CLIMATE CHANGE AND ADAPTIVE CAPACITY OF WOMEN TO RURAL WATER SUPPLY IN EKITI STATE NIGERIA

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ABSTRACT

Rural Nigeria still depends largely on the dictates of weather for survival and sustenance. Supply of water for domestic and agricultural production is a pre-occupation of the womenfolk. This study used focused group discussions and interviews of 400 respondents randomly selected from the two senatorial districts of Ekiti State to assess the adaptive capacity of the women folk to rural water accessibility as affected by climate change from January 2008- January 2010. Findings shows that the women in rural Ekiti have no access to information on climate change and the technological options to manage climate variability are poor, have no plan, finance, technological or any institutional support to adapt to climate change. The strategies adopted are mainly traditional. With respect to water supply, they resort to unhygienic sources of springs, streams and lakes and so the children are prone to vagaries of water related diseases. They trek long distances on farm to look for irrigation water while a few plant vegetables near streams. Majorities are idle, stay off farm and suffer from hunger in off season. Women's poor adaptation to climate change results in decline in yields and productivity from agriculture causing fluctuations in food prices and increased number of people at risk of hunger and food insecurity.

Keywords: Adaptation, Climate change, Water Supply, Women

INTRODUCTION

Water is the most important gift of nature to mankind and an essential nutrient in animal feeding and health..It makes up 50 to 90 percent of the weight of living things and it is the medium in which all chemical reactions in the body take place. Water acts as an ideal lubricant to transport feed; aid in excretion; a regulator of body temperature; and a buffering agent to regulate pH (acidity or alkalinity) of body fluids Barney and Van Horn (2006). A restriction of water intake lowers feed intake, retention of nitrogen and loss of nitrogen in the faeces. It also results in an increased excretion of urea in the urine such that animals need a continuous supply of water for maximum efficiency since water functions as a lubricant in the transport of feed and aids in the excretion of waste products from the body, the intake must equal the output lost through urine, faeces and evaporation. The relevance of water to life necessitates the need for its adequate management and sustenance, more so as one third of the world's population is currently experiencing some kind of physical or economic water scarcity as a result of climate change (IFAD, 2001).

Climate change is a real concern for the sustainable development of agriculture, especially in developing nations although longer growing seasons and warmer temperatures may bring some benefits, there will also be a range of adverse impacts including reduced water availability and more frequent extreme weather events. A growing competition for water from industry, agriculture, power generation, domestic use and the environment will make it difficult for poor people to access this scarce resource for productive, consumptive and social

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uses. Moreover, in water-scarce regions and countries, inequity in access to water resources is increasing and this particularly affects poor rural people, especially women, the bulk of who lives in sub-Saharan Africa and South Asia and depends on agriculture for livelihood (Molden, 2007).

Women are most often responsible for domestic and community water management and often play active roles in the construction and preventive maintenance and repair of sanitation facilities in developing societies. These women and children travel spending 8 or more hours per day collecting and carrying up to 20 kilos or 15 liters of water per trip (Wikipedia, 2010). In South Africa women collectively walk the equivalent distance of 16 times to the moon and back per day gathering water for families. In Nigeria, a large percentage of the country's estimated 120 million populations do not have access to potable water. According to Multi-indicator Cluster Survey of 1999, only 52% of the urban (48% if peri-urban areas are included) and 39% of rural dwellers have access to potable water(FOS, 1999) hence women are responsible for determining sources of water to collect, quantity of water to be taken and the water's hygienic quality. The significant roles performed by the womenfolk in water management and supply necessitated examining their adaptive strategies to rural water supply in developing nations and in particular, Ekiti State, Nigeria.

LITERATURE REVIEW

Climate change as a result of global warming has become a new reality with deleterious effects as manifested in disruption of seasonal cycles and ecosystems what adversely affects agriculture, water needs and supply as well as food production. The changes in rainfall patterns, variability in rainfall, changes in water level, volume of ponds, lakes, rivers and streams and frequency of storms and drought affects agriculture in a number of ways. For example, uncertainties in the onset of the farming season from changes in rainfall characteristics can lead to an unusual sequence of crop planting and re-planting while extreme weather events such as thunderstorms, heavy winds and floods devastate farmlands lead to crop failure. Also migration of pests and crop and disease organism in response to climate and variations potentially pose threat to crops and livestock. Thus Nigeria and other West African countries are likely to have agricultural losses of up to 4 % of GDP due to climate change by 2100 (Mendelsohn, et al, 2000). Parts of the country that experience soil erosion and operate rain-fed agriculture could have up to 50% decline in agricultural yield between 2000 – 2020 due to increasing impact of climate change (Agoumi, 2003; IPCC, 2007).

