



THE NATURE AND IMPACTS OF FOOD SECURITY PROGRAMMES IN THE NORTHERN REGION OF SIERRA LEONE

Mohamed Paul Ngegba

Department of Extension and Rural sociology, School of Agriculture, Njala University, Njala Campus.

ABSTRACT

Food security remains a serious challenge for many households in Sierra Leone. There is evidence that the least food secured households are less likely to adopt new agricultural technologies and practices that could improve their farm productivity and make them more resilient or less vulnerable to climate change. This paper examines reports on a study that investigated the nature and impact of food security programmes in the northern region of Sierra Leone. The study was conducted in Kambia District. A stratified random sample was used to select the District, while a purposive and simple random sampling technique was used for selecting households and farmers. A questionnaire, divided into three sections and comprising semi-structured and structured questions were administered to 114 respondents. The findings revealed that 41.22% of the respondents (fulltime farmers) indicated not food secured, while 44.7% showed that their household are minimally food secured, while of the farmers interviewed said the local community is not food secured. It was further observed that most farmers (41.22%) and local community (88.60%) were not food secured. Though food security programmes exist in the study area, many people do not know about their existence. Every Food Security Programmes are delivered either directly or indirectly, the nutritional status remains critical as most of the people do not have access to safe and sufficient food at all times. It was recommended that every effort be made by Government, NGOs, and individuals to improve on the food situation in the country; strengthen community-based food production; Government as well as NGOs adopt proper information dissemination mechanism; Government works with farmers and other food producers and business associates and other NGOs to increase the quantity and quality of food that is available to the rural people; and empower the rural women.

KEY WORDS: Nature, Impacts, Household, Food Security Programmes.

INTRODUCTION

Sierra Leone is located on the west coast of Africa and covers an area of 72,326 km². The Republic of Guinea borders the country on the north and northeast and the Republic of Liberia and the Atlantic ocean on the southeast and west. The country comprises the mountainous Freetown peninsula, together with some islands. These are also extensive coastal swamps about 30km wide. Inland from the swamps are grassland plains, which extend 160km eastward to where the land rises to the plateau. These are also extensive coastal swamps about 30km wide. Inland from the swamps are grassland plains, which extend 160km eastward to where the land rises to the plateau (Government of Sierra Leone agricultural sector master plan, Vol. II, Jan 1997). It is estimated that about 70% of the total population live in the rural area with majority doing farming as the main occupation and shifting cultivation as the predominant practice. (Medium Term Agricultural Strategy Plan 2003-2007). Sierra Leone being naturally well-endowed country with a varied agricultural resource base, rich in fisheries and a high potential for raising yields, yet it is classified as the least developed country by the United Nations. Per capital income is below US\$175 and 68% of the population live in absolute poverty. The country cannot feed herself fully and is highly dependent on imported food. Fundamental aspect of poverty in Sierra Leone is chronic food deficiency. This for most households result from lack of access to food due to

both low domestic production level and abysmally low income. Improving household food security is an issue of supreme importance to a large security is an issue of supreme importance to a large number of Sierra Leonean populace who are suffering from persistence hunger and under nutrition and to others who are at risk of doing so in the future, including coming generations. Food security is a widely debated and is at risk of doing so in the future, including coming generations. Food security is a widely debated and much confused issue.

Achieving a sufficient food supply-a necessary condition for food security- and making it sustainable, that is, keeping pace with growing food needs remains a national challenge. Promotion of agricultural growth and of food crop yield, in particular, needs to remain high in the policy agenda. This is re-echoed in the inauguration speech of His Excellency, the former President, Alhaji Dr. Ahmed Tejan Kabba, who says “No Sierra Leoneans should go to bed hungry by the year 2007”. The nature and effect of food security situation in Sierra Leone over the past decade have been worsening. Per capital production has decline, especially for rice the most important staple food for sierra Leoneans. The population has been growing at a rate of 2.5% per annum, while the growth rate of agricultural production has been negative. Rice self-sufficiency has declined from an estimated 95% in 1975/1976 to about 60% in 1994/ in 1975/1976 to about 60% in 1994/95 and currently stands at 43.6%, that is

domestic production in 1999/2000 could only meet the needs of about 25% of Sierra Leone's population (Medium Term Agricultural Strategy Plan, 2003-2007). The focus of food security centres on four dimensions: access, adequacy, availability and stability. Food adequacy depends not only on domestic production but also on the ability to import what is necessary to fill the needs gap. Availability of food does not ensure its accessibility, food may be available, but a household for many reasons may not have access to it. Sierra Leone is notable for favorable climate and vast natural resources, which give it comparative advantage in the cultivation of many crops both for export and domestic use and vast natural resources, which give it comparative advantage in the cultivation of many crops both for export and domestic use, as well as raising livestock. However, in order to realize the food benefits of the country's tremendous wealth, some formidable challenges must be surmounted among which are natural, socio-economic and technological factors. In Sierra Leone, Government is the sole authority responsible for agricultural development. However, it has many arms that cooperate with other agencies; donors, NGOs, civil society, farmers and perhaps the private sector to promote production, nutrition and food security activities. The Ministry of Agriculture Forestry and Food Security is the principal representative of government with responsibility for sectoral policies, plans and programmes. The role of many stake holders, especially NGOs, in agriculture is recognized by government. In this regard, it is prudent to encourage their participation, facilitate and coordinate their activities in order to achieve positive result. In recognition of the vital role women play, there exist in MAFFS women in Agriculture and Nutrition Unit responsible for addressing the many obstacles that militate against them in food and agricultural production. Their role is exemplified by the fact that they produce 60% of the food. Moreover, women's participation in all aspect of production and certain operations like weeding and post-harvest handling are women specific. Agriculture provides the best self-employment opportunities for youths, men and women. Already, some youth groups are actively engaged in various aspects of agriculture. The strategy is to sensitize several others to emulate their colleagues to participate fully in all aspects of agriculture and food security with particular emphasis in land water development, fishing, skills development in the use of appropriate labour-saving devices and environment conservation. NGOs in general are reputable voluntary organizations or agencies who are action-oriented and nonprofit making. In agriculture, NGOs are major stakeholders or integral partners. Their activities and participation in the food production process can make significant contribution to increase agricultural production, growth, and food security. If their activities are properly coordinated, they can serve as extension agents who can augment the national service without duplication. Improved technical packages can increase food and agricultural

production significantly if used effectively. This in turn depends on research, extension and training and the means to use such packages. Rice Research Station Rokupr, and SLARI-Njala, have also been engaged in farming systems research for some time and have developed proven technologies.

