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# FOOD SECURITY CHALLENGES AND COPING STRATEGIES OF FARMING HOUSEHOLDS IN SELECTED STATES IN NIGER DELTA, NIGERIA

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***Abstract***
*Food security challenges and coping strategies of farming households in selected states of Niger Delta (Delta and Edo States) were examined. A total of 425 respondents were randomly sampled (246 from Delta and 179 from Edo States) using a multi-Stage sampling procedure. Collected data were analyzed using descriptive statistics while chi-square and Freidman test were used to test the hypothesis. The result revealed that the major challenges facing food security were fear of herdsman attack (mean 3.41) flooding (mean 3.28), high post-harvest losses (mean 3.28) poor extension contact (mean 3.28), poor yield (mean 3.06), limited knowledge of the use of improved farming methods (mean 2.66) and inadequate capital (mean 2.63). The major coping strategies adopted by farming households were practicing mixed farming (mean 3.45), mixed cropping (mean 2.98), embarking on casual labour for money to buy food (mean 2.77) and engaging in off-farms activities to increase household income (mean 2.75). It was concluded that farming households in the study area, faced diverse food security challenges; consequently have adopted several strategies to cope with these challenges. It was recommended that the state's extension agencies should do their best to improve the extension-farmer contacts with an emphasis on better storage facilities for farmers and possible ways of combating floods.*

***Keywords: Food security; challenges, coping strategies, farming, households.***

## Introduction

Nigeria is faced with several challenges such as poverty, insecurity of life and property, fuel scarcity, unemployment and inflation but food insecurity remains a major issue (Agbugba *et al,* 2022). A country like Nigeria, which has abundant human and natural resources capable of sustaining the nation, is still unable to adequately meet the food need of her citizens. For instance, food production rate (1.5%) has not kept pace with the population growth rate (3.2%) leading to increased food importation, dwindling level of national food security and national food self-sufficiency and extremely high level of poverty. (Ike *et al*., 2017). Similarly, Global Hunger Index, ranked Nigeria 40$^{th}$ out of 79 nations, while the 2011 UNDP Human Development Index placed Nigeria 156$^{th}$ out of 187 countries that are hungry and food insecure with approximately 29.4 million undernourished people despite being one of the largest economies in Africa (FAO, IFAD, UNICEF, and WFP, 2021). However, it is strongly believed that if the food insecurity challenge of the nation is effectively addressed, the country will be on the path of economic development (Kassy *et al.,* 2021).

Despite efforts made by government at different times by introducing and formulating different agricultural programmes and policies, such as Agricultural Development Programmes (ADP) in 1975, National Special Programme on Food Security in 2002, National Fadama Development Projects in 2008, Nigerian Agricultural Transformation Agenda in 2014, Growth Enhancement Programme in 2014 and Green Alternative in 2016 (Matemilola and Elegbede 2017). The food insecurity situation has remained undaunted as household's food insecurity, under-nutrition and micro-nutrient deficiencies are prevalent in the country (FAO, 2018). More so, there is the threat that hunger and poverty becomes more pronounced as report has shown that 133 million Nigerians are multi-dimensionally poor (NBS, 2022). This will mean that households need to adopt several strategies in order to cope with the prevailing food security challenges in the country. But whether or not the farming households in the study area are food secured or faced with food security challenges remain unknown. If these households are faced with food security challenges, their ability to cope with these challenges is still undetermined. This study therefore examined

the food security challenges and coping strategies of farming households in selected states in Niger Delta, Nigeria.

**Methodology**

The study was conducted in Niger-Delta area, South-South Nigeria. The area comprised of the oil rich states of the country known for diverse agricultural activities because of the availability of land and water resources. The area is located in latitude $5^0$ $19^{'}$ $20{\cdot}40^0$ N and longitude $6^0 28^{'}$ $8.99^0$ E (Nigeriagalleria, 2022). Data for the study was collected by the use of questionnaires and were analyzed using descriptive statistical tools such as frequency count, mean and percentage while Freidman test was used to test the differences among the challenges of food insecurity faced by farming households in the study area. Multi-state sampling techniques procedure was adopted in the selection of respondents. The first stage involved the purposive selection of two contiguous states (Delta and Edo states) because of the predominance of farming activities among the households. In the second stage, two agricultural zones each from the selected states were randomly selected. The third stage involved random sampling of 50% of local government areas (LGAs) of the selected agricultural zones to give a total of sixteen (16) i.e. 9 from Delta and 7 from Edo. In the fourth and final stage, a proportional random sampling was carried out in each selected LGA. The sample size was derived using the table of sample size proportion (Krejcie and Morgan, 1970). This table provides the recommended sample size for a giving population. This was applied to the population of each sampled LGA (Table 1). The total target sample size was 447, comprising 262 from Delta state, and 185 from Edo state. At the end of data collection process, only 425 copies of the instruments (246 and 179) from Delta and Edo states respectively were collected and found useful for data analysis. This figure represents a response rate of 95%