Several nations are concerned with the issue of climate change and have inherent abilities to deal with certain variations in climate; yet adaptive capacities are unevenly distributed across countries and within societies. Adaptation relates to adjustments to reduce vulnerability or enhance resilience in response to observed or expected changes in climate and associated extreme weather events. Adaptation occurs in physical, ecological and human systems. It involves changes in social and environmental processes, perceptions of climate risk, practices and functions to reduce potential damages or to realise new opportunities. Adaptations include anticipatory and reactive actions, private and public initiatives and can relate to projected changes in temperature and current climate variations and extremes that may be altered with climate change. In practice, adaptations tend to be on-going processes, reflecting many factors or stresses, rather than discrete measures to address climate change specifically.

Individuals and societies adapt to both observed and expected climate through anticipatory and reactive actions. Some adaptation measures are undertaken by individuals while other types of adaptation are planned and implemented by governments on behalf of societies,

sometimes in anticipation of change but mostly in response to experienced climatic events, especially extremes (Adger, 2003; Kahn, 2003; Klein and Smith, 2003).

Adaptation to climate change and risks takes place in a dynamic social, economic, technological, biophysical, and political context that varies over time, location, and sector. This complex mix of conditions determines the capacity of systems to adapt. Although scholarship on adaptive capacity is extremely limited in the climate change field, there is considerable understanding of the conditions that influence the adaptability of societies to climate stimuli in the fields of hazards, resource management and sustainable development.

The poor and marginalized have historically been most at risk and are vulnerable to the impacts of climate change (IPCC, 2007). Vulnerability to climate change refers to the propensity of human and ecological systems to suffer harm and their ability to respond to stresses imposed as a result of climate change effects. The vulnerability of a society is influenced by its development path, physical exposures, the distribution of resources, prior stresses and social and government institutions (Kelly and Adger, 2000; Jones, 2001; Yohe and Tol, 2002; Turner et al., 2003; O'Brien et al., 2004; Smit and Wandel, 2006).

Leary *et al* (2006) noted that the marginalised, primary resource-dependent livelihood groups in Africa, Asia and Latin America, are particularly vulnerable to climate change impacts if their natural resource base is severely stressed and degraded by overuse or if their systems of governance are in or near a state of failure and hence not capable of responding effectively. The devastating effects of climate change in Nigeria are borne mainly by the vulnerable group which consists of the womenfolk, their children and the aged. Empirical research has shown that entitlements to elements of adaptive capacity are socially differentiated along the lines of age, ethnicity, class, religion and gender (Cutter, 1995; Denton, 2002; Enarson, 2002). Climate change therefore has gender-specific implications in terms of both vulnerability and adaptive capacity (Dankelman, 2002). There are structural differences between men and women through, for example, gender-specific roles in society, work and domestic life. These differences affect the vulnerability and capacity of women and men to adapt to climate change. In the developing world in particular, women are disproportionately involved in natural resource-dependent activities, such as agriculture (Davison, 1988), compared to salaried occupation. Most fundamentally, the vulnerability of women in agricultural economies is affected by their relative insecurity of access and rights over resources and sources of wealth such as agricultural land. It is well established that women are disadvantaged in terms of property rights and security of tenure, though the mechanisms and exact form of the insecurity are contested (Agarwal, 2003; Jackson, 2003). This insecurity can have implications both for their vulnerability in a changing climate and also their capacity to adapt productive livelihoods due to the climate. Consideration should therefore be given to the role of gender in influencing the development of interventions to enhance adaptive capacity and to facilitate adaptation. Gender differences in vulnerability and adaptive capacity reflect wider patterns of structural gender inequality. According to Denton (2004), any climate intervention that ignores gender concerns reinforce the differential gender dimensions of vulnerability. Smit *et al.* (2001) considered enhanced adaptive capacity as a tool for reducing vulnerability to climate change and that activities which enhance adaptive capacity are essentially equivalent to those meant to promote sustainable development. These activities are improving access to resources; reducing poverty; lowering inequities of resources and wealth among groups; improving education and information; improving infrastructure and improving institutional capacity and efficiency.