Fish is the most widely used animal protein in Sierra Leone. Its availability is fundamental to the achievement of food security and a priority to government. Livestock has between the least developed sector and hit hardest by the rebel war. Reliable figures are not available on existing farm animals. With near collapse of the domestic stock and infrastructure coupled with very weak institutional base, holistic strategies and plans are the best options to save the sub sector from total collapse, and promote its further development. In Sierra Leone a wide range of food crops are grown under a bush and fallow system; sorghum, maize, millet, cassava, sesame, beans and groundnuts are associated by crops grown with rice. Most farmers sow first crop rice after the bush has been cleared and burnt while a variety of crops follow it. There are however regional differences. In the north, for example, where research is based, farming is characterized by the bush follow system with small holdings ranging from 0.5ha to 6.0 ha for food crop production. Well over 10 different crops grown in mixed stands in one season with rain fed upland dominating. The farming system is essentially subsistence oriented, shifting with some cash cropping superimposed. While crop production is practiced both in lowlands and uplands the cash crop, mainly oil palm, is best adapted to the upland soils. Recent estimates of the country's production show dramatic decrease in the production of nearly all food crops. Therefore, to achieve higher level of food security, Sierra Leone needs to adequately exploit its existing potentials for increases crop production, raise meat output and expand fish production. Sierra Leone like other developing countries is making efforts to improve her food security, but faces difficult choices due to budgetary and institutional resources constraints. Typically this country relies heavily on a narrow set of policy instrument such as food rationing, general price subsidies, employment programmes, or feeding schemes. In every aspect, the thrust of Sierra Leone's recovery and growth rests on agriculture. Given the country's enormous natural and human resources base, the sector has tremendous capacity for prosperity. Despite this potential, however, Sierra Leone has been characterized by low per capital income, abject poverty, and chronic deficit over the years. The situation was worsened by the rebel war, and recent Ebola outbreak which inflicted untold destruction on every fabric of society. Hard hit in the struggle was the agricultural sector, which normally provides employment for 80% of the rural population. There were losses of lives, destruction of infrastructure, seeds, tools and weakening of the institutional machinery. Farms were abandoned, or neglected for nearly a decade during the rebel war to the extent that roads have been overgrown with bush and rendered impassable by most vehicles and recently pre prevented from moving from one area of the country to another, totally stopping marketing of

agricultural products. All tree crop plantations were overgrown by secondary forest. The once thriving agricultural and research training institutions were seriously damaged and staff displaced and most died of the Ebola Virus Disease. The extension service especially at village and farm levels was disrupted and many of the extension workers became direct victims of the war and the Ebola outbreak. In the midst of this entire crisis, Sierra Leone has no alternative but to adopt the Poverty Reduction Strategy Paper (PRSP) in order to reverse these negative economic and social trends and to improve on the food security situation of the country. Poverty is a major determinant of chronic food insecurity; the poor do not have adequate income to gain access to food in the quantities needed for a healthy life. Food insecurity leads to much human suffering. Effort to become secured may exert a heavy toll from household if, for example, most of their income and time is spent on obtaining food. The search for food security may also have important implication for a region's environment and natural resources utilization as well as its demographic situation. Therefore, the trust of this study is to investigate the nature and impact of food security programmes in the Northern Region on poverty alleviation in Sierra Leone. It is hoped that findings of this study will be used by Government for formulation, designing, implementing policies, monitoring, and evaluating programmes that will promote sustained growth of agricultural outputs, food security, poverty alleviation, and environmental protection within the framework of improved micro-economic climate and social stability. It is also hoped that the results would not only be useful to NGOs, but the entire Sub-Saharan Region of Africa for reducing poverty.

Purpose and Objectives

The purpose of this therefore, is to investigate the nature and impact of food security programmes in the Northern Region in Sierra Leone. To achieve this, the study was guided by three major objectives as follows: 1) determine the nature and types of food security programmes in the Northern Region in Sierra Leone; 2) assess the level of awareness of farmers about food security in the northern region; and 3) identify the impact and level of success of the food security programmes in the Northern Region.

METHODOLOGY

Study Area

The study was conducted in Kambia District in the Northern Province of Sierra Leone. The district is divided into seven (7) chiefdoms and the headquarter town is Kambia. Kambia is hundred and five (105) miles from the capital Freetown. The inhabitants of this area are mostly engage in subsistence farming, fishing and petty trading. The vegetation is predominantly savannah grassland and the prevalence of mangrove and inland valley swamps make farming a major occupation in the District. This research therefore covers the major towns and villages that are within a 12-mile radius from Kambia town (the district headquarter town).

Design of the Study

The study was descriptive in nature and descriptive statistics was used to report findings. It is only a representative of the total population of full time farmers in the Northern Province is considered. It is analytical as it investigates the impact of food security programmes in the Northern Region of Sierra Leone.

Population and Sample

The population of the study consists of full time farmers in the Kambia District, Northern Region of Sierra Leone. The selection of the farmers was based on the fact that he/she must be a full time farmer.

Sampling Procedure

The study employed purposive, multistage and systematic random sampling techniques. One District –Northern was purposively selected because of their locations, cultural diversities and their active involvement in food security programme implementations. The second stage in the multistage sampling involved simple random selection towns and villages. The third stage involved the selection of purposive random sampling of farmers from among the major towns and villages selected. The sample consists of ten (10) major villages that are within a twelve (12) mile radius from Kambia town (District headquarter). Out of these ten towns/villages, seven (7) were randomly selected using simple random sampling with replacement. The villages selected were Rokupr, Kawula, Tawuya, Kapairoh, Kokoya, Bamoi Munu and Romaka. This gave 70% in the study area. From the seven (7) major villages, cluster sampling procedure was used to select the full time farmers and 70% of full time farmers in each village were considered. This gave a total of one hundred and fourteen (114) full time farmers. Since all full time farmers in the northern region share similar characteristics, this sample therefore gives a fair representation of all full time farmers in the region.

Instrumentation

The instrument used was a set of well-structured questionnaire seeking information from full time food crop farmers. The questionnaires were designed based on the objective of the research. Expert opinions were used to improve on the quality of the questionnaire. Pre-testing of the questionnaire was also done to check for the flaws and adjustment made was necessary. Information was also collected through personal interview of full time farmers. Records were used as a source of data collection.

Data Collection

The data for this study was collected between 7th and 30th August, 2015. Both primary and secondary data were collected. The secondary data were information from the literature, official documents, library materials, internet, and textbooks. Primary data was solicited through administration of questionnaire, direct observation, focus group discussions, and key informant interviews. Data were collected using questionnaires. These questionnaires were administered to full time crop farmers and these were completed and returned to the researcher. Personal interview and information from records were also used in the data collection process. Data collection started from the 7th

August and ended 21st August, 2015. Data was collected by 10 well trained enumerators, who were familiar with, and understood the culture of the farmers and speak their languages very fluently. These enumerators were supervised by the authors

Data Analysis

The qualitative data were analyzed through qualitative content analysis, while the quantitative data utilized Excel and Statistical Package for Social Sciences (SPSS) IBM Statistics version 20 to complete descriptive statistics. The data were analyzed to yield frequencies and percentages of the farmers relative to their responses.

