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Farmers' Coping Strategies to Households Food Insecurity in Ezinihitte Mbaise Local Government Area of Imo State-Nigeria

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Abstract
The study assessed farmers' coping strategies for household food insecurity in Ezinihitte Mbaise Local Government Area of Imo state, Nigeria. A multistage random sampling procedure was used to select 90 farm households from whom data were elicited using a semi-structured interview schedule. Data were analysed using means, frequencies, percentages, and food security index. Results showed that the farm households' incidence of food insecurity and gap were 0.5111 and 0.4769 respectively, while the severity of food insecurity was 0.2388. Reduced number of meals eaten per day (78.26%), reduced size of meals (73.91%) and less expensive food were identified by 71.74% of the food insecure as coping strategies for food insecurity by farm households. Meanwhile, 75.56% and 70.00% of the farm households reported that low income and poor access to farm inputs were problems constraining their achievement of food security. The study concluded that a higher percentage of the farm households in the study area were food insecure. It was recommended that heads of farm households be encouraged to join and participate in cooperative societies to improve their food security status and access to production resources.

Keywords: food Insecurity, coping strategies, farm households

Introduction

Food is widely recognized as the most basic need of man. Its relevance and importance to human existence cannot be overemphasized as a steady food supply stabilises individuals, households, societies, nations and the world (Masara, 2019). Attainment of food security in any country is usually an insurance against hunger and malnutrition, both of which slow down economic development (Osondu, 2019). In recognition of the fact that the elimination of food insecurity and attainment of food security is an integer of economic development, one of the Sustainable Development Goals (SDGs) was aimed at ending hunger, achieving food security and improving nutrition (Chidiebere-Mark et al., 2022).

Food security and insecurity are two opposing terms used to describe how much access or lack of access to sufficient and nutritious food is available to a population (Abdulazeez et al., 2023). Food security is defined as a state in which people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life (Food and Agriculture Organization (FAO), 2022; Osuji et al., 2019). Food insecurity, on the other hand, refers to the inability of a household or individual to meet the required consumption levels in the face of fluctuating production, price and income (USDA Economic Research Service, 2022). A food-insecure household has inadequate food available to it to ensure minimum intake for all members (usage) and does not have adequate capacity to effectively demand more food if there is such a need (FAO, 2022).

Food insecurity or lack of access to a nutritionally adequate diet in a household or country can take various forms - chronic, seasonal, or temporary/transitory (USDA Economic Research Service, 2022). Chronic food insecurity exists when food availability to supply adequate nutrients for all individuals is persistently and grossly inadequate. Seasonal food insecurity occurs when food supplies run low at particular seasons of the year such as during planting season. Transitory food insecurity occurs when there is a temporary shortfall in the availability of food due to instability in food production, a hike in food prices as well as a shortfall in income (USDA Economic Research Service, 2022). Household food insecurity can manifest in either of two forms, namely: hunger and malnutrition (Ojo and Adebayo, 2020). Hunger and malnutrition have been closely linked with poverty. While hunger may be occasioned mostly by inadequate income, or hyperinflation which causes reduced purchasing power, malnutrition is caused by poor diet and has a very long-term devastating effect on affected households in developing countries (Ojo and Adebayo, 2020).

Food security comprises four pillars. These are food supply or availability, food accessibility or affordability, food utilization and food stability (Abubakar and Abdullahi, 2020). First, food must be available in sufficient quantities, continuously and consistently. Secondly, people must have sufficient resources to obtain nutritious food, without resorting to emergency aid or other coping strategies. This can be through home and local production or food purchases. Thus, the food should be at the right place and at the right time, and people should have the economic means to access adequate and nutritious food. Also, there must be utilization of available food (food storage, preservation, cooking and consumption) and the ability to meet food needs on an ongoing basis (food stability) (Osuji et al., 2019). The ultimate goal of food security is for individuals to be able to obtain adequate food needed at all times, and to be able to utilise the food to meet the body's needs when necessary (Osuji et al., 2019). Households' food security can be defined as the ability of members of a household to access an adequate supply of food, on a stable basis, and in a sustainable manner (USDA Economic Research Service, 2022). A household can be said to be food secure if it can sufficiently gain access to food in quantities and qualities for members to enjoy a quality and healthy life (Adio and Oladele, 2021). Food and Agricultural Organization (2022) further opined that a household is considered food secure when its occupants do not live in hunger or fear of starvation. Household food insecurity can manifest in either of two forms, namely: hunger and malnutrition (Ojo and Adebayo, 2020). Hunger and malnutrition have been closely linked with poverty. While hunger may be occasioned mostly by inadequate income, or hyperinflation which causes reduced purchasing power, malnutrition is caused by poor diet and has a very long-term devastating effect on affected households in developing countries (Ojo and Adebayo, 2020).

