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Food insecurity and coping strategies of farm families in the Savelugu-Nanton Municipal of Northern region

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ABSTRACT

The study aimed at examining the food insecurity trends and coping strategy of households in the Savelugu-Nanton Municipality of the northern region of Ghana. The study adopted a cross-sectional survey. The samples size was 300 household heads who responded to a semi-structured interview guide. Data were collected on the bio-characteristics of the household head, farm characteristics such as farm size, labor, and crops grown, harvesting, consumption, ad infinitum. Other areas of data collection cover the duration of food storage. The Statistical Package for Social Sciences was used to analyze the data. Bivariate test, frequency, and percentage were estimated from the data collected. The findings of the study show that there is a rise in food insecurity from April to June among the majority of households between 2013 and 2016 farming season leading to a reduction in food consumption (80%) and increase in rural-urban migration (91%). It is recommended that the Government of Ghana should tackle the menace of climate change through policy formulation and make the provision of dugout or dams available to communities to engage in all year-round agricultural activities.

Keywords— *Coping mechanism, Food scarcity, Ghana, Rural development, Smallholder farming*

1. INTRODUCTION

One of the development challenges facing developing countries is food insecurity. Food insecurity is defined as a situation where people, individuals at times, lack physical and economic access to sufficient, safe and nutritious food needed to maintain a healthy and active life. Food insecurity represents a major public health concern and is a useful index of health and well-being [1]. Ghana is one of the countries battling with a high incidence of food insecurity (34%) in Sub Sahara Africa [2]. The WFP study also indicates that 40% of the population of the northern region are vulnerable to becoming food insecure. According to [3] smallholder farm families constitute a large proportion of the population who are chronically food insecure and undernourished. The causes of food insecurity in Africa are complex and often intertwined [4]. The main concerns are the impacts of climate change, increase in food prices, loss of

subsistence and traditional food crops and cash crop [5]. Political economy theorists argue that food insecurity is a result of poor governmental policies to the agricultural sector [6]. [7] States that the causes of food insecurity are limited to drought, flood, war, population growth, over-reliance on rain-fed agriculture and poor access to quality land. For instance, nearly 85% of the population is engaged in agriculture, with farm sizes ranging from 0.2 ha to 2 ha per household. The burning question that arises is how farm families cope in the face of a lack of access to land. The land tenure system is still a problem affecting people's access to land.

The theoretical underpinning of food insecurity is the food entitlement decline theory. This theory states that food security depends on the household's entitlement to food. These entitlements emanate from families own production, labour, trade and transfer. Food security is both a demand and supply side factors [8]. Hence, food security is the situation when all people, at all times have physical and economic access to sufficient, safe and nutritious food that meet their dietary needs and food preferences for active and healthy life (ibid). This illustrates that food security entails food availability, food accessibility, food utilization and stability of food supply.

Food security has both spatial and temporal dimensions. However, most studies focus on the national level without attention on the household as a unit of analysis. Also, there is no adequate data on the strategies adopted by households in times of food shortages in most parts of the northern region of Ghana. Against this background, the study sought to assess the food insecurity of farmers and their coping strategies. The specific objectives of the study were:

- To determine smallholder farm families' food insecurity trends
- Examine the causes of smallholder food insecurity
- Assess the coping strategies of smallholder farm families

2. LITERATURE REVIEW

According to [9], the major factors affecting food availability are low production due to low productivity of land, labour and other production inputs, high incidences of crop and livestock pests and diseases, inadequate processing, storage and marketing

infrastructure. This is caused mainly by inadequate finance to obtain productivity-enhancing inputs or capital, limited availability of support services and appropriate technologies. In addition, many rural households face labour shortages due to migration of young people to the urban areas in search of employment. Other factors affecting food availability include high pre and post-harvest losses due to pests and, disease and climatic conditions [10].

Poor transportation infrastructure also impacts on food security in Tanzania as it restricts the flow of food from surplus to deficit areas. The central railway line connecting Dares Salaam with Dodoma is ineffective since 2008. Since then, the service between these regions has been discontinued. The road network connecting central to western Tanzania for Kigoma and Katavi Region which are surplus areas is also largely unpaved. [11] Point out that Tanzania could feed herself through domestic production, however food produced in the country cannot be efficiently distributed, making it inaccessible or unavailable in some areas.

The lack of storage and safe facilities for food items including cereals, yam, beans, etc often time lead to food wastage causing people the huge loss of food and money [12]. Other studies suggest that the lack of storage facilities for perishable vegetables affect farmers' production levels [13]. The lack of storage facilities for perishable commodities compels most households to consume all food items within a period of one to three months and then go hungry for the rest of the months.