RESULTS

1. Nature and Types of Food Security Programmes in Sierra Leone

Rating of the level of food security in the various areas (household, local communities, and nations) is shown in table 1. The table reveals that 47.0% of the 114 respondents said that their households were not food secured. Fifty-one farmers agreed that they were minimally food secured. However, only 7.01% accepted that their households are moderately food secured and highly food secured. Another illustration from the table rates food security with respect to the local community. In this respect 88.65 of the farmers interviewed said that their local communities are not food secured. A significant smaller percentage (10.53%) rated their community as minimally food secured. A complete variation in the responses was observed when food security was rated with respect to the nation as a whole. Almost all (97.37%) of the farmers interviewed indicated that the nation is not food secured.

TABLE 1: Frequencies and Percentages of Responses of Full Time Farmers on the Level of Food Security in the Various Areas (Household, Local Community and Nation)

Areas of food security	Farmers							
	Rating of level of food security							
	Not Food secured		Minimally Food secured		Moderately Food secured		Highly Food secured	
	F	%	F	%	F	%	F	%
Household	47	41.22	51	44.74	8	7.10	8	7.01
Local community	101	88.6	12	10.53	1	0.87	0	0
Nation	111	97.37	3	2.63	0	0	0	0

(b) Crops Grown by Full Time Farmers which make them Food Secured

Table 1(b) illustrates the frequencies and percentages of crops grown by full time farmers, which make them food secured. Among the various crops listed, all the farmers interviewed cultivate rice. This represents 100% of the total

respondents. With respect to cassava, 96% cultivate the crop for them to become food secured. In the case of potato, millet and groundnut, the table shows that 71%, 17%, 70% respectively indicated they cultivate these crops in order to become food secured.

Table 1(b) Frequencies and Percentages of Farmers Responses on Crops Grown for them to become Food Secured

Crops grown	Rice	cassava	Potato	Maize	Millet	Sorghum	Yam	Groundnut	Beans	Sesame	Okra	Coco yam
Frequency (F)	114	109	81	74	19	88	8	80	47	83	98	6
Percentage (%)	100.0	96.0	71.0	65.0	17.0	77.0	7.0	70.0	41.0	73.0	86.0	5.0

(c) Farmers Response on Various Sources of Food to Feed Themselves and their Families

Table 3 shows frequencies and percentages of farmers' responses on various sources of food to feed themselves and their families. From the table, all the farmers interviewed relied on small-scale farming as their main source of food. It

is also seen from the table that 42.9%, 49.1% and 56.1% respectively depend on food aid, micro-credit and food-for-work. 20.2% accepted that sell wood to obtain income, which they use to buy food to feed themselves and their families. Also, 12/3% depends on gift from friends and relatives, while 31.6% on small-scale business.

Table1(c): Frequencies and percentages of Farmers responses on Various Sources of Food to feed themselves and their Families

Sources of Food	Farmers	
	F	%
Small-scale farming	114	100.0
Food Aid	49	42.9
Micro-credit	56	49.1
Food-for-work	64	56.1
Selling wood	23	20.2
Gifts from friends and relatives	14	12.3
Small business	36	31.6
Part-time job	3	2.6
Full time job rather than farming	0	0.0

1 (d) Types of Food Security Programmes Available in the Northern Region

Table1 (d) shows the frequencies and percentages of farmers on the types of food security programmes available in the northern region. In the light of food aid, out of the 114 farmers interviewed 34% accepted that they know about the programme and a corresponding 66% said they do not know about the programme with seed distribution and other

vegetative parts 86.1% said the programme was ongoing in the study area, while 17% said that they do not know about the existence of such programme. For farm machine rental an insignificant number of the total farmers interviewed said it is present in the region. In case of micro-loans and extension service, 47% and 11% respectively indicated that these programmes are present in the region.

TABLE 1(d): Frequencies and percentages of farmers’ responses on the types of Food Security Programmes Available in the Northern Region

Types of Food Security Programmes	Farmers					
	Know		Don't Know		Total	
	F	%	F	%	F	%
Food Aid	39	34	75	66	114	100
Food-for-work	97	85.1	17	14.9	114	100
Seed distribution and other vegetative parts	48	42.1	66	57.9	114	100
Farm machine rental	2	1.8	112	98.2	114	100
Micro-loan for farmers	54	47	60	52.6	114	100
Extension services	13	11.4	101	88.6	114	100
Provision of tools	28	24.6	86	75.4	114	100

TABLE 1(e): Frequencies and Percentages of Farmers Responses on the form in which food security programmes are provided

Food security Programme	Farmers			
	Form in which provided	F	%	
Food Aid	Money	6	15.4	
	Edible food items	39	100.0	
	Supply of farm tools	0	0.0	
Food-for-work	Husk rice	61	62.7	
	Money	3	3.1	
	Bulgur	92	94.8	
	Corn meal	74	76.3	
	Vegetable oil	92	94.8	
	Beans	78	80.4	
	50kg bags	12	25.0	
Seed distribution and other vegetative parts	Bushels	47	97.9	
	Stem cutting	31	64.6	
	Vine cutting	13	27.1	
	Vegetable seeds	6	12.5	
	Micro-loans for farmers	Cash	54	100
		Cheque	0	0.0
Bank draft		0	0.0	
Farms tools	Cutlass	28	100.0	
	Hoe	28	100.0	
Extension services	Framer education	13	100.0	

(e) Form in which Food Security Programmes are provided

Table 5a illustrates frequencies and percentages of the responses of farmers on the form in which food security programmes are provided. The percentages are worked out with respect to the frequencies of farmers who know about the presence of the various food security programmes in the region. For food aid out of a total of 39 farmers who said this programme is present in the region, 15.4% shows that it is provided in the form of money while all 39 received food aid in the form of edible food items. With respect to food-for-work 62.7% said it is delivered as husk rice, 3.1% in the form of money, 94.8% as bulgur, 76.3% in the form of corn meal, 94.8% in the form of vegetable oil and 80.4% in the form of beans. For seed distribution and other vegetative parts 25% receive seeds in 50kg bags, 79.9% in bushels, while 64.6% received it as stem cutting. On the issue of micro-loans all the farmers indicated that it is given as cash. For provision of farm tools 28 farmers accepted that it is delivered as hoes and cutlasses, while all those who

acknowledge the presence of extension service in the study area said that it is provided in the form of farmer education.

