

TOWARDS EFFECTIVE STRATEGIES FOR IMPROVING FOOD SECURITY UNDER CLIMATE CHANGE IN ANAMBRA STATE

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Abstract

The effects of climate change are enormous and are felt in all aspects of human life and activities. The negative effects include increased poverty, water scarcity and food insecurity. Climate change also leads to health related problems (such as spread of malaria in the arid zones), weakened physical infrastructure base for socio-economic activities resulting in reduced development, increased soil erosion (resulting from increased rainfall), storms and rising sea levels in the coastal areas and climate change refuges (resulting from migration). The main purpose of this study therefore was to change. The descriptive survey was adopted in the study. Three research questions guided the study. All the literate farmers, teachers of home economics and agriculture in public secondary schools in Aguata Education Zone of Anambra State constituted the population of the study. A sample of 160 farmers and teachers (of Home Economics and Agriculture) was selected from the zone through purposive sampling technique. A researcher-developed questionnaire duly validated by experts and whose reliability index is 0.83 was used for data collection. Mean was used to answer the research questions. Helping farmers develop healthy attitudes towards the environment was among the preventive strategies. The maintenance strategies include regular maintenance of farm

food preservation in the house. Again, the remedial strategies include helping farmers take actions to reduce greenhouse gas emissions and protecting food items like vegetables from direct sunlight. It was among others recommended that farmers should be made to learn about the science of climate change and actions to take to reduce greenhouse gas for improved food security in Anambra State.

Key words: Strategies; Food; Security; Climate; Maintenance-Oriented; Preventive Oriented; and Remedial-Oriented

Background to the Study

Food is necessary for health, growth and normal functions of living organisms. It is the material that enables man to grow and reproduce himself (Lapedes, 2007). Essentially food is a mixture of chemicals which could be separated into different components having different functions in the body. The major constituents of food are water, protein, carbohydrates, fats, vitamins and minerals. Based on the knowledge of the chemical constituents and their functions in the body, food are classified either as proper foods (carbohydrates, proteins and fats) for the supply energy or as accessory foods (water, inorganic salts and vitamins) which are essential for life but do not supply energy (Franson, 2002). Due to the roles which food play in human life, the needs to be secured.

Food security is generally defined as access by all people at all times to enough food for an active and healthy life (World Bank, 1986). It is a universal indicator of households' and individuals' personal well-being but food insecurity is a forerunner to nutritional, health, human and economic development problems. Food insecurity connotes deprivation of basic necessities of life and its consequences are adversely affecting the livelihood and well-being of a massive number of people and inhibiting the development of many poor countries (Gebremedhin, 2000). Important aspects of food security issues include the availability of food stuff, the quality of the diet, the stability of supplies over time and space and access to food produced (Honfoga & van den Boom, 2003).

Although there is variation in the estimate of the food insecure people all over the world, available statistics show that a large proportion of the world population have problem of food insecurity. It was observed that more than eight hundred million people still remained food insecure (Wiebe, 2003; FAO, 2005).

According to a World Food Program estimate, hunger affects one out of seven people on the planet. In 1996, the World Bank estimated that more than one billion of

the world's people did not have enough food to lead healthy and productive lives (Gebremedhin, 2000).

Food insecurity remains a global threat and human tragedy. It is by any measure a miserable picture, which does not reflect well on the efforts that have gone into the hunger alleviation programmes on which enormous sums of public funds have been lavished (Abdulaziz, 2002). The persistence of hunger in the developing world means that ensuring adequate and nutritious food for the population will remain the principal challenge facing policy makers in many developing countries in the years to come (Stamoulis, Pingali & Shetty, 2004). Food insecurity is a particularly serious issue in many low income countries.

Though food insecurity is generally being reduced worldwide, the problem is actually growing worse in Africa. This is due to increasing population growth and poor progress in efforts directed at reducing food insecurity in many countries in the continent. Estimates of the overall numbers of undernourished people in Africa have actually been rising over the past few decades from 111 million in the period 1969-71, to 171 million in 1990-92, to 204 million in 1999-2001 (Benson, 2004). In sub-Saharan Africa, poverty is increasing and food security situation is deteriorating (Hazell & Haddad, 2001). With an estimate of sixty thousand people majority of whom are children dying each day of hunger, food insecurity is considered a common phenomenon in Africa.

Apart from the increasing population growth and poverty which the factors identified above as responsible for food insecurity, the major contributing factor is climate change. According to the International Panel on Climate Change (IPCC, 2007), climate change is a change in the state of the climate that can be identified by changes in the mean and/or variability of its properties and that persist for extended periods, and typically decades or longer. This may be a change in the average weather or a change in the distribution of weather events around an average. The United Nations Framework Convention on Climate Change (UNFCCC, 1994) stated that climate change is a change of climate which is attributed directly or indirectly to activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. This suggests that climate change can be a change in the statistical distribution of weather over periods of time that can range from decades to millions of years.