A farm household is conceptualized as an economic unit consisting of either a single person or a group of persons who live together and depend on a common income (feed from the same pot) and within the limits of that income, exercise choices in meeting specific objectives with at least one member describing their major occupation as farming (Anderson, 2020). According to Chidiebere-Mark et al. (2022), one of the greatest challenges facing developing countries is the provision of sufficient, healthy, accessible and affordable food for all households. However, in many developing countries there is a higher prevalence of food insecurity among farm households (Sibiri & Zheng, 2022).

In sub-Saharan Africa, farm households especially smallholder farm households appear to be the most vulnerable to food insecurity and poverty though the rest of the population depends on their production (Kuwornu et al., 2020). This stems from the fact that many farm households in the region farm on small-sized plots of land, use labour-intensive tools and inputs with low productivity, and often earn low levels of income (Kuwornu et al., 2020). Consequently, they are unable to access adequate amounts of food either through their own production or food procurement. In Nigeria, the attainment of food security is a core problem confronting most farm households especially those residing in rural areas where the bulk of the country's food production comes from (Osuji et al., 2019).
Nigeria has the largest economy in Africa, but the country's poverty rate is alarming (Akerele et al., 2019). Not less than 70% of the Nigerian population is surviving on less than a dollar per day while food insecurity prevalence in low-income urban households and rural areas respectively stands at 79% and 71% (Akerele et al., 2019).
Despite successive government efforts over the years to achieve food security in the country, through the setting up of several agricultural development institutions, and special programmes and projects, still very large proportions of Nigerians are food insecure and in hunger (Abur, 2019).
Based on the problems mentioned earlier, this study assessed farmers' coping strategies for household food insecurity in Ezinihitte Mbaise Local Government Area of Imo State-Nigeria. Specifically, the study sought to:

i. ascertain the annual farm income of farm households ;
ii. assess the food security status of farm households ;
iii. identify food insecurity coping strategies used by farm households; and
iv. identify problems constraining the achievement of food security among farm households.

Methodology

The study was carried out in Ezinihitte Mbaise Local Government Area (LGA) of Imo State, Nigeria. The LGA has its headquarters located in Itu. Ezinihitte Mbaise Local Government Area is located between latitudes 5^0 $28^{'}$ North and 5^0 $47^{'}$ North of the Equator and longitudes 7^0 $19^{'}$ East and 7^0 $32^{'}$ East of the Greenwich meridian. It has a population of 168,767 people which comprises of 84,725 males and 84,042 females (National Population Commission (NPC), 2006) with a total land area of about 169 square kilometres and a population density of 196.40 persons per km square. The study area comprises 14 communities namely: Itu, Amumara, Akpoku na Umudim, Ihitte, Okpofe, Umuchoko na Umueze, Ezeagbogu, Eziudo, Ife na Owutu, Udo, Obizi, Onicha, Oboama and Umunama. Ezinihitte Mbaise is predominantly an agrarian, the greatest amount of precipitation occurs in July with an average rainfall of 394mm. The average temperature of the area is 27^oC, the humidity is 70% and the average wind speed is 11 km/h.

The population for this study consist of all the farm households in the Local Government Area. Multi-stage sampling procedure and a simple random sampling technique were employed in the selection of communities, villages and respondents. In the first stage, five communities were randomly selected from the fourteen communities that make up the LGA. The selected communities were: Eziudo, Itu, Okpofe, Ihitte and Oboama. In stage two, three villages were randomly selected from each of the five communities. This gave 15 villages that were selected for the study. Six (6) farm households were chosen at random from each of the selected (15) villages to give a total of 90 respondents for the study.

Data for this study were collected using a structured interview schedule. Data on farm income, food insecurity coping strategies and constraints were analysed using percentages while data on food security status were analysed using food security indices.