(f) Means by which Food Security Programmes are provided

Table 1 (e) shows the frequencies and percentages of farmers responses on the means by which food security programmes are provided. From the table, it is observed that 9.5% of the farmers interviewed accepted that food aid is directly supplied, while 20.5% said that it is provided through community leaders. In the case of food-for-work, 26.8% indicated that it is directly supplied. The table further reveals that 74.2% of the farmers received food-for-work through farmers association. With respect to seed distribution, 35.4% of farmer got seeds and other vegetative parts directly and 91.7% of them received through farmers association. The table also shows that 66.7% of the respondents received micro-loans directly and 64.5% through farmers association. For provision of tools 60.7% indicated that they received them directly.

TABLE 1 (f): Frequencies and Percentages of the Responses of Farmers on how Food Security Programmes are provided

Food Security Programmes	Farmers		
	How provided	F	5.0%
Food Aid	Directly supplied	31	79.5
	Personal request	4	10.3
	Project Proposal	3	7.7
	Direct application	0	0
	Community leaders	8	20.5
Food-for-work	Farmers' association	2	5.1
	Directly supplied	26	26.8
	Through religious organizations	0	0.0
	Farmers' association	74	74.2
Seed distribution and other vegetative parts	Community leaders	13	13.4
	Directly	17	35.4
	Farmers' association	44	91.7
	Community leaders	9	18.8
Micro-loans for farmers	Religious leaders	0	0.0
	Directly	36	66.7
	Farmers' association	35	64.5
	Community leaders	5	10.4
Provision of tools	Religious leaders	0	0.0
	Directly	17	60.7
Extension services	Farmers' association	11	39.3
	Farm visits	13	100

2. Level of Awareness of Farmers about National Food Security Programme

a) Awareness of Farmers about the National Food Security Programme in the Northern Region

Table 2(a) shows the frequencies and percentages of farmers' responses on awareness of the national food

security programme. Out of a total of 144 farmers interviewed, 19.3% said they are aware of the national food security programme. A significant percentage of 80.7% said they are not aware of this programme in the region.

TABLE 2(a): Frequencies and Percentages of Farmers Responses on Awareness of the National Food security Programme

Farmers Responses					
Yes		No		Total	
F	%	F	%	F	%
22	19.3	92	80.7	114	100

(b) Means of Receiving Information about Food Security Programmes

Table 2(b) indicates the frequencies and percentages of farmers’ responses on the means of receiving information about food security programmes. From the table, out of a total of 22 farmers who are aware of the national food

security programme, 45.5% indicate that the information was received through radio broadcast, while 13.6% from television. On the same table, 18.2% got the information from NGOs in the study area and 22.7% from friends and relatives.

TABLE 2(b): Frequencies and Percentages of Farmers Responses on the Means of Receiving Information about Food Security Programmes

Source of Information about Food Security Programmes	Farmers
	No (%)
Radio	10(45.5%)
Television	3(13.6%)
Extension workers	0(0.0%)
NGOs	4(18.2%)
Friends and relatives	5 (22.7%)
Chiefdom authorities of food security	0(0.0%)
Total	22(100.0)

2(c) Levels of Awareness of Farmers on Food Security Programmes

Table 2 (c) shows the frequencies and percentages of farmers’ responses on the level of awareness of food security Programmes in the northern region. Out of the 114 farmers interviewed 57% said they are not aware of food aid while 43% accepted that they are aware of the existence of this programme. Out of the 49 farmers that are aware of food aid 31 have a moderate awareness and 18 have high awareness.

In the case of food-for-work 10.5% of the farmers said they are not aware of it, while 89.5% accepted that they are aware of the programme. From this percentage (89.5%), 60.5% have a moderate awareness and 29% have high awareness. For seed distribution and micro-loans 25.4% and 28.1% respectively indicated that they are not aware of these programmes while a corresponding 74.6% and 71.1% respectively accepted they are aware of these programmes.

TABLE 2C- Frequencies and Percentages of Farmers Responses on the Level of Awareness of food Security Programmes in the Northern Region

Food security programmes	Farmers			
	Rating of level of awareness			
	Not Aware	Aware	Moderate Awareness	High Awareness
	No. (%)	No. (%)	No. (%)	No. (%)
Food aid	65(57.0%)	49(43.0%)	31(27.2%)	18(15.8%)
Food-for-work	12(10.5%)	102(89.5%)	69(60.5%)	33(29.0%)
Seed distribution and other vegetative parts	29(25.4%)	85(74.6%)	49(43.0%)	36(31.6%)
Micro-loans	32(28.1%)	82(71.9%)	48(42.1%)	34(29.8%)
Machine rental	108(94.7%)	6(5.3%)	6(5.3%)	0(0.0%)
Provision of tools	23(20.2%)	91(79.8%)	54(47.4%)	37(32.5%)
Extension of service	101(88.6%)	13(11.4%)	13(11.4%)	0(0.0%)

3. Impacts and Level of Success of Food Security Programmes in the Northern Region

(a) Level of positive and negative impact of food security programmes in the northern region

Table3 (a) illustrates the frequencies and percentages of positive and negative impacts of food security programmes. For change in income level of farmers, out of the 114 farmers interviewed 7% indicate high positive impact, 36% moderate positive impact and 37.7% indicated little positive impact. For the same option 3.5% indicated little negative impact. Eighteen (18) farmers however, said that change in income level of farmers has no impact at all. The table also

reveals that for increase in quantity of produce 4.4%, 22.8% and 43% respectively show high positive impact, moderate and little impact, while 21.1% said this has no impact. The table further illustrates that in developing farmers’ self-reliance in farming, out of the 114 farmers investigated 71% show positive impact and 7% indicated negative impact. Another illustration from the table is that in terms of increase in farmers’ participation, of the total farmers interviewed 64.8% indicated positive impact and 7% indicated negative impact. With respect to the improvement in quality of produce 57.9% show positive impact, 3.5% negative impact and 36.8% said it has no impact.

TABLE 3a: Frequencies and Percentages of Farmers Responses on the Impact of Food Security Programmes in the Northern Region