The effects of climate change are enormous. IPCC (2007) identified the negative effects of climate change to include increased poverty, water scarcity and food insecurity. Climate change also leads to health related problems (such as spread of malaria in the arid zones) weakened physical infrastructure base for socio-economic

activity resulting in reduced development, increased soil erosion (resulting from increased rainfall), storms and rising sea levels in the coastal areas and climate change refugees resulting from migration (Smith, 2001). Again Caldeira and Wicklt (2003) observed that climate change can lead to health related problems such as increase in malnutrition, increased deaths, disease and injury due to extreme weather events, increased burden of diarrheal diseases, cardio respiratory diseases due to high concentrations of ground level ozone and other infectious diseases.

Given the above state of affairs, there is need to adopt some strategies in order to effectively handle the climate change related issues. It therefore becomes imperative for home economists to be well equipped with appropriate strategies for managing food crises in the context of climate change.

Righty, Akubue (1986) grouped the strategies as maintenance-oriented activities, preventive-oriented activities and remedial-oriented activities. Maintenance-oriented activities are those that aim maintaining the status quo. The essence is to ensure that food items are in good conditions. The preventive-oriented activities are carried out to ensure that damages do not occur. In order to avoid environmental degradation, people can engage in such preventive activities like tree planting, planting of flowers, mulching or development healthy attitudes towards environment or climate change. Remedial activities are carried out when all preventive measures failed. Remedial activities are carried out to make up for the damages that occurred. Such activities include, for instance, planting of trees or flowers to check erosion among others. The problem of the study is thus put in question form; “what strategies could be adopted for improving food security under climate change?”

Research Questions

The three (3) research questions that guided the study include:

1. What are the maintenance strategies for improving food security under climate change?
2. What are the preventive strategies for improving food security under climate change?
3. What are the remedial strategies for improving food security under climate change?

Methodology

The descriptive survey research design was adopted in this study. In this kind of design, the population is studied by collecting and analyzing data collected from a representative few (Nwankwo, 2013). This design is appropriate in this study since the whole population was studied through a representative few.

All the literate farmers, teachers of Home Economics and Agriculture in public secondary schools in Aguata Education Zone of Anambra State constituted the population of the study. A sample of 160 farmers and teachers (of Home Economics and Agriculture) was selected from the zone through purposive sampling technique.

A researcher developed questionnaire was the instrument for data collection. It was divided into two main parts: A and B. part “A” was on the background information of the respondents. Part “B” contained the items of the questionnaire. This part was further divided into three sections 1 – 3. Sections 1, 2 and 3 respectively contain items on preventive-oriented, maintenance-oriented and remedial oriented strategies for improving food security under climate change. The instrument is a 4 point scale structured thus: strongly Agree (SA = 4); agree (A = 3); Disagree (D = 2); and Strongly Disagree (SD = 1). The instrument was duly validated by three experts, one from agriculture, one from environmental studies and the other from measurement and evaluation, all in Nnamdi Azikiwe University, Awka. The reliability co-efficient of 0.83 was obtained using the Pearson Product Moment Correlation to analyze data collected from test re-test conducted on 15 teachers home economics in Onitsha education zone. This reliability index was considered high and very adequate for the study. The research questions were answered using mean scores. The scores were pooled into two groups. SA and A were pooled together as agree while D and SD were pooled together as disagree and the midpoint of 2.50 was used as the criteria score. All items that got 2.50 above were interpreted as in agreement while those rated below 2.50 were interpreted as disagreement with the opinion of the researcher.

Results

Research Question 1: What are the maintenance strategies for improving food security under climate change?

Table 1: Maintenance Strategies for improving Food Security under Climate Change

S/N	Maintenance Strategies:	X	Decision
1.	Asking farmers to plant trees/flowers around the farm lands.	1.60	Disagree
2.	Teaching households basic food handling skills.	2.52	Agree
3.	Encouraging farmers to use mulching instead of burning farm lands for increased food production	3.33	Agree
4.	Teaching farmers the essence of environmental conservation for adequate food production.	2.80	Agree
5.	Teaching the farmers the essence of planting creeping crops to reduce erosion and increase food production.	2.74	Agree

6.	Teaching the farmers the essence of applying manure regularly to their farm lands for increased food production.	3.45	Agree
7.	Work with households to ensure adequate food preservation in the house.	2.93	Agree

Research Question 2: What are the preventive strategies for improving food security under climate change?