Food security status (objective ii) was estimated as two-thirds of the mean per capita monthly food expenditure of all farm households. The farm households were classified as either food secure or food insecure households based on the food security line. A food insecure household is one whose per capita monthly food expenditure falls below two-thirds of the mean monthly per capita food expenditure while a food secure household is one whose per capita monthly food expenditure is above or equal to two-thirds of the mean per capita food expenditure (Sulaiman et al., 2021).

The food security index which was used to profile the food security status of the farm households was derived from Foster, Greer and Thorbecke (FGT) weighted poverty measure and had been applied to several studies whose main focus was on food security (Sulaiman, et al., 2021). The FGT-weighted poverty measure was adopted from Foster, Greer and Thorbecke (1984) as used in Sulaiman, et al., (2021). The FGT index is expressed mathematically as:

$$P\alpha = \frac{1}{N}\sum_{i=1}^{q}\frac{z - Yi}{z}\alpha \geq 0 \ldots \quad (1)$$

Where:
Yi = Per capita household food expenditure (i = 1, 2 .....q);
z = Food security line;
N = Total number of farm households;
q = Number of food insecure farm households;

Pα = Weighted food security index, α ≥0 and it can take values of 0, 1 and 2. When = 0, the FGT index P_0 measures food insecurity incidence. This represents the proportion of the households that are food insecure, i.e., those that fall below the food security threshold (line). When = 1, the FGT index P_1 measures the food insecurity depth of the households. This denotes the proportion of food security line that the food insecure household will require to get out of food insecurity. When = 2, the FGT index P_2 measures the severity of food insecurity. It measures how far away the food-insecure households are from the food security line.

Results and Discussion

Farm Income of the Farm Households

Result in Table 1 shows that the mean farm income of the farm households was ₦249,430.12 per annum. This amount translates to a mean monthly farm income of 20,785.84 Naira for the farm households which is below the country's monthly minimum wage of ₦30, 000. The implication is that this amount may not be adequate to access food

in the right amount in the face of the current economic hardship and a general rise in the price of food items. This result highlights the current economic challenge facing most farm households in the study area. The higher the farm income, the more likely farmers can save, invest in improved technologies and realize more income for better welfare (Osondu, 2019).

Table 1: Farm households annual farm income

Farm Income (₦)	Percentage	Mean
1,000.00 - 99,999.00	13.33	249,430.12
100,000.00 - 199,999.00	33.33	
200,000.00 - 299,999.00	31.11	
300,000.00 - 399,999.00	15.56	
400,000.00 and above	6.67	
Total	100.00	249,430.12

Source: *Field survey*, 2023

Food security status of the farm households

The food security profile of the farm households is presented in Table 2. The result shows that the mean monthly household income (farm and non-farm) of the farm households was ₦33,195.06. Food security indices were computed using data on household per capita food expenditure. As shown in the table, the adult equivalent mean monthly household food expenditure was ₦19,630.81. Using this value, the food security line (2/3 of mean household food expenditure) was ₦13087.21.

Furthermore, Table 2 shows that the food insecurity incidence of the farm households which is otherwise known as the headcount ratio was 0.5111. This implies that 51.11% (46) of the farm households were food insecure because their food expenditure fell short of the two-third mean household food expenditure used as food security line. Thus, 48.89% (44) of the farm households can be adjudged to be food secure.

The food insecurity gap allows for the assessment of the depth of food insecurity among farm households and indicates the minimum cost of eliminating food insecurity (relative to the food security line) among the food-insecure farm households. Table 2 shows that the food insecurity gap of the farm households was 0.4769. This implies that the food-insecure farm households have a household food expenditure shortfall of 47.69% of the food security line. Therefore, an increase of ₦6,241.29 (0.4769 x ₦13,087.21) in the average monthly food expenditure of the food-insecure farm households will enable them to rise above the food security line. The result lends credence to Osondu (2019) finding of a food insecurity shortfall of ₦3,744.41 among food-insecure farm households in Abia State, Nigeria.

Also. as shown in Table 2, the value of the squared food insecurity gap otherwise known as food insecurity severity was 0.2388 for the farm households. This implies that 23.88% of the food-insecure farm households were extremely food insecure.