Option of impact of Food Security Programmes	FARMERS						Impact
	Rating of Level of Impact						
	POSITIVE IMPACT			NEGATIVE IMPACT			
	High	Moderate	Little	High	Moderate	Little	
No.(%)	No.(%)	No. (%)	No. (%)	No. (%)	No.(%)	No. (%)	
Change in income level of farmers	8(7.0%)	41(36.0%)	43(37.7%)	0(0.0%)	0(0.0%)	4(3.5%)	18(15.8%)
Increase in the amount of land use	4(3.5%)	34(29.8%)	46(40.4%)	0(0.0%)	0(0.0%)	6(5.2%)	24(21.1%)
Increase in quality of produce	5(4.4%)	26(22.8%)	49(43.0%)	0(0.0%)	0(0.0%)	6(5.2%)	28(24.6%)
Control of pests and diseases	1(0.9%)	8(7.0%)	29(25.4%)	0(0.0%)	0(0.0%)	4(3.5%)	70(61.4%)
Improvement in quantity produce	1(.9%)	30(26.3%)	35(30.7%)	0(0.0%)	0(0.0%)	5(4.4%)	42(36.8%)
Developing the farmers self reliance in farming	8(7.0%)	32(28.0%)	41(36.0%)	0(0.0%)	0(0.0%)	7(6.1%)	25(21.9%)
Increase in farmers participation	8(7.0%)	32(28.0%)	34(29.8%)	0(0.0%)	0(0.0%)	8(7.0%)	32(28.0%)
Improvement in social status of farmers	3(2.6%)	18(15.8%)	22(19.3%)	0(0.0%)	0(0.0%)	4(3.5%)	65(57.0%)
Methods of marketing agricultural produce	3(2.6%)	21(18.4)	39(34.2%)	0(0.0%)	0(0.0%)	12(10.5%)	37(32.7%)
Acquisition of farm tools	17(14.9%)	33(29.0)	21(18.4%)	0(0.0%)	2(1.8%)	7(6.1%)	34(29.8%)
Improvement in farmer- extension worker relationship	2(1.8%)	6(5.3%)	36(31.6%)	0(0.0%)	1(0.9%)	7(6.1%)	62(54.4%)
Development of farmers skills and knowledge in agriculture	2(1.8%)	18(15.8%)	37(32.5%)	0(0.0%)	0(0.0%)	4(3.5%)	53(46.9%)
Increase in level of farming resources	11(9.6%)	29(25.4%)	29(25.4%)	0(0.0%)	0(0.0%)	7(6.1%)	38(33.3%)
Better allocation of farming resources	2(1.8%)	16(14.0)	35(30.7%)	0(0.0%)	2(1.8%)	4(3.5%)	55(48.2%)
Use of appropriate technology in farming	3(2.6%)	6(5.3%)	22(19.3%)	0(0.0%)	1(0.9%)	5(4.4%)	77(67.5%)

3(b) Level of Success of Food Security Programmes in the Northern Region

Table 3(b) shows the frequencies and percentages of farmers’ responses on the level of success of food security programmes in the Northern Region. With reference to increase in the financial status of farmers 4.4% of the farmers interviewed said it has produced high level of success, 21.9% indicated moderate level of success and 39.5% indicated little level of success. However, 34.2% shows that this option has no success. With increase in food production 6.1% of the farmers interviewed showed that food security programmes have high contribution of success, 24.6% indicated moderate level of success, 35.1% said little contribution to success and 34.2% shows no contribution to success. The same table also reveals that with respect to the involvement of youths in farming, 8.8% of the respondents

indicated high contribution to success, 17.2% shows moderate contribution to success while 59.6% and 4.4% shows little success and no success respectively. The table also illustrated that 14.9% of the respondents accepted that food security programmes have high success in improving the nutritional status of the farmers’ family. Also 23.7% indicated moderate level of success, 27.2% little success and 34.2% no contribution to success. With regards to the protection of farmers against exploitation by middlemen, only 0.9% of the total farmers interviewed indicated high contribution to success while 77.2% said no contribution to success.

When it comes to the area of availability of loans to farmers 33.3% indicated high level of success, 23.6% shows moderate level of success and 37.7% said little contribution to success.

TABLE 3b- Frequencies and Percentages of Farmers Responses on the Level of Success of Food Security Programmes in the Northern Region

Option of the Level of Success of Food Security Programmes	Farmers							
	Level of Success							
	High Level		Moderate		Little Level		No Success	
	F	%	F	%	F	%	F	%
Introduction of new farming techniques	2	1.8	34	29.8	46	40.4	32	28.1
Increase in financial status of farmers	5	4.4	25	21.9	45	39.5	39	34.2
Provision of improved planting materials for farmers	1	0.9	23	20.2	52	45.6	38	33.3
Availability of food	3	2.6	31	27.2	56	49.1	24	21.1
Increase in food production	7	6.1	28	24.6	40	35.1	39	34.2
Stability in food production	0	0	33	29	47	41.2	34	29.8
Pest and disease control	7	5.3	19	16.7	74	64.9	15	13.2

Involvement of youths in farming	10	8.8	31	17.2	68	59.6	5	4.4
Acquisition of technical skills and knowledge	2	1.8	5	4.4	28	24.2	79	69.3
Availability of extension services	0	0.0	3	2.6	14	12.3	97	85.1
Improvement in the nutritional status of the farmers family	17	14.9	27	23.7	31	27.2	39	34.2
Improvement in the nutritional status of the community	1	0.9	8	7.0	17	14.9	88	77.2
Improvement in the nutritional status of the country	0	0.0	0	0.0	12	10.5	102	89.5
Availability of loans to farmers	38	33.3	30	26.3	43	37.7	3	2.6
Protection against exploitation of farmers by middlemen	1	0.9	6	5.3	19	16.7	88	77.2
Bargaining power of farmers increase	2	1.7	5	4.4	14	12.3	93	81.6
Supply of agricultural tools	41	36	36	31.6	34	29.8	3	2.6
Marketing excess produce	0	0.0	18	15.8	43	37.7	53	46.5

DISCUSSION

Nature and Types of Security Programmes in Sierra Leone

The study revealed that food security is rated with respect to three (3) important areas. These are household, local community and the nation. It was observed that 41.22% of the respondents (fulltime farmers) indicated not food secured, while 44.7% shows that their household are minimally food secured. Also, the farmers' source of food supply was irregular. Most of the farmers went for a day or two without food for various reasons. One possible reason could be accessibility, as most of the farmers cannot access the food they require. Secondly, even if they have access to food, they may not have the purchasing power to obtain the required food, which is not enough to provide the nutrients requirement of the body (abundance). Finally, since rice is the staple food for all Sierra Leoneans, absence of rice in the diet for a particular day means absence of food. Though these people may consume other foodstuffs, example, cassava, the un-affordability of rice due to high prices means they are far from being food secured. This finding is contradicting what FAO (2000) stated, that, food security is achieved when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. The findings also revealed that 88.60% of the farmers interviewed said the local community is not food secured. This is not surprising as the community can only be food secured if a greater percentage of the households are highly food secured. The reasons advanced for the food insecurity of households also hold for local community. Although the proportion of undernourished people in Sub-Sahara rural communities remained about constant the increase in the absolute number reflects the fact that the supply of domestic or imported food is not sufficient to cope with population growth (FAO, 2003). Since 41.22% of the farmers indicated that their households are not food secured, and the percentage of 88.6% said local community is not food secured, it goes without saying that the nation is not food secured. These findings confirmed the World Food Programme (WFP) (2006) report, which stated that about 45% of the population is potentially food insecure – 4% food insecure throughout the year, 26% highly vulnerable and 15% moderately vulnerable—with variations both geographically and amongst livelihood groups, but contrary to World Bank, 2015, which stated that the number of poor