**Table 1: Sampling Frame**

| Zone | LGA | No.of registered farmers | No. Sampled |
|---|---|---|---|
| **Delta State** | | | |
| Delta North | Aniocha south | 32 | 30 |
| | Ika Noth East | 42 | 38 |
| | Ika south | 49 | 44 |
| | Oshimili North | 31 | 29 |
| | Ukwani | 22 | 21 |
| Delta Central | Ethiope East | 30 | 28 |
| | Ethiope West | 22 | 21 |
| | Okpe | 20 | 19 |
| | Ugheli North | 35 | 32 |
| Total | 9 | 283 | 262 |
| **Edo** | | | |
| Edo South | Orhionmwon | 21 | 20 |
| | Uhumwode | 09 | 09 |
| | Ipkoba-Okha | 10 | 10 |
| | Egor | 13 | 13 |
| Edo cental | Esan central | 51 | 45 |
| | Igueben | 14 | 14 |
| | Esan west | 91 | 74 |
| Total | 7 | 209 | 185 |
| **Sum total** | **16** | **492** | **447** |

**Measurement of Variables**

The food security challenges of the farming household were measured using a 4 point rating scale: very serious (coded 4), serious (coded 3), little serious (coded 2) and not serious (coded 1). The mean benchmark score of ≥2.50 was used to determine if a challenge was serious or not. Thus, a mean score of ≥2.50 signifies a serious challenge, while mean <2.50 implied otherwise. The weighted mean score of

2.50 is derived as follows: 4+3+2+1= 10/4. Similarly, to measure the coping strategies adopted by the respondents, the frequency of adopting the strategies was measured on a 4 point Likert-type scale of 'very frequent' (coded 4), 'frequent' (3), 'sometimes' (2) and 'not at all' (1).

## Results and Discussion

### Household Food Security Challenges

The food security challenges identified to be militating against household food security in the study area are shown in Table 4. The constraints with mean of 2.50 and above were considered serious. These challenges include fear of herdsmen attack (mean=3.41), flooding (mean=3.28), high post-harvest losses (mean=3.28), poor extension contact (mean=3.23), poor yield (mean=3.06), limited knowledge on the use of improved farming technologies (mean=2.66) and inadequate capital (mean=2.63). The result suggests that farming households in the study area were faced with several food production limitations which are capable of militating against their food security. Herdsmen attack is a recent security concern that has become a national and international issue. It is a situation where herdsmen and their cattle invade farmers' farms and homes, killing them and destroying their crops. In most cases, the farmers, for fear of being killed or raped, abandoned their farms and villages and relocated to neighbouring countries and cities. Consequently, food production declined while the price of foodstuff has skyrocketed leading to increase food insecurity. This corroborated Okoro, (2018) who concluded that herder-farmer conflicts have resulted in food insecurity in Nigeria.

High post-harvest losses', arising from inadequate storage facilities, is a major constraint identified to be militating against food security of farming households in the study area. Some farmers interviewed (insert the value) testified that their challenge was not that of production, but that of post-harvest losses as they do not have means of storing their produce for a long time. This result validated the report of Okpkiri, (2017) who reported lack of storage facilities as one of the challenges to food security in Abia State, Nigeria. Flooding, which is usually a condition of complete or partial inundation of dry asrea of land due to overflow of tidal or inland water, has caused serious damage to agricultural production, loss of human lives, displacement of people, loss of properties and general damage to the environment. The most devastating of all the flood events in Nigeria, was that of August – October 2012, which forced rivers over their banks and submerged hundreds of kilometers of rural lands, farms and settlements (insert references). This led to the destruction of crops and livestock causing increased food insecurity in the country. Akukwe (2019) had noted that flooding is a significant environmental factor affecting food security negatively