Furthermore, the lack of processing equipment to add value to agricultural produce is major challenge farmers in developing countries face. Processing refers to the transformation of agricultural produce from its original form into another form for the purpose of consumption, sales or proper storage. Processing enables food to be converted into another form that can easily be preserved for a longer duration. Where foods are not processed and well preserved it befits the assumption of food security because of the probably high wastage.

Food insecurity coping strategies are activities, which maintain food security or combat food insecurity that has occurred at the household level. Coping strategies are directly attributed to household activities rather than external factors. [15] States that smallholder farmers respond to two kinds of crisis namely, 1) coping mechanisms and 2) adaptive capacity [14]. Berkes and Jolly posit that coping mechanisms with time develop into adaptive strategies. A coping strategy/mechanism refers to how households or community members meet their relief and recovery needs, as well as adjust to future disaster by themselves without seeking for support from outside individuals or entities [16]. [17] argues that different households employ different coping strategies within the same community or country depending on the extent of vulnerability exposure and sensitivity. According to [18], some households depend on communal support networks, consumption of wild foods, market purchases, aid from family relatives and friends, sale of livestock and household valuables, migration, reduction in the number of meals served each day, reduction in the portions/ sizes of meals and consumption of fewer foods items as coping strategies/mechanism. In southern Ethiopia, [14] found that majority of households minimize the frequency and quantity of food consumption, diversify their livelihood, cultivate additional and new variety of crops, wage labor and engaged in seasonal migration.

In the view of Sewnet, there are four types of coping strategies, namely 1) changing the diet to include less costly foods; 2)

increasing food supplies through means such as borrowing money, consuming seed stocks, begging, ad infinitum; 3) decreasing the number of individuals being fed by the household; and 4) rationing available foods [19].

According to [20] households adopt both ex-ante and ex-post coping strategies in their endeavour to be food secure. Generally, there are four categories of strategies, namely consumption, expenditure, income, and migration. Consumption strategies include buying food on credit, relying on less-preferred food substitutes, reducing the number of meals eaten per day, regularly skipping food for an entire day, eating meals comprised solely of vegetables, eating unusual wild foods, restricting consumption of adults so children can eat normally, and feeding working members at the expense of non-working members. Expenditure strategies include the use of savings and avoiding health care or education costs in order to buy food. Income strategies include the use of pension, small businesses and selling household and livelihood assets such as livestock. Migration strategies include sending children to relatives or friends' homes or migrating to find work (ibid).

Increased use of coping strategies indicates a decrease in food security. Likewise, a decrease in food security results in increased frequency and severity of coping strategies. Thus, the analysis of coping strategies indicates a decreasing food security situation when coping strategies accelerate from temporary measures (e.g., reduction in number or quality of meals for a brief, defined time period) from which a household can recover, to measures that undermine future lives and livelihoods and damage social, financial, physical, or natural assets irreversibly [21]. According to [22] understanding the severity of food insecurity is essential for determining the best type of response. The severity of food insecurity is gauged by its impact on people's ability to feed them in the short term, and its impact on livelihoods and self-sufficiency in the longer term.

3. MATERIALS AND METHOD

The Savelugu-Nanton district was created under the PNDC Law 207 in 1988. Subsequently, this Law was replaced by the Legislative Instrument (LI) 1450 under the Local Government Act 1993 (Act 462). The Assembly was later upgraded to a Municipal status in March 2012 under the Legislative Instrument 2071 [23]. The municipality is bordered to the North by the West Mamprusi District, to the East by the Karaga District, to the West by the Kumbungu District and to the South by the Tamale Metropolis. The altitude of the district ranges between 400 and 800 feet above sea level (ibid). The total landmark of the district is about 2022.6 square km.

The Savelugu-Nanton district receives an average annual rainfall of 600mm. The district has a high temperature with an average of 34°C, maximum 42°C and minimum 16°C. The minimum temperature 16°C which is the North-East Trade winds (harmattan) are mostly experienced from December to late February (ibid). Large scale production is very minimal. Major food crops cultivate include rice, groundnuts, yams, cassava, maize, cowpea and sorghum (ibid).

A cross-sectional survey was employed for this research. A total of five thousand one hundred and fifty-eight (5,158) household heads from three communities of the Savelugu-Nanton Municipal made up the study population. The study used both purposive sampling technique and simple random sampling techniques involving the lottery approach to sample the respondents. A purposive sampling technique was used to select the three (3) communities from the Savelugu-Nanton

Municipality as well as the staff of the Department of Agriculture and some farmers classified as ‘best practice farmers’. The chosen communities have the highest number of smallholder farmers who are classified as being poor. The study used the simple random sampling technique to select three hundred (300) smallholder household heads from the communities.