people in Sub-Saharan Africa, living with less than \$ 1.25 a day, has declined by 23 percent between 1993 and 2011). From table two (2), it is illustrated that 100% of the farmers interviewed cultivated rice. This is not surprising as rice is the staple food crop for all Sierra Leoneans. The crop is cultivated both in upland and inland valley swamps. According to investigation, a greater percentage of rice cultivated is carried out in upland since this makes it possible for mixed cropping to be done with crops like maize, sorghum, sesame, okra, etc. Next importance to rice is cassava, 96% of the farmers interviewed cultivated crop for them to become food secured. This is due to the fact that cassava is considered the second staple food in Sierra Leone. It can be processed in various products such as; garie, foo-foo etc. In the case of potato, yam and beans, these crops are grown in the backyard gardens; and one of the reasons being that these crops can be sold to obtain income for purchasing rice. They also sometimes serve as “back-up” where rice is not sufficient. The most intriguing aspect from table 2 is that only 17% of the respondents cultivated millet. This crop could be considered as a perfect substitute to rice, but many farmers do not cultivate it. This is probably because of lack of food for the processing of the produce. Crop diversity is significant and important factor of food security. This research confirms the findings of others researchers on the topic of the importance of crop diversification as a potential strategy to mitigate food insecurity by smallholders in Sub-Sahara Africa (Njeru, 2013). In this study farmers grew various kinds of crops to make them food secure. It is interesting to note from table three that the 114 respondents interviewed relied on various sources of food to feed themselves and their families. Some of these sources are discussed below: The study revealed that 100% of the farmers interviewed indicated that they depend on small-scale farming. This finding is in line with the findings of Sesay (2007) that most farmers in the Northern Sierra Leone are smallholder farmers. This is true as farming is the most predominant activity in the rural area. This is because most people consider farming as a last resort after all other activities have proven futile. Farming in these areas is considered a way of life. Even big business men partake in it. The income generated from the produce is used for diverse purposes such as feeding the family and paying school fees. Also, since this study centers on full time farmers it is not an enigma to discover that 100% of the respondents relied on small-scale farming.

With respect to food aid, only 42.9% indicated that it is their major source of food to feed themselves and their families. Food aid has played a tremendous role in the lives of people living in the study area. This is especially so during the rebel war crisis when farming was rendered almost impossible. Food aid is an incentive for both food production and communal work. At planting time, farmers borrow money from local money lenders to buy food, which they repay in kind at harvest with very high interest rate. Food aids prevent farmers from borrowing or reduce their debt burden. Some studies such as (Herrero *et al.*, 2010; Tache and Oba, 2010; Milgroom and Giller, 2013) suggest that crop diversification can boost total household income, and our data support that hypothesis. This is the much talked about in every corner of the country especially in the rural areas. From the research, it is discovered that 49.1% of the 114 farmers received micro-credit, which they subsequently use to feed themselves and their dependents. Micro-credit is used to purchase food for the farmers' family, thus serving the function of food-for-work. Except for savings and credit association and money lenders, government and NGOs have been the main source of credit and input packages through its many intermediaries. Currently government provides micro-credit, but its impact on food security has not gone far enough. With adequate provision of credit, farmers will not only be able to acquire inputs but their associations will be able to participate effectively in input and output marketing. The study further shows 56.1% of the farmers who indicated that they rely on food-for-work as their main source of food to feed themselves and their families. Food-for-work when utilized properly would help in solving the food insecurity situation in the country. This is because it brings more youths into activities such as IVS development, upland farm cultivation, tree crop rehabilitation and agro-forestry. These findings of this study are similar to a survey done on food-for-work programs in Ethiopia, which also revealed that they increased consumption by an average of about 455 calories, or 30% of the daily intake (Gedamu, 2006). Another food for work program implemented in India by the Catholic Relief Services in the 1980s, "reached poor peasants with less than 5 acres who were below the official poverty line. The selling of wood was not a new practice in the rural areas, especially among farmers. Since shifting cultivation was the major practice in the study area, large piles of wood were often gathered and sold. The money obtained was subsequently used to purchase food for the farmers' families. Such money could also be used to purchase farm inputs. From the research; various types of food security programmes are available in the region. Some of them includes: food aid, food-for-work and seed distribution. The presence of NGOs such as Action Aid, CAP, CARITAS *etc.* usually help in the implementation of the above mentioned food security programmes. Micro-loans were most times provided to women, which help to increase their participation in agriculture. These findings subscribed to the findings of Ngegba *et al.* (2015) who found that food security programmes were provided by many NGOs in the Bo District in the Southern Region of Sierra Leone. The

number of extension workers in Sierra Leone was small; this made it difficult for extension services to be adequately provided to the farmers throughout the country. Also most extension workers were not rural minded. They therefore, prefer to stay in bigger towns where there were few farmers. Other food security programmes were: provision of farm tools and farm machine rental. The food security programmes provided foods in various forms. Food Aid and food-for-work was usually provided in the form of edible food items such as bulgur, cornmeal, and vegetable oil *etc.*, which, prevented farmers from selling their reserved seeds. Seed and other vegetative parts distributions were part of the food security programme and were provided in the form of vine cutting, stem cutting, vegetable seeds, seed rice, *etc.* Micro-loans are delivered in the form of cash (money) since cash is the easiest means of transaction in the provinces. The absence of banks in the study area made it unnecessary for cheques or bank drafts to be issued for micro-loans. Farm tools were provided in the form of hoes and cutlasses. These tools are cheap and easy to maintain. Experience the world over shows that improved hand tools save labour considerably by reducing the amount of time it takes to do a particular job. Also there is a proliferation of blacksmiths all over the country. Extension services are provided in the form of farmer education. These findings are similar to those of Ngegba (2004) which stated that farmers in Valunia and Bumpeh Chiefdoms used various coping strategies in time of food self- insecurity. Food security programmes are either provided directly or indirectly. Direct supply of food security programmes normally yield good result because donor agencies deal directly with individual farmers. Thus leading to proper utilization of the items supplied. Indirect supply such as those provided through farmers associations, community leaders, *etc* sometimes lead to frustration of some farmers, as the items may not reach the target population. It is revealed from the study the beneficiaries of food security programmes. It is clear from the study that all food security programmes target men, women and youths. This is because members of this group constitute the working category. Nevertheless, food aid in addition to men, women and youths also target children. From the study, also 92.6% of the farmers indicated that micro-loans are given to women. Recent strides have shown that agricultural programmes focused on women or women's' group in terms of credit have proved successful (Sesay, 2007). They are comparatively more credit worthy than their counterpart male farmers.