Poor extension contact was another constraint identified as serious by the respondents (insert values). Inconsistent extension contact with farming households could lead to lack of advisory services, poor technology transfer, ineffective training services, and belated information dissemination, leading to poor food production and increased food insecurity among the households. This finding is in agreement with Chege *et al*., (2018) who found a significant relationship between extension contact with famers and their food security status. Therefore, an effective agricultural extension system is needed to provide a broad range of services such as advisory services, technology transfer, training and effective information dissemination needed to enhance farming households' access to better crop production techniques, improved input, as well as other production incentives that will help to improve food production among the farming households. The problem of poor yield in agricultural production, also reported as a concern in this study, can be attributed to several factors such as poor soil fertility, climatic problems, pests and diseases attack, use of local planting materials, poor agronomic practices, as well as subsistence nature of agricultural practices in the study area. Climatic conditions like extreme rainfall and drought, as well as diseases and pests attack can cause complete crop failure and poor yield, thus causing food scarcity and increase in food cost leading to increased food insecurity. This is in line with the findings of Umar *et al*. (2017), who reported that several factors such as poor soil fertility, climatic problems, as well as pest and disease attack can cause serious crop failure that ultimately affect farmers agricultural income and household purchasing power and their food security status.

**Table 4: Challenges to Food Security among Respondents**

| | Delta | | Edo | | Total | |
|---|---|---|---|---|---|---|
| Constraints | Mean* | SD | Mean* | SD | Mean* | SD |
| Fear of herdsmen attack | 3.38 | 0.9 | 3.44 | 0.9 | 3.41 | 0.9 |
| Flooding | 3.30 | 0.7 | 3.25 | 0.6 | 3.28 | 0.6 |
| Storage issues (high post-harvest losses) | 3.34 | 0.8 | 3.21 | 0.8 | 3.28 | 0.8 |
| Poor extension contact | 3.42 | 0.8 | 2.97 | 1.0 | 3.23 | 0.9 |
| Low yield (production) | 3.07 | 0.7 | 3.03 | 0.6 | 3.06 | 0.7 |
| Limited knowledge on use of improved farming methods | 2.84 | 0.8 | 2.40 | 0.8 | 2.66 | 0.8 |
| Inadequate capital | 2.70 | 1.0 | 2.52 | 1.0 | 2.63 | 1.0 |
| Poor road/condition | 2.20 | 0.9 | 2.28 | 0.8 | 2.24 | 0.9 |
| Low or poor soil fertility | 1.96 | 1.0 | 2.00 | 0.9 | 1.98 | 0.9 |
| Lack of improved seeds/seedling | 1.72 | 0.8 | 1.89 | 0.8 | 1.80 | 0.8 |
| High cost of transportation | 1.75 | 0.9 | 1.85 | 0.8 | 1.79 | 0.9 |
| Low market price of farm produce | 1.77 | 1.0 | 1.70 | 1.0 | 1.74 | 1.0 |
| Inadequacy of credit/loan given (i.e. smaller than what is needed) | 1.80 | 1.1 | 1.50 | 0.9 | 1.67 | 1.0 |
| High collateral requirement for credit | 1.76 | 1.1 | 1.51 | 0.9 | 1.65 | 1.0 |
| Lack of markets for sales of produce | 1.57 | 0.9 | 1.63 | 0.9 | 1.59 | 0.9 |
| High cost of farm chemicals | 1.59 | 0.9 | 1.53 | 0.8 | 1.56 | 0.9 |
| Non-availability of farm chemicals | 1.51 | 0.9 | 1.61 | 0.9 | 1.55 | 0.9 |
| High cost of improved seeds/seedlings | 1.56 | 0.9 | 1.47 | 0.9 | 1.52 | 0.9 |

***Serious (mean ≥ 2.50)***

Another identified constraint affecting food security status of the farming households in the study area was limited knowledge in the use of proper farming methods. The farmers are limited in the knowledge of modern farming technology/methods. This affects production efficiency; increase cost of production and decreases in their production output. This could be attributed to poor extension services delivery in the study area. No doubt, it is the duty of agricultural extension service providers to disseminate modern farming technologies to the farmers, but when this is unavailable lack adequate knowledge of the improved farming technologies. This finding agrees with Akinmolafe and Ajayi (2022) who reported farmer's low knowledge on the improved technicalities in soil management among cocoa farmers in Ondo State, Nigeria. Inadequate capital as a constraint, affects farmers' production ability in several respect. For instance, capital is needed for purchase of planting materials, land, hiring of labour, inputs (fertilizers, agro-chemicals) and transportation of materials especially with the current inflation. This is in agreement with Okpokiri *et al.* (2017) who reported similar factor such as high cost of food stuff and labour in Abia State, Nigeria. No doubt capital will be needed to start payment for labour and their feeding.