IPCC (2007) noted that the factors which influence adaptive capacity to climate change include: technology, information and skill, infrastructure, institutions and equity.

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Technology

Most adaptive strategies identified in the management of climate change directly or indirectly involve technology in terms of warning systems, protective structures, crop breeding and irrigation, settlement and relocation or redesign and flood control measures. The availability and access to these technologies both have a great influence on the ability to adapt to climate change. Lack of technology seriously impedes a nation's ability to implement adaptation options by limiting the range of possible responses (Scheraga and Grambsch, 1998).

Information and Skill

The adaptive capacity of a system is a function of *availability of* and *access to* resources by decision makers, as well as vulnerable sub-sectors of a population (Kelly and Adger, 1999). Adaptation requires the recognition of the necessity to adapt, knowledge about available options, the capacity to assess them, and the ability to implement the most suitable ones. Fankhauser and Tol (1997). Building adaptive capacity requires a strong, unifying vision; scientific understanding of the problems; an openness to face challenges; pragmatism in developing solutions; community involvement; and commitment at the highest political level (Holmes, 1996). Lack of trained and skilled personnel can limit a nation's ability to implement adaptation options Hence countries with higher levels of stores of human knowledge are considered to have greater adaptive capacity than developing nations and those in transition. Adaptive capacity is likely to vary with social infrastructure (Toman and Bierbaum, 1996).

Institutions

O'Riordan and Jordan (1999) described the role of institutions "as a means for holding society together, giving it a sense and purpose and enabling it to adapt." In general, countries with well-developed social institutions are considered to have greater adaptive capacity than developing nations and those in transition with less effective institutional arrangements. Established institutions facilitate management of contemporary climate-related risks and also provide an institutional capacity to help deal with risks associated with future climate change Huq *et al.* (1999) demonstrated that Bangladesh is particularly vulnerable to climate change—especially in the areas of food production, settlements, and human life—reflecting serious constraints on adaptive capacity in the "existing institutional arrangements (which) is not conducive to ease the hardship of the people. Due to inherent institutional deficiencies and weaknesses in managerial capacities to cope with the anticipated natural event, it would be extremely difficult for the country to reduce vulnerability to climate change (Ahmed *et al.*, 1999). Baethgen (1997) discussed an example in which the presence of inconsistent and unstable agricultural policies had increased the vulnerability of the food production sector in Latin America. Drastic changes in economic and policy conditions are expected to make agricultural systems more vulnerable to changes in climate

Equity

The adaptive capacity of a system has been related to the *availability* of and *access* to resources by decision makers and vulnerable sub-sectors of a population but Cyert and Kumar (1996) have noted that differential distribution of information about technological innovation, within an organization can impose constraints on adaptation strategies. Differentiation in demographic variables such as age, gender, ethnicity, educational attainment, and health are often related to the ability to cope with risk

Economy

The ability to adapt to climate change depends on the economic condition. Burton (1996) noted that wealthier nations are better prepared to bear the cost of adaptation to climate

change impacts and risks than poorer nations. Kelly and Adger (1999) demonstrated the influence of poverty on a region's coping capacity with poor regions having less diverse and more restricted entitlements and a lack of empowerment to adapt. There is ample evidence that poorer nations and disadvantaged groups within nations are especially vulnerable to disasters (Banuri, 1998; Munasinghe, 2000). This realization necessitated the proposal made at the Sixth Conference of Parties to the UN Framework Convention on Climate Change that called for the creation of an Adaptation Fund of $1 billion per year for developing countries, especially the least developed and small island states, to enable them to combat the consequences of climate change. Many scientists, policy makers and the IPCC Fourth Assessment Report have agreed that disadvantaged nations, especially in the global south, need more attention to the negative impacts of climate change. These regions are highly populated and the people generally have lower adaptive capacity. A balance, however, between development and climate change mitigation and adaptation needs to be found. It has also become clear that a shift in policy focus away from reactive disaster management to more proactive capacity building can reduce gender inequality (Mirza, 2003).

