers to food security at household level is of paramount importance in designing appropriate interventions in order to ensure food security for food insecure households (Meludu *et al*., 2023). Table 4 presents the views of the sampled

households according to the various predisposing factors that endangered household food security in the State. The table revealed that the distortion in the food security was caused by several factors that predispose the affected households to eventual food insecurity in varying magnitude. Thus, the result in Table 10 revealed that the leading causes of food insecurity were 'High food prices' (1st), 'Inadequate Supply/ high price of agro-inputs' (2nd), 'High fuel prices/transportation costs' (3rd) and 'Inadequate storage facilities' (4th) which accounted for 92.7, 90.7, 86.4 and 82.4% of the sampled households, respectively. This result is similar to the finding of Musa and Madalla (2025), in their research work titled 'Influence of Fuel Subsidy Removal on Food Security Status of Rural Farming Households in Bauchi State Nigeria, they found out that majority (79.7 - 91.2%) of their sampled respondents attested that food insecurity in the study area was caused by high fuel price, High food prices and high price of farm inputs. To support this finding, Adikwu *et al*., (2024) and Meludu *et al*., (2023) reported in their study that high fuel price has negatively impacted on the short run, food security among rural farmers especially in the northern part of the country (Nigeria). As Abdulrazaq *et al.*, (2022) could put it, 'Suddenly after the removal of fuel subsidy in 2023, the prices of Premium Motor Spirit (PMS) raised by more than 400% (i.e. from N165 to almost N1, 000 naira). This triggered an upsurge in food production and a hike in the prices of food and non-foodstuff in markets which invariably threaten food security in the country'. This scenario, which manifested in high cost of transportation as well as general cost of living has led to limited farmer's ability to access essential resources to produce food efficiently. This led to serious decline in agricultural productivity, a reduction in income levels and drastic increase in food prices. Consequently, rural farmers face challenges in meeting their basic food needs to ensure food security for their families and communities, worsening poverty and nutritional deficiencies (Goji *et al.,* 2024).

Table 4: Distribution of Households' Response to Causes of Food Insecurity

Cause	Agreed	Undecided	Disagreed	Rank
High food prices	369 (92.7)	0(0.0)	29 (7.3)	1st
Inadequate supply or high price of agro-inputs	361 (90.7)	11 (2.8)	26 (5.6)	2nd
High fuel prices/transportation costs	344 (86.4)	0 (4.3)	54 (9.3)	3rd
Inadequate storage facilities	328 (82.4)	8 (2.0)	62 (15.8)	4th
Conflict and civil unrest	267 (67.1)	14 (3.5)	117 (29.4)	5th
Over Population in the family	236 (59.3)	28 (7.0)	134 (33.7)	6th
Unemployment	235 (59.0)	26 (6.5)	137 (34.4)	7th
Loss of crops due to flood or drought	193 (48.5)	22 (5.5)	183 (46.0)	8th
Poor crop harvest due to pest/disease	187 (47.0)	8 (2.0)	203 (51.0)	9th
Loss of animals due to disease outbreak	178 (44.7)	41 (10.3)	179 (45.0)	10th
Sickness/disease	158 (39.6)	33 (8.5)	207 (52.0)	11th
Celebration of a household member	141 (35.4)	37 (9.3)	220 (55.3)	12th
Dead of a household member	124 (31.2)	60 (15.6)	214 (53.8)	13th
Debt to reimburse	123 (30.9)	46 (11.6)	229 (57.5)	14th
Difficulties in accessing wider market outlets	112 (28.1)	31 (7.8)	255 (63.8)	15th
Limited range of crops and livestock breeds	97 (24.4)	37 (9.3)	264 (66.3)	16th
Frequent visitors into the household	72 (18.1)	61 (15.3)	265 (66.6)	17th

Source: Field Survey, 2025 Values in parenthesis are in percentages

Other important causes as indicated by the sampled households were 'Conflict and civil unrest' (5th), 'Over Population in the family' (6th), 'Unemployment' (7th), 'Loss of crops due to flood or drought' (8th), 'Poor crop harvest due to pest/disease' (9th) and 'Loss of animals due to disease outbreak' (10th) which accounted for 67.1, 59.3, 59.0, 48.5, 47.0 and 44.7% of the sampled households, respectively. The implication of the result in Table 10 is that food insecurity in the study area will continue to exist if not increase among the farming households as far as these causative factors still prevail which will lead to high food prices, insufficient supply of food and weaker purchasing power by the households. As Rahman *et al*, (2021) clearly put it "food security status of a household can be influenced by the dynamic nature of the economy, food prices and supply, storage facilities, price of agro-inputs and cost of production and transportation" which confirm the result in Table 10. The implication of the existence of such factors in the study area is that food insecurity would continue to exist and vary extremely among households and exert its negative impact on both farming and non-farming households as well as the national economy unless these causative factors are mitigated.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Based on the results of the findings, it was concluded that the ratio of mean household monthly income of N64,334/month to the mean of 9 persons per household which is N266.7/capita/day is insufficient to guarantee food security, given the acceptable living standard of $1.25/capita/day (equivalent of N2062/capita/day at $1 = N1650). It was also found that the available kcal/capita/day for insecure households was 1,643 which is far below the recommended level of 2,730kcal/capita/day. Moreover, high food prices, high price of agro-inputs, high cost of transportation and Inadequate food storage facilities were the major causes of food insecurity in the study area

Recommendations

Based on the findings of the study, it was therefore recommended that appropriate policy interventions should focus on parameters that promote food security such as support and investment in skill-base education and income frontiers, financial inclusion and institutional support to foster human capital development. In addition, farmers are encouraged to diversify their revenue streams, improve in their savings and reinvestment to build up their food and asset base to assist their households to live beyond daily calorie requirement.

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