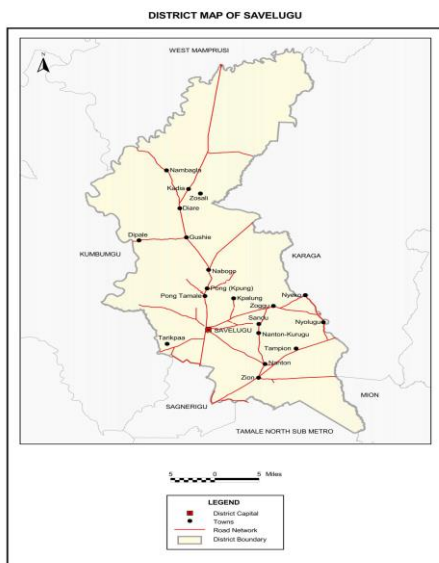


Fig. 1: Map of Savelugu-Nanton Municipal
 Source: Savelugu-Nanton Municipal Medium Term Development Plan (2017).

A semi-structured interview guide was used for the data collection during the dry season where farmers mostly are at home. This technique allowed the researcher to interact well with smallholder farmers concerning issues of food security in the selected communities. Data collection centred on the socio-demographic characteristics of respondents, farm size, the land tenure system, farm input and outputs (yield), marketing, transport and communication, migration, family size, income, food storage duration, coping strategies, among others.

The quantitative data were analyzed through the Statistical Package for Social Sciences (SPSS). A Chi-square test to measure the association between socio-demographic factors and household food security was analyzed. The study also constructed a food security index. The food security index was derived based on the daily-recommended 2470 kcal and 65g protein as the food security line. Household calories availability was estimated using food nutrient composition. Furthermore, a food consumption index was used to measure the food trends in the study area. From this index, each household was categorized as either severely food insecure, moderately food secure or acceptable food secure. A score below 21 is considered severely food insecure, a score between 21 and 35 is defined as moderately food secure and a score above 35 is described as acceptable food secure.

4. RESULTS AND DISCUSSION

4.1 Demographic characteristics of respondents

Table 1 shows the socio-demographic characteristics of the respondents. The bivariate results show that the percentage of food insecure households differ by gender, $\chi^2 (2, N = 300) = 5.72$, $p < .05$. Female-headed household (71%) were more food insecure than male-headed household (43%). The findings also show that the percentage of food-insecure households did not differ by age, $\chi^2 (4, N = 300) = 2.99$, $p > .05$. The findings of the study show that 42% of food insecure household is the same for the youth (16-39 years) and middle age (39-40 years) household.

Also, Table 1 indicates that the percentage of food insecure household differ by farm size $\chi^2 (4, N = 300) = 4.26$, $p < .05$. The findings show that 67% of food insecure households have less than two hectares of farm land compared to 54% who reported having between 3-5 hectares of land for cultivation. This means that farm size has a direct correlation with food insecurity. The land is an important factor of production in developing countries. Hence, households with limited small farm size are vulnerable to food insecurity. Furthermore, the bivariate findings show that the percentage of food insecure households differ by household size $\chi^2 (4, N = 300) = 7.47$, $p < .05$. The results show that 65% of food insecure household have above 8 household size compared to 27% of food insecure household having 1-3 household members. This findings support the Malthusian theory of population growth and food production. The Malthusian theory states that as population increases geometrically and food production increases arithmetically, there will be an imbalance between food supply and demand.

Table 1: Bio-demographic characteristics of households

Charact eristics	Food secured		Food insecure		Moderate secure		Chi-square
	F	%	F	%	F	%	
Gender							
Male	48	27.7	75	43.4	50	28.9	$\chi^2 = 5.72$ df = 2 p = .041
Female	15	11.8	90	70.9	22	17.3	
Age							
16-39	18	28.1	27	42.2	19	29.7	$\chi^2 = 2.99$ df = 4 P > .56
39-60	45	27.1	70	42.2	51	30.7	
60+	18	25.7	37	52.9	15	21.4	
Farm size							
< 2	60	26.9	95	42.6	68	30.5	$\chi^2 = 4.26$ df = 4 P > .37
3-5	16	23.2	37	53.6	16	23.2	
6+	5	62.5	2	25.0	1	12.5	
Household size							
1-3	46	40.7	30	26.6	37	32.7	$\chi^2 = 7.47$ df = 4 P < .02
4-7	31	23.0	70	51.9	34	25.1	
8+	4	7.7	34	65.4	14	26.9	

Source: Field survey

4.2 Trends of the food security situation

Figure 2 shows the trend in food insecurity of households. The results show that the incidence of food insecurity keeps rising from 2013 to 2016. There is also a consistent increase in food insecurity in the months of April to June. This finding collaborates the [9] and [18]. Several factors account for this trend of food insecurity in the study area. One of the predominant cause is climate change factors as pointed out by the respondents (table 2). This is also in line with the conclusion drawn by [24] and the [25] that agricultural production and food security are severely compromised by climate change. Again, the lack of access to credit facilities disadvantages farmers to invest heavily on their farms in terms of buying agro-chemical and improved seed variety (table 2). This result agrees with [26] that farmers who do not have access to credit are unable to build on their capacity to produce more through the use of improved seeds and the adoption of improved technologies.