METHODOLOGY

The study was carried out in Ekiti State, Nigeria from the month of January 2008 to January 2010. A multi- stage random sampling technique was adopted in selecting 400 women farmers used for the study. The first stage involved a random selection of two out of three senatorial districts. These are Ekiti North and Ekiti South senatorial districts in the state. Ekiti North is made up of five Local Government areas (LGAs) while Ekiti South comprises six LGAs. Three LGAs were randomly selected from each senatorial district while six villages were randomly selected from each LGA. From each village, existing women organizations were sought and four groups were randomly selected. A focused group discussion was utilized and subsequent interview of three members from each group was carried out thus, 12 women farmers were randomly selected to make a total of 432 respondents. Responses to 400 questionnaires were found adequate while the remaining 32 were discarded due to errors. Focused group discussion and interview schedule were used in soliciting responses from these respondents. The responses were coded and analysed using both descriptive and inferential statistics while results were presented using frequency counts, percentages and Pearson Product Moment Correlation.

RESULTS AND DISCUSSIONS

Socio-Economic Characteristics of the Respondents

Table 1 shows that 43.8 percent of the respondents was within the age range of 40-50 years and 3.78 percent was above 60 years while the mean age of the respondents was 43.5years. Most respondents (81.75%) were married, 11.25 percent was widowed/divorced while 7.0 percent was single. The respondents cut across all religious groups with Christianity making the larger percentage.

Most households have male heads with 26.5 percent headed by females. The women engaged in several aspects of agriculture and are characterised by multiple job holdings. Food crops and vegetables are produced by 70.0 and 65.5% of women some of who also rear goats and sheep (41.25%), keep poultry (42%) and practice fish farming (6.25%). Most women cultivate plots of land portions assigned to them by their spouses (35%), hired/rented land (26.25%), and land leased/purchased and by contractual arrangement (16.25%) while only 6.25percent obtained land by inheritance. As a result, land available was below five hectares showing that the women were small-scale farmers. For livestock 15.0 percent of the women

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have less than 200 herds of goat/sheep, 6.0 percent own 280-500 poultry birds and 6.5 percent own 301-800 birds while 2 percent have above 1100 poultry birds.

Most of the respondents have primary education (30%) while secondary education, tertiary education and adult literacy /non formal education accounted for 28.75,13 and 12% respectively. Majority (61.75%) of the respondents realised below N10, 000.00 per month (<$65.8/month equivalent to $2.2/day), 37.0 percent realised between N10, 000.00- N20, 000.00 ($65.8-$131.58/month, equivalent of $2.2-$4.4per day) while only 1.25percent realised between N21, 000-50,000 ($138.15-$328.94 an equivalent to $4.6-10.96 dollars per day).Majority (71.25%) of the respondents indicated that they did not have access to credit facilities as against 28.75 percent with access. A large percentage of respondents (80.25%) depend on firewood in cooking.

Majority of female farmers are still young and expected to be agile and productive in the agricultural enterprises especially in food crop production, sheep/goat rearing and poultry production. The low income from agricultural production and lack of access to credit facilities from institutions that would demand collateral security and the low level of education influence the level of productivity. Thorbecke (1998) had observed that rural farming in Nigeria is characterised by low income and low productivity which translate to recycling poverty among the citizenry.

Table 1. Socio-economic characteristics of the respondents (Part-I)

Variable	*Categories*	*Frequency(N=400)*	*Percentage*
Age (years)	21-30	22	ss5.50
	31-40	148	37.0
	41-50	175	43.8
	51-60	40	10.0
	Above 60 years	15	3.78
Marital Status	Single	28	7.0
	Married	327	81.75
	Widowed/divorced	45	11.25
Religion	Christianity	237	59.25
	Islam	118	29.50
	ATR	45	11.25
Head of Household	Male headed	294	73.5
	Female headed	106	26.5
Farming Occupations	Arable crop production	280	70.0
	Goat rearing	165	41.25
	Fish farming	25	6.25
	Vegetables/food crops	262	65.5
	Poultry production	268	42.0
Type of land ownership	Inheritance	25	6.25
	Hired/Rented land	105	26.25
	Portion assigned to by husband	140	35.0
	Purchase/lease	65	16.25
	Contract farming	65	16.25

Table 1. Socio-economic characteristics of the respondents (Part-II)