**Copping Strategies Adopted by Rural Households against Food Insecurity**

Table 5 shows the copping strategies employed by farming households in the study area to combat or manage food insecurity. From the result, coping strategies with mean 2.50 and above were regularly adopted by the farmers while copping strategies with mean below 2.50 not regularly used by the farmers. The leading coping strategies regularly employed by the farmers include practicing mixed farming (mean = 3.45), and mixed cropping (mean = 3.36), engaging in multiple income generating activities (mean 2.98), providing casual or labour service to get money to buy food (mean 2.77), engaging in off – farm jobs to increase household income e g trading, driving and civil service (mean = 2.75), increased reliance on wild food e.g. pawpaw and mango (mean = 2.62), diversion of money meant for other purposes to buy food (mean = 2.62) and buying food items on credit (mean 2.60). The result implies that farming households in the study area, employ diversified copping strategies to manage food insecurity. This agrees with Seid *et al.* (2019), who reported similar result in Ethiopia. It was identified that reducing frequency of meal, size of meal served, working as a daily labourers, sales of fire wood and charcoal, engaging in wide fruit gathering, engaging in petty trading, selling livestock, and borrowing to buy food etc as measures taken by households to address food insecurity.

**Table 5: Coping Strategies Adopted by Rural Households Against Food Insecurity.**

| | Delta | | Edo | | Total | |
|---|---|---|---|---|---|---|
| Strategies | Mean* | SD | Mean* | SD | Mean* | SD |
| Practicing mixed farming | 3.47 | 0.9 | 3.42 | 1.0 | 3.45 | .9 |
| Practicing mixed cropping | 3.43 | 1.0 | 3.26 | 1.2 | 3.36 | 1.1 |
| Engaging in multiple income generating activities | 2.97 | 0.9 | 2.99 | 1.0 | 2.98 | .9 |
| Provide casual labour to get money to buy food | 2.67 | 1.0 | 2.91 | 1.0 | 2.77 | 1.0 |
| Engaging in off-farm jobs to increase household income e.g. trading, driving, civil service etc. | 2.83 | 0.8 | 2.65 | 0.8 | 2.75 | 0.8 |
| Increased reliance on wild food (e.g. pawpaw, mangoes etc.) | 2.68 | 1.0 | 2.54 | 10.2 | 2.62 | 10.1 |
| Diversion of money meant for other purposes to buy food | 2.66 | 0.7 | 2.56 | 0.7 | 2.62 | 0.7 |
| Buying food items on credit | 2.62 | 0.7 | 2.57 | 0.9 | 2.60 | 0.8 |
| Eating foods that are less preferred | 2.54 | 0.8 | 2.38 | 0.7 | 2.47 | 0.8 |
| Skipping one or two meals per day | 2.40 | 0.8 | 2.38 | 0.9 | 2.39 | 0.8 |
| Reduction in quality and quantity of food consumed | 2.45 | 0.7 | 2.21 | 0.7 | 2.35 | 0.7 |
| Eating cheaper meals outside of home | 2.31 | 0.8 | 2.22 | 0.6 | 2.27 | 0.7 |
| Borrowing money to buy food | 2.26 | 0.6 | 2.25 | 0.7 | 2.26 | 0.7 |
| Mothers limiting their own food intake in order to ensure that their children get enough to eat | 2.14 | 0.6 | 2.11 | 0.7 | 2.13 | 0.6 |
| Children in the home engage in trading activities to support family income | 1.87 | 0.8 | 1.77 | 0.7 | 1.83 | 0.8 |
| Borrow food from friends, relatives and neighbors | 1.70 | 0.6 | 1.95 | 0.8 | 1.81 | 0.7 |
| Reducing the number of people eating in the household | 1.46 | 0.8 | 1.67 | 0.7 | 1.55 | 0.8 |
| Mortgaging and selling of assets e.g. TV, furniture, land etc | 1.29 | 0.7 | 1.51 | 10.1 | 1.39 | 0.9 |
| Sale of brooding stock of livestock | 1.39 | 1.0 | 1.37 | 0.7 | 1.38 | 0.9 |
| Sending children to live with others (family relations) | 1.28 | 0.6 | 1.45 | 0.6 | 1.35 | 0.6 |
| Skipping eating for a whole day | 1.38 | 0.7 | 1.26 | 0.6 | 1.33 | 0.6 |
| Begging for food from neighbors or family members | 1.18 | 0.5 | 1.30 | 0.6 | 1.23 | 0.6 |
| Sale of farm implements/inputs | 1.17 | 0.5 | 1.20 | 0.6 | 1.19 | 0.6 |
| Receiving food items from donor agencies e.g. churches, NGOs, and Multi-national organizations | 1.15 | 0.5 | 1.09 | 0.4 | 1.13 | 0.5 |