Level of Awareness of Farmers about the National Food Security Programme

The research revealed that out of the 114 farmers interviewed, only 19.3% indicated that they are aware of the National Food Security Programme. This figure shows that there is very low awareness about the national food security programme. A major reason for the low awareness is illiteracy. Another reason could be that the authorities have not done enough to sensitize farmers about the national food security programmes. The research further revealed that 10 out of 22 farmers that are aware of National Food Security

Programme accepted that the information is received through radio broadcast. This is so because most of the households visited have access to radio and the information about food security is broadcast in the local languages (Temne, Limba, Mende, *etc.*) Other sources of information include; friends and relatives, television and NGOs. All of the various food security programmes present in the region, food-for-work, seed distribution, micro-loans and provision of farm tools are the once that are mostly aware by the respondents. Food-for-work (89.5%) accepted that they are aware of this programme. Out of the percentage 60.5% have a moderate awareness while 29.0% have high awareness. Such food is usually provided by NGOs (local and international) operating in the study area. Chief among them are Action Aid, CAP, to name but a few: In this regard, 31.6% of the farmers have high awareness about this programme. The presence of Agricultural Institutions like RRRS, SMP and SLARI in the study area has contributed a lot in this respect. Micro-loans continue to play a vital role in improving the food security situation of the country. The fact is justified by the 71.9% of the farmers who are aware of this type of F.S.P. Government and NGOs are the major providers of loans in the region. This study subscribes to Seppeh's (2013) findings that households in Bo City who had access to micro-financial assistance from NGOs were more food secured than those which were not. It was the only reliable source of food during the rebel war. As the war ended, most NGOs now embark on other programmes instead of providing road aid to people. This is why most of the respondents are not aware of this programme in the region

Impact and Level of Success of Food Security Programmes in Sierra Leone

From the research, it is clearly manifested that food security programmes have created both positive and negative impacts on the farmers in the northern region. Some of these impacts are discussed below: The impact created by food security programmes in this respect is little. The incomes of small-scale farmers in the study area still remain low. In fact most farmers generate income through the scale of their produce which is not enough for large-scale investment in agriculture. However, the income of these farmers will continue to be low since they lack the needed collateral for obtaining big loans from commercial banks. The study further indicated that forty three percent (43%) out of the 114 farmers interviewed indicated that food security programmes have made little impact in increasing the quality of their produce. This is justified by the fact that most farmers do not produce beyond their subsistence needs (Moriba, et al., 2011). Only a very small quantity of the produce is sometimes sold to obtain food items which farmers do not use. The status of most farmers was determined by the amount of land they cultivated or number of heads of cattle they had. Food security programme had done very little in this regard. As illustrated from the research, most of the farmers interviewed accepted that the programs have made no impact in improving the social status of farmers. Most farmers in this region are

conservative and in most cases do not participate in activities outside their locality. The introduction of food security programmes in the region has help most of the farmers to contribute meaningfully towards agricultural development. For instance, some food security programmes like micro-loans schemes initiated the formation of farmers associations, which has helped farmers to write and supervise their own projects. There is also an increase in women participation in farming. This finding is in line with (MAFFS, 2012), that most farmers had not participated in food security programmes because they are not aware of the benefits derived from such

Level of success of food security programmes in the region

The research revealed that food security programmes have made little success in increasing the financial status of farmers. The research indicated that the food security programmes have made no success in increasing the financial status of farmers. This is obvious as most farmers in the region continue to remain poor and most relied on subsistence farming rather than farming for the market. In a sense what is produced is only enough to feed the farmers' family. It is worth nothing that the financial status of farmers will continue to decline unless and until farming is commercialized. According to Seppeh, 2013, microfinance as food security programme in Bo district has boosted up the household food securities, as most farmers in the area had increased income from the additional activities like petty trading, and adoption new technologies that the farmers undertook in that area. The findings of our study contradict this finding. The research further showed that 6.1% of the farmers who said that food security programmes have succeeded in increasing food production. This is a very small percentage compared to the 114 farmers interviewed. In fact 24.6% indicated moderate level of success and 35.1% little contribution to success. These percentages cannot be contested since the greater majority of the population relied on imported rice. The research also shows that the food produced by most farmers in the region is never enough to feed the farmers family for a whole season. Local produce are often supplement with imported rice. This was what MAFFS (2003) indicated that most farmers in the Lokomasama Chiefdom in the Northern Sierra Leone farm on subsistence basis and that even the rice they produce per growing season would not be enough to be consumed throughout the year. The findings of this study agreed with Koroma's findings. The population of Sierra Leone is predominantly comprised of youths whose role in agriculture would lead to mass production of food. Contrarily, these youths shy away from this occupation to embark on petty trading. From experience, most youths in the region farm for only one or two seasons in order to generate capital to set up other businesses. Bangura (2012) observed that farmers in Kambia and Kenema Districts in Sierra Leone embarked on additional income activities in order to increase their household incomes. This study supports this view. This is justified by 59.6% of the farmers who indicated that food

security programmes have made little success in the involvement of youths in farming activities.

The research shows that 25.4% of the respondents indicated high level of success with regards to the involvement of women in farming. The need to integrate women in the main stream of agriculture is imperative. Their involvement is exemplified by the fact that they produce 60% of the food. Moreover, women participate in all aspect of production and certain operations like weeding and post-harvest handling are women specific. This is an addition to the wide range of household duties. Women will continue to play a tremendous contribution to the attainment of food security if they are given the needed encouragement. According to Fontana and Natalia, 2008, and Wrangham, 2009, gender differences become clearer when looking at women's workloads. It is estimated that women provide 85 to 90 percent of the time spent on household food processing and preparation across a wide range of countries. The findings of this study subscribes to this hypothesis.

It is observed that 34.2% of the farmers indicated that no success has been made with regards to the improvement in the nutritional status of the farmers' family. From all indications it is clear that the farmers' family still struggles to get food. Even where food is available, it may not be enough and the diet is far from being balanced. It has also been proven that most farmers' families depend on one meal a day. Hence, the food security situation of farmers' families still remains worse.