Variable	*Categories*	*Frequency(N=400)*	*Percentage*
Highest Level of Education	No formal education	65	16.25
	Adult literacy/Non-formal education	48	12.0
	Primary education	120	30.0
	Secondary education	115	28.75
	Tertiary education	52	13.0
Size of farm	Less than and equal to 5 hectares	275	68.75
	5-10 hectares	-	-
Size of herds	Below 200	15	3.75
	201-500	60	15.0
	501-800	24	6.0
	801-1100	26	6.5
	Above 1100	08	2.2
Monthly Farm income	<N10,000.00	247	61.75
	N10-N20,000.00	148	37.0
	N21,000-N50,000.00	05	1.25
Access to credit facilities	Yes	115	28.75
	No	285	71.25
Cooking facilities	Gas	05	1.25
	Kerosene stove	74	18.5
	Firewood	321	80.25

Facilities Utilised On the Farm

The type and nature of facilities present and utilized on the farms presented in Table 2 show that 46.2 percent of the respondents have access to and plant improved seeds, 27.5 and 5% have access to agro-chemicals and plough/harrows/tractors while only 2 percent have access to pumping machine, crop breeding centres and flood control measures respectively. None of the respondents have access to electricity and drainage infrastructure on the farm.

Table 2. Facilities utilised on the farm

Facilities present/utilised in the farm	*Frequency*	*Percentage*
Irrigation facilities	28	7.0
Improved seeds	185	46.25
Agro chemicals	110	27.5
Tractor/plough/harrow	20	5.0
Electricity	0	0.00
Drainage Infrastructure	0	0.00
Pumping machine	08	2.0
Crop breeding centre	08	2.0
Flood control measures	08	2.0
Drought tolerant seeds	185	46.25
Dams	45	11.25

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Figure 1 shows that 90% of respondents depend on rainfall for agricultural production, 29.5percent relies on streams/ rivers, 21.25 percent utilises hand dug wells/ boreholes respectively while 40percent relies on wells for water both for domestic and agric production and 26.0 percent use pond water. The figure shows that there is a combination of water sources for agricultural production.

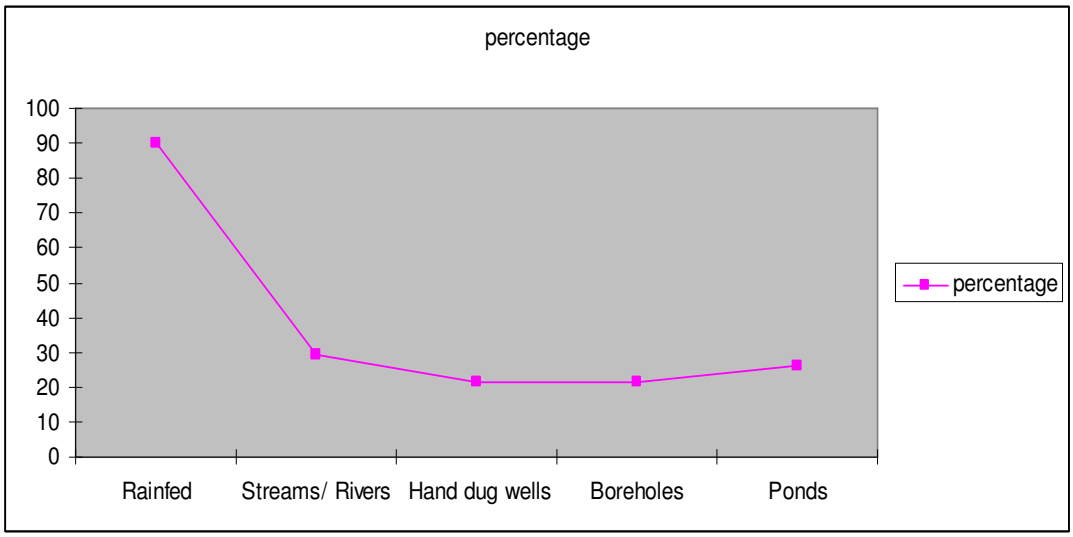

Figure 1. Sources of water supply for domestic and agricultural production

Awareness of Climate Change

Figure 2 shows that 81 percent of the respondents are aware of climate changes in the environment (Figure 2) whereas 19.25 percent believes it is the normal change in weather.