Another cause of food insecurity is the lack of access to agricultural inputs such as fertilizers, herbicides, insecticides ad infinitum on the local markets. The nearest market for agro-chemicals is the regional capital which remains in accessible to hinterland farmers especially during the raining season as roads become deplorable. Furthermore, lack of storage facilities for agricultural produce is a major disincentive for food crop production (table 2). Also, 53% of households experienced post-

harvest losses due to lack of storage facilities for perishable vegetables. This findings concord with the study of [13] in the Upper East region of Ghana. Finally, the findings show that there is a general lack of government’s support in the form of subsidy for food crop farmers. Instead, the government’s attention is on cash crops such as cocoa and cashew because they are exported for foreign exchange.

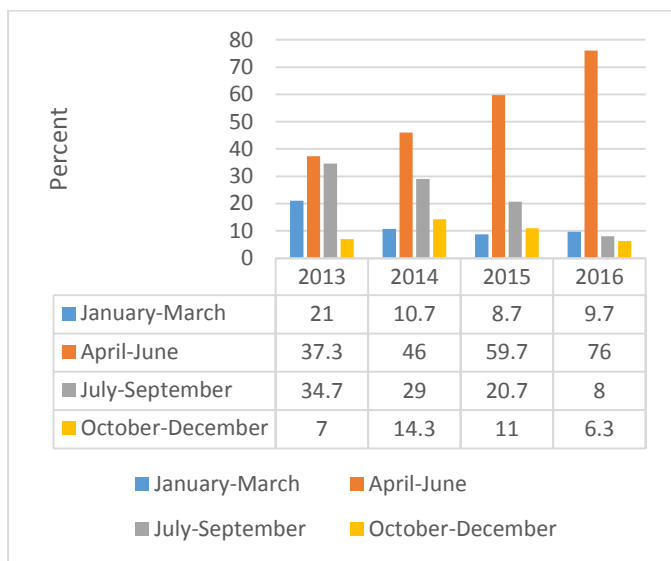


Fig. 2: Trends in food insecurity situation

Source: Field survey

Table 2: Causes of food insecurity

Causes	F	%
Lack of access to credit	238	79.3
Unfavourable climate change variables	286	95.3
Lack of access to agricultural inputs	163	54.3
Lack of government support in the form of subsidy	87	29.0
Lack of storage facilities	159	53.0

Source: Field survey

4.3 Coping strategies adopted by smallholder farmers

Table 3 shows the coping strategies adopted by the respondents in terms of food insecurity. The results show that migration to the south of Ghana is one of the surest means of coping with food scarcity among the majority of households (91%). This situation helps to explain the rural-urban migration phenomena in Ghana. People mostly migrate because they hope to find jobs to engage in so that they can remit their income back home during the raining season to engage in farming. The respondents indicate that they usually find jobs in local restaurants, gain temporal farm and illegal work among others.

Another coping strategy adopted by the respondents is to resort to borrowing from well-to-do relatives outside the community (Table 3). This is usually done in anticipation that during harvest the borrower would repay back the loan or go to work on the farmer of the lender to set off any debt. This finding confirms the views of [27] that food insecure households depend on borrowing from social network groups and repay through in kind or cash. Moreover, the findings indicate that though households report to the sale of livestock and poultry as a coping strategy, it is very low among the most household. This is because households do not embark on livestock production because of lack of access to animal feed and water during the dry season. Again, 80% of the respondents indicate that they reduce the number of meals eaten in the period of food insecurity as a coping mechanism.

Table 3: Coping strategies of households

Strategies	F	%
Migration to urban centres	274	91.3
Borrowing from friends and neighbours	229	76.3
Casual labour activities (being a driver mate)	37	12.3
Reduce number of meals eaten	241	80.3
Sale of livestock and poultry	68	22.7

Source: Field survey

5. CONCLUSION

The vulnerability of households in the northern region of Ghana to food insecurity has been increasing due to climate change related factors, poor policies and heavy dependence on rainfed agriculture. These challenges require major interventions. The government of Ghana has to tackle food insecurity from a political economy perspective by making policies that aimed at curtailing the effects of climate change and make the provision of one village one dam a reality for dry season agriculture. Also, the provision of credit facilities and local off-farm job opportunities would help curb the rural-urban drift that is often associated with food insecurity. Furthermore, increasing household awareness of the government’s free warehouses across the length and breadth of the country would encourage them to store the excess of food products for use during the lean season.

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