CONCLUSION

From the findings obtained, it would be concluded that greater number of households in the study area are not food secured. This is because they do not have access to adequate safe food on permanent basis. Since individual households are not food secured, it therefore, implied that, the community and the nation are not food secured. A wide range of food crops is grown under bush fallow-rain-fed system. The crops include; rice, sorghum, beniseed, cassava, sweet potatoes and yam. The upland supports these crops normally in mixtures, the combination and density of which varies with farmers and regions. Sole cropping is confirmed mostly to rice in the wetlands. The research reveals that farmers relied on various sources of food to feed themselves and their families. However, it is worth nothing that the major source of food is from small-scale farming. This is justified by the fact that the research focuses on full time farmers. Other sources of food include: i) Food aid, ii) Micro-Credit, iii) Food-for-Work, iv) selling of wood, and v) Gift from friends and relatives. It is discovered from the study that all the food security programmes are available in the region but the greater majority do not know about their existence. However, it is only food-for-work that is known by greater percentage of the farmers investigated. From the findings discussed, it must be concluded that food security programmes are provided in the form of food as well as non-food items. The food items include; bulgur, corn meal, vegetable oil, to name but a few and the non-food items includes; money, seeds, hoes, stems cuttings, cutlass, etc. In

addition, extension services are provided in the form of farmer education. Food security programmes are delivered either directly or indirectly. In the direct method the food security programmes are provided to individual farmers. The indirect methods include community leaders and farmers associations. From the findings, it can be concluded that food security programmes are delivered mainly to men, women and youths. The only exception is food aid, which sometimes target children. Farmers received information about food security programmes from various sources. However, the major source of information is the radio. It is clear that few farmers are aware of all the food security programmes in the region and these farmers have moderate levels of awareness. However, a greater majority of farmers are not aware of these programme in the region. It is observed that some of the food security programmes have created no impact at all. Farmers still relied on cultural pest and disease control methods such as , the use of concoctions, traps, fencing, etc, which , have not proven effective and the yields obtained still remain the same. Also, most farmers are conservative and can hardly adhere to modern methods of farming. The ration of extension worker to farmer is still very low (1:500). As a result, majority of the farmers do not receive these services. The nutritional status remains critical as most of the people do not have access to safe and sufficient food at all times. Also, farmers still remain vulnerable to exploitation by numerous middlemen who levy very high interest rates on loans given to farmers. As a result, farmers are forced to sell their produce at very low prices. Furthermore, only seasonal food security exists in the area- food supplies are only abundant during the harvest seasons. As these quantities become exhausted, farmers begin to struggle to get food to feed themselves and their families.

RECOMMENDATIONS

Based on the findings of the study, it is recommended that:

1. Every effort should be made by Government, NGOs, and individuals to improve on the food situation in the country.
2. To have enough nutritious foods in the right variety, community-based food production should be strengthened.
3. Government as well as NGOs should adopt proper information dissemination mechanism. Such mechanisms should take the form of community sensitization workshops, public meetings, and radio discussions.
4. Government should work with farmers and other food producers and business associates and other NGOs to increase the quantity and quality of food that is available to the rural people.
5. To increase food production and boost facility income, rural women must be empowered,

REFERENCES

Agricultural Sector Master Plan Vol. II (Jan. 1997) North-Western Diversified Food Crop Development Project.

- Bangura, B.J. (2012) Comparative Analysis of Farmer Field Schools' Contribution to Food Security in Kambia and Kenema Districts in Sierra Leone, Unpublished M.Sc. Thesis, Njala University, Njala Campus.
- FAO, AHP (2002) Anti Hunger Programme: Reducing hunger through agriculture and rural development and wider access to food, FAO, Rome.
- FAO (2003) Monitoring progress towards the World Food Summit and Millennium Development Goals. Thrived from: <ftp://ftp.fao.org/docrep/fao/006/j0083e/j0083e00.pdf>
- Fontana, M. and Natali L. (2008) Gendered patterns of time use in Tanzania: Public investment in infrastructure can help? Paper prepared for the IFPRI Project on 'Evaluating the Long-Term Impact of Gender-focused Policy Interventions.
- Gedamu-Gobena, A. (2006) Triticale Production in Ethiopia- Its impact on Food Security and Poverty Reduction. Thieved from: www.worldcat.org/.../triticale-production-in-ethiopia-its-impact-on-food
- Government of Sierra Leone (GoSL) (2002), Medium Term Agricultural Strategy Master Plan, 2003-2007.
- Herrero, M., Thornton, P.K., Notenbaert, A.M., Wood, S., Msangi, S., Freeman, H.A., Bossio, D., Dixon, J., Peters, M., Van de Steeg, J., Lynam, J., Parthasarathy, R.P., Macmillan, S., Gerard, B., McDermott, J., Seré, C., Rosegrant, M. (2010) Smart investments in sustainable food production: revisiting mixed crop-livestock systems. *Science*, 2010; 327: 822–5.
- Ministry of Agriculture, Forestry and Food Security (MAFFS) (2010), Planning, Evaluation, Monitoring and Statistics Division (PEMSD) and Sierra Leone Agricultural Research Institute (SLARI) (2010); Project: Strengthening the Availability and Access to rice statistics for Sub-Saharan Africa: a contribution to the Emergency Rice Initiative, Country report, Freetown, Sierra Leone. May, 2010.
- Ministry of Agriculture, Forestry and Food Security (MAFFS) (2003), Agricultural Household Census Report on Agricultural Farm Families and their Food Security Status, Freetown, Sierra Leone.
- Milgroom, J., Giller, K.E. (2013) Courting the rain: rethinking seasonality and adaptation to recurrent drought in semi-arid southern Africa. *Agriculture System*. 2013; 118: 91–104.
- Moriba, S. Kandeh, J.B.A. and Edwards, Craig (2011), Diffusion of Technologies by Tikonko Agricultural Extension Centre (TAEC) to Farmers of Tikonko Chiefdom in Sierra Leone: Impacts , Problems, Proposed Solutions, and an Updated outcome.
- Ngegba, M.P. & Bangura E.T. (2015), Assessing Beneficiaries' Participation in Non-Governmental Organization (NGO)-led Food Security Programmes in Bo District, Southern Sierra Leone: *International Journal of Advanced Biological Research (IJBR)*, Vol5(4) 2015 pp334-341. Thrived from: www.scienceandnature.org
- Ngegba, M.P. (2004) Strategies Adopted in Attaining Food Security in Valunia and Bumpah Ngao Chiefdoms in Bo District, Southern Sierra Leone. Unpublished M.Sc. Thesis, Njala University College, University of Sierra Leone.
- Njeru, E.M. (2013) Crop diversification: a potential strategy to mitigate food insecurity by smallholders in sub Saharan Africa. *Journal of Agriculture, Food Systems, and Community Development* <http://dx.doi.org/10.5304/jafscd.2013.034.006> pp. 1–7 ISSN: 2152-0801 online
- Sesay, J. (2007) Perception of Farmers on Lowland Farming in Sierra Leone: Case Study of Kambia District, Unpublished M.Sc. Thesis, Njala University, University of Sierra Leone.
- Seppeh, F.A. (2013) Access to Financial Service for the Poor through Micro-Finance and Micro-credit in HELP-SL, Bo City. Unpublished B.Sc. Dissertation, Njala University, Bo Campus.
- Tache B, Oba G. (2010) Is poverty driving Borana herders in Southern Ethiopia to crop cultivation. *Hum Ecol*, 2010; 38:639–49.
- Wrangham, R.T. (2009) *Catching Fire: How Cooking Made Us Human*. Basic Books, New York.