Table 2: Preventive Strategies for improving Food Security under Climate Change

S/N	Preventive Strategies:	X	Decision
8.	Restructuring of framing programmes/activities in line with climate change.	2.81	Agree
9.	Seeking professional advice on climate change and making use of it in the farm.	2.70	Agree
10.	Helping farmers develop healthy attitudes towards the environment.	1.65	Agree
11.	Regular maintenance of the food preservation facilities.	2.93	Agree
12.	Engaging farmers in estimating emission	1.82	Disagree
13.	Recycling farm generated waste products.	1.97	Disagree

The mean ratings for items 12 and 13 respectively show that engaging farmers in estimating emission and recycling farm generated waste products are not among the preventive strategies for improving food security under climate change.

Research Question 3: What are the remedial strategies for improving food security under climate change?

Table 3: Remedial Strategies for improving Food Security under Climate Change

S/N	Remedial Strategies:	X	Decision
14	Sand filling of gutters created on farm lands by erosion menace.	3.33	Agree
15.	Ensuring that flowers and grass are planted around in the farm to check erosion.	1.64	Disagree
16.	Provide farmers with activities that will help them learn about the science of climate change and the actions to take to reduce greenhouse gas emissions.	2.72	Agree
17.	Helping farmers to use climate change emission calculator kit (Climate Check) to conceptualize ways to mitigate the	2.57	Agree

	farm land's climate impact.		
18.	Mitigating the farm greenhouse gases emissions by developing and implementing an action plan.	3.38	Agree

The mean rating of 1.64 for item 15 indicates that ensuring that flowers and grass are planted around in the farm to check erosion is not among the remedial strategies for improving food security under climate change.

Discussion of Findings

The study reveals the effective strategies for improving food security under climate change. The maintenance strategies include teaching households basic food handling skills, encouraging farmers to use mulching instead of burning farm lands for increased food production, teaching farmers the essence of environmental conservation for adequate food production, and teaching the framers the essence of planting creeping crops to reduce erosion and increase food production. Others include teaching the farmers the essence of applying manure regularly to their farm lands for increased food production and work with households to ensure adequate food preservation in the house.

The preventive strategies were also investigated. The identified preventive activities include restructuring of farming programmes/activities in line with climate change, seeking professional advice on climate change and making use of it in the farm, helping farmers develop healthy attitudes towards the environment and regular maintenance of the food preservation facilities.

The study also examined the remedial strategies for improving food security under climate change. As a remedial strategy, the farmers are to sand fill gutters created on farm lands by erosion menace. Other remedial strategies include providing farmers with activities that will help them learn about the science of climate change and the actions to take to reduce greenhouse gas emissions, helping farmers to use climate change emission calculator kit (Climate Check) to conceptualize ways to mitigate the farm land's climate impact and mitigating the farm greenhouse gases emissions by developing and implementing an action plan. The findings of this study agree with some other research works in the field. Lambi and Nguh (2010:15) found that “preserving major creational and other open spaces; and preventing damage to environmentally sensitive areas may be used” in preserving our environment and in reducing the adverse effects of climate change. The findings are also in line with Akinjide (1997) who discovered the dimensions of environmental problems in Nigeria and the management strategies for solving. The findings of the study noted above cut across the three strategies investigated in this study.

Conclusions

Climate change and climate variability are not only environmental issues but also of economic, social, education and political issues for man. The impacts and particularly the related economic and social shocks pose some problems as extreme climate events can adversely affect food security in particular and the living standards and health of people in general. Each of these has implications for food security.

Three effective strategies for improving food security under climate change were identified. The respondents recommend more maintenance strategic than preventive and remedial strategies. This does not show a more comprehensive approach to environmental issues particularly in food security.

Recommendations

In the strength of the findings of this study, the following recommendations are made:

1. Government should provide access to sufficient quantities of food items. This may require formulation of policy for sustained, broad-based, economic growth.
2. Direct nutrition interventions to provide food to those suffering from acute hunger and malnutrition. Such interventions are a vital component of any effort to build the quality of human capital, encourage economic growth, and improve standards of living.
3. Enhancing the means to acquire food, whether through cash incomes or access to productive resources. Increased food supplies simultaneously increase the income of farming households and reduce the prices people pay for food in the marketplace, both of which enhance nutrition security.
4. Levels of environmental education should be improved, because the knowledge imparted is critical both to achieve nutritional security and to enhance productivity for economic growth.
5. Farmers, home economics and other food handlers should be made to learn about the science of climate change and the actions to take to reduce greenhouse gas emissions and improve food security.

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