***Regularly (mean ≥ 2.50)***

**Test of Difference in Constraints to Food Security**

Friedman test was used to analyze the hypothesis, which states that, there is no significant difference (insert probability level: P>0.05?) among the challenges limiting food security of farming households in the study area. The result is presented in Table 6. The Friedman test (*Chi-Square = 2910.81; df = 17; p < 0.01*) was significant at 5% level. The significant result indicated that there was a significant difference in the challenges limiting food security among the respondents. This means that some challenges were significantly more serious than others. The post-hoc test revealed that the major or most significant challenges limiting food security status of farming households in the study area, was storage issues (high-post harvest losses) (mean = 13.96), followed by fear of herdsmen attack (mean = 13.95). The next two important constraints i.e. flooding (mean = 13.80) and poor extension contact (mean = 13.48) were equally ranked i.e. there was no significant difference between them. The next significant challenge was poor yield (mean = 13.02), followed by inadequate capital (mean = 11.44) and limited knowledge on use of improved farming methods (mean = 11.29). The least significant challenges were non-availability of farm chemicals (mean = 6.19), high cost of farm chemicals (mean = 6.22), high cost of improved seeds/seedlings (mean = 6.33), lack of market for sales of produce (mean = 6.48), high collateral requirement for credit (mean = 6.82) and inadequacy of credit /loan given (mean = 7.09). This result suggests that the extent to which these challenges affects food security differs with the level of seriousness. By implication, some factors significantly affects food security than the others. This agrees with Onoja et al., (2022).

**Table 6: Friedman test of differences in challenges to food security among respondents**

| Constraints | Mean Rank* |
|---|---|
| Non-availability of farm chemicals | 6.19 $^{k}$ |
| High cost of farm chemicals | 6.22 $^{k}$ |
| High cost of improved seeds/seedlings | 6.33 $^{jk}$ |
| Lack of markets for sales of produce | 6.48 $^{jk}$ |
| High collateral requirement for credit | 6.82 $^{jk}$ |
| Inadequacy of credit/loan given (i.e. smaller than needed) | 7.09 $^{ijk}$ |
| Low market price of farm produce | 7.31 $^{hij}$ |
| High cost of transportation | 7.64 $^{ghi}$ |
| Lack of improved seeds/seedling | 7.81 $^{gh}$ |
| Low or poor soil fertility | 8.60 $^{f}$ |
| Poor road network | 9.57 $^{f}$ |
| Limited knowledge on use of improved farming methods | 11.29 $^{e}$ |
| Inadequate capital | 11.44 $^{e}$ |
| Poor yield | 13.02 $^{d}$ |
| Poor extension contact | 13.48 $^{c}$ |
| Flooding | 13.80 $^{c}$ |
| Fear of herdsmen attack | 13.95 $^{b}$ |
| Storage issues (high post-harvest losses) | 13.96 $^{a}$ |

***Chi-square = 2910.81; df = 17; p < 0.01***

****means with same letters are not statistically (significantly) different***

**Conclusion And Recommendations**

Based on the findings of the study, it could be concluded that the farming households were faced with diverse food security challenges. Prominent among them were storage issues, fear of herdsmen attack, flooding and poor extension contact. Therefore, the farmers in the area have adopted several strategies to cope with these challenges. Strategies such as practicing mixed farming and mixed cropping, engaging in multiple income generating activities and increase reliance on wild food were the most common strategies adopted by the farming households in coping with food security challenges. It is therefore recommended that state's extension agency or ADP in the study areas should do its best to improve on the extension/farmer contact with emphasis on better storage facilities for farmers and possible ways of combating flood. This may help the farmers overcome the treat of flood and poor storage facility. The security agencies should as a matter of urgency, intensify efforts to end herdsmen attack, incessant killing

and kidnapping of innocent farmers in the study area. This may help to bring back the confidence of the farmers to remain in production and possibly bring farmers who may have gone out of production due to fear of herdsmen attack, killings and kidnapping

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