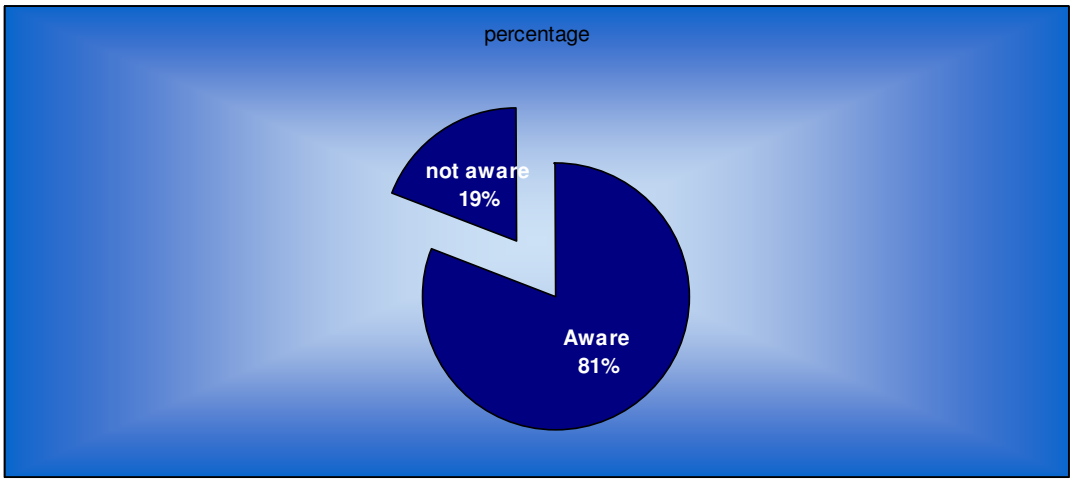

Figure 2. Awareness on climate change

Signs, Challenges and Adaptation Strategies to Climate Change

Noticeable signs of climate change, challenges and adaptation strategies are indicated in Table 3. Unusual and erratic rain and sudden stoppage of rain posed the challenges of unprecedented planting, crop failure, pest infestation, low yields, hunger as well as reduced farm income. Apart from the 10% that practices irrigation, there are no adaptation strategies to meet other challenges. Flooding results in pollution of drinking water, limited water source with attendant problem of water scarcity, trekking long distance to locate water and the use of

un-potable water. The strategies adapted are more palliative than preventive hence the prevalence of sicknesses and diseases and low income. Unusual scorching of the sun caused drying up of vegetables and maize, and other young plants, heat stroke in poultry, low yield, sudden death of animals, reduced egg production susceptibility of animals to diseases and meningitis in human being. There is no strategy adapted to resolve the challenges posed. The challenges of unexpected/unusual dry season and extended drought, and extremes of temperature posed the challenges of decrease in water table, crop failure, excessive temperature, increase in water intake and demand, decrease in water source, heat stroke in poultry, prevalence of diseases, low yield, hunger, reduced farm income and trekking long distance while looking for water. Most of the respondents have no adaptive strategy to cope with the situation

Table 3. Signs, challenges and adaptation strategies to climate change

Signs of climate change	*Challenges*	*Adaptation strategies*
Unusual/erratic rain and sudden stoppage of rain	Unprecedented planting, Crop failure Pest infestation Low yield Hunger Reduced farm income	Use of irrigation facilities (10%) No adaptive strategy (90%)
Flooding	Pollution of drinking water limitation of water source scarcity of drinking water Travel long distance to locate water Use of un-potable water Sicknesses and diseases Loss of fishes Reduced farm income	Use of alum (10%), Putting drinking water under the sun and cover with black cloth (5%), allowing the dirty water to settle (9.5%), Use of water storage tanks (9.5%), Building underground tanks (2%), Boiling to kill germs (5.0%) Increased time spent on water location (63.5%) Purchase of water (15.0%), Use of poor water quality (42.0%) No strategy netting of ponds to control flood (3.75%)
Unusual scorching of sun.	Scorching of vegetables and maize Low yield, drying up of young plants Heat stroke in poultry, Sudden death of small animals. Reduced egg production Susceptibility of animals to diseases Meningitis in human being	 No adaptive strategy - -- - Mulching yam (27.5%) - -
Unexpected dry season .	Decrease in water table Crop failure,	Spent more money to purchase water (37.5%) Increased time spent on water

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	Excessive temperature,	location (63.5%)
	Increase in water intake and demand,	No solution -
	Decrease in water source.	-
	Heat stroke in poultry, prevalence of diseases	
	Low yield	No adaptive strategy
	Hunger	-
Extended drought	Reduced farm income	-
	Travel long distance looking for water	
Extreme temperature		
	Change in crop planting time	
	Late harvesting	
	Low yield	
	Reduced farm income	
	Prevalence of pest and diseases	
	Low yields	
	Loss of farm animals	

Secondary data reveal that there is no research institute in the vicinity such that the respondents have no linkage with any.