Table 2: Food security profile of the farm households

Food Security Indices	Farm Households
Mean monthly household farm income	20,785.84
Mean monthly household non-farm income	12,409.22
Mean monthly household income	33,195.06
Mean monthly household food expenditure	19,630.81
Food security line (2/3 of pooled mean household food expenditure) (₦)	13087.21
P_0 (Incidence of food insecurity)	0.5111
P_1 (Gap or depth of food insecurity)	0.4769
P_2 (Severity of food insecurity)	0.2388

Source: *Field survey*, 2023

Food Insecurity Coping Strategies of the Farm Households

Table 3 shows that 78.26%, 73.91% and 71.74% of the food-insecure farm households reduced the number of meals eaten per day, reduced the size of meals eaten and ate less expensive food respectively. This result supports Osondu (2019) report that the predominant food insecurity coping strategies adopted by most food-insecure households were a reduction in the number of meals eaten per day, a reduction in the size of meals eaten and the consumption of cheap foods.

Furthermore, 65.22% and 60.87% of the farm households allowed children to eat first and used savings to buy food respectively, as coping strategies for food insecurity. Additionally, 52.17% and 50.00% of the food insecure farm households consumed seed stocked for the next planting season and bought food on credit respectively in other to cope with food shortage. The strategies undertaken by the farm households to cope with food insecurity align with USDA ERS (2022) report, which stated that during food shortage or crisis, populations that are affected adopt different coping mechanisms to survive and such strategies may include rationing available food, finding additional food or income, or even, migration.

Table 3: Farm households' food insecurity coping strategies

Coping Strategies	Percentage
Using savings to buy food	60.87
Eating less expensive food	71.74
Buying food on credit	50.00
Allowing children to eat first	65.22
Reducing size of meal	73.91
Selling personal belongings	17.39
Reducing number of meal eaten per day	78.26
Consuming seed stocked for next planting season	52.17
Sending household members to eat elsewhere	26.09
Borrowing money to buy food	32.61
Sale of livestock	36.96

Source: *Field Survey,* 2023

* = Multiple responses recorded

Constraints to Achieving Food Security among Farm Households

Results in Table 4 show that the majority (75.56%) of the farm households were constrained by low income. Similarly, 70.0% of the households indicated poor access to farm inputs as a constraint. According to the respondents, their household income was too low in the face of the incessant rise in prices of food items to meet their household consumption and production needs. They further asserted that poor access to essential farm inputs such as fertilizer and livestock feed prevented them from boosting farm output levels and generating more income. This result lends credence to Abdulrazaq et al., 2022 report that many farm households in Jigawa State, Nigeria were constrained by inadequate supply and low access to farm inputs which limited the size of farmland that could be effectively cultivated and affected food production, and consequently resulted to food insecurity.

Furthermore, as shown in Table 4, the problem of low income was exacerbated by inadequate access of the farm households to credit (64.44%) and the high cost of food items (61.11%). These problems limited the investment portfolio of the farm households and their ability to access other food items not produced by them. The result supports Dunga's (2020) assertion that the poor nature of most farm households in developing countries is mostly due to a lack of adequate access to credit which could have significant negative implications on technology adoption, agricultural productivity, food security, nutrition and overall household welfare.

Meanwhile, 60.00% of the farm households reported being constrained towards the achievement of food security by inadequate/no access to extension service and pests and diseases respectively. Also, 56.67% and 51.11% of the farm households were constrained by small farm size/low access to land and inadequate knowledge of how to diversify income sources respectively.

Table 4: Constraints to household food security

Constraints	*Percentage
Low income	75.56
Poor access to farm inputs	70.00
Inadequate credit access	64.44
High cost of food commodities	61.11
Inadequate/no access to extension service	60.00
Pests and diseases	60.00
Small farm size/low access to land	56.67
Inadequate knowledge of how to diversify income sources	51.11
Poor marketing facilities	44.44
Unfavourable weather condition	40.00
Infertility of the soil	35.56
Poor communication skill of some extension agents	33.33

Source: Field Survey, 2023

***** = Multiple responses recorded

Conclusion and Recommendation

A higher percentage of the farm households were food insecure. Reducing the number of meals eaten per day, reducing the size of meals, eating less expensive food and allowing children to eat first were the food insecurity coping strategies adopted by farm households in the study area. However, these coping mechanisms embarked upon by the food-insecure farm households have short-term effects.

Therefore, it is recommended that heads of farm households be encouraged to join and participate in cooperative societies to have improved access to production resources to improve their household food security status

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