Adaptation Strategies to Climate Change

Table 4 shows that measures put in place as to adapt with climate change include use of water storage tanks and extension agents(37.5%) while other adaptation strategies such as irrigation facilities, flood control measures, trained personnel on climate change, agricultural policies on climate change, weather forecast, visitation by climate change agents, government policies in relation to climate change, agency on climate change and environmental issues, technologies on climate change and crop insurance were not available in the area.

Table 4. Adaptation strategies to climate change

Adaptation measure for Climate Change	*Yes*	*%*	*No*	*%*
Irrigation facilities	40	10.0	360	90.0
Flood control measures	15	3.75	385	96.25
Water storage tanks	148	3.75	252	63.0
Extension agents/linkage with farmers	148	3.75	252	63.0
Radio broadcast on current situation	55	3.75	345	86.25
Crop insurance programme	0	-	400	100
Trained personnel on climate change	5	1.25	395	98.75
Policies on Agricultural production	5	1.25	395	98.75
Weather forecast	15	3.75	385	30
Introduction of different farming practices			120	96.25
Weather control mechanism	280	70	385	100
Visitation by climate change officials	0	0	400	100
Government policy in relation to climate change technology	0	0	400	100
Agency on climate change and environmental issues	0	0	400	100

Few women farmers (2.5%) cultivated swamp rice to replace upland rice and 25% relocated to other places. Sunk wells within the farms to provide water essential for irrigation, and participated in Fadama farming (12.5%) are some of the strategies while others accepted the situation as it comes.

The women in Ekiti State are aware of climate change in the environment but lacked all the necessary pre-requisites to adapt to it. There were no technology information, government policy or finance put in place to support or enhance their adaptability to climate change.

Correlation of Socio-Economic Variables and Adaptation to Climate Change

Results in table 5 show a significant relationships between level of education (r=0.562), farm size(r=0.571), farm income(r=0.537), access to credit facilities(r=0.511) and adaptation to climate change. Thus, as the level of education, farm size and access to credit facilities increased the ability to adapt to climate change increased while rising farm income increases the ability to purchase / finance facilities necessary for adaptation to climate change increases. There is a negative relationship between age (r = - 0.521) and adaptation to climate change. It implies that old people are less risk takers and would be reluctant to adopt any innovation necessary to cope with climate change.

Table 5. Relationship between socio-economic variables and adaptation to Climate change

Variable	*Correlations(r2)*
Sex	0.202
Age	-0.521*
Level of education	0.562*
Farm size	0.567*
Land ownership	0.394
Religion	0.120
Farm income	0.537*
Access to credit facilities	0.511*

Note: significant at 0.05 level (2- tailed)

CONCLUSION AND RECOMMENDATIONS

The study was carried out in Ekiti State Nigeria and generated data from 400 respondents randomly selected from two senatorial districts, using structured interview schedule and focus group discussions. Women farmers in Ekiti State Nigeria are mostly married and cut across all religious backgrounds and are fairly literate. They depend mainly on their husbands and purchase/rents or contractual arrangement to obtain land for cultivation of food crops such as maize, rice cassava, and yam, vegetables while livestock production is limited to rearing of sheep and goats and poultry birds. The farmers earn low income from agricultural production while a large proportion did not have access to credit facilities. They also depend mainly on rainfall for water supply both for domestic and agricultural production but lack the fund, technology, information, and necessary facilities required for adaptation to climate change hence low yields, crop failure, pests and disease attack and death of farm animals are predominant. No governmental policies and programmes were put in place to address climate change issues.

The study recommends that women farmers in Ekiti State should be encouraged to enrol for adult literacy education to improve their educational status while special credit facilities with

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no collateral security should be designed for them. They should be encouraged to join co-operatives and women groups to increase accessibility to credit facilities. The State government should come up with policies that address climate change. Knowledge, technology, policies, institutions and programmes must be developed to address the women folk in respect of climate change. Training personnel for capacity building will benefit the women farmers and improve on-farm productivity in order to reduce hunger and food insecurity and attendant poverty. The institutional linkages for international aids in respect of climate change should be created by the state in pursuit of the Millennium Development Goals of halving poverty by the year 2015.

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