

Youth Farmers' Coping Strategies with Climate Change in Osun State, Nigeria

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Abstract

The study investigated youth farmers' coping strategies with climate change in Osun State, Nigeria. Data were gathered through structured interview schedule from 150 farming youths that are ex-trainees of Leventis Foundation School of Agriculture, Ilesa Osun State. Data collected were analyzed using descriptive statistical tools such as frequency counts, percentage, mean and standard deviation while correlation and chi square were used to test the hypothesis. The mean age of farming youths in the study area was 27.7 ± 9.0 years. Majority (72.0%) were male who spent an average of 13.9 ± 1.3 years in formal school. The mean of years of farming experience was 8.6 ± 3.8 . The youth were fully aware of climate change which had affected their food production enterprises. There were positive and significant relationship between coping strategies of the respondents and their age ($r= 0.546$; $p \leq 0.01$); years of formal education ($r= 0.484$; $p \leq 0.01$); and farming experience ($r= 0.503$; $p \leq 0.01$). It was concluded that climate change is inevitable, that there is need to devise strategies to cope with its devastating impact on food production especially of the farming youths. Exploration of media source of information for coping strategies was recommended.

Keywords: climate change, coping strategies, youth farmers

Introduction

Climate change is no longer news, as different studies have elaborately discussed global attention that is being drawn to its threats on the survival of natural resources and human livelihood; particularly agriculture and food security at macro and household levels (Adamu and Oladele, 2010; Deji *et al.*, 2010; Obinna, 2010; Simonelli, 2008; and Intergovernmental Panel on Climate Change IPCC, 2007). By definition, climate change refers to an alteration in the exiting weather conditions over a period of time which is attributed mainly to emission of greenhouse gases due to natural variability and direct or indirect human activities (Omotayo, 2010; and United Nations Environmental Programme UNEP, 2009).

Climate change impacts are perceived to vary among regions and between different generations, income groups and occupations, men and women as well as young and old people which have social and economic impacts on human livelihood (Deji *et al.*, 2010). These impacts as indicated by Farinde (2006) and Tologbonse *et al.*, (2010) are manifested in increase extreme weather conditions such as drought, flood, irregular rainfall pattern, increase temperature, sea level rising, increase in ground water salinity; prolong dry season, delayed rainfall onset, and early rainfall retreat. These have led to water scarcity, soil infertility, insect pest invasion, longer growing season, redistribution of crops, decline in animal production and crop yield (Harpenden, 2005).

The local farmers, including the youth, are experiencing climate change even though they have not considered its deeper implication. This is evidenced in the late arrival of rain, the drying-up of stream and small rivers that usually flows year round, the seasonal shifting of the "Mango rains" and of the fruiting period in the southern part of Oyo state (Ogbomosho) and gradual disappearance of flood recession cropping in riverine areas of Ondo State are among the effects of climate disturbances in some communities of south western Nigeria (Building Nigeria's Response to Climate Change BNRCC, 2008). The above calls for formidable coping strategies with climate change for the survival of human race on the planet earth.

The ultimate objective of the United Nations Framework Convention on Climate Change UNFCCC, (2006) is to assure that no 'dangerous' interference with the climate system occurs. This could be achieved through the use of coping strategies with climate change which entails mitigation strategies (procedures or activities that reduces or prevent climate change processes) and adaptation strategies (initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects). The procedures of mitigation are easy to access because they are easily grouped while that of adaptation is not easy to access because they cannot be easily group as there are many of them. Mitigation and adaptive strategies have been accepted as two mutually exclusive strategies which are pre-requisite for successfully addressing of climate change (Nyong *et al.*, 2003).

In the view of Mortimore (2000), emphasis should be placed on the need to first examine what the communities

have been doing to cope with climate change in the past to ensure livelihood sustainability for success in coping with current climate change challenges. Olayemi (2012) recognized mixed cropping, early planting, mixed farming, and off-farm activities as coping strategies of crop farmers in Ondo state.

PURPOSE OF THE STUDY

There have been literatures (Tologbonse *et al*, 2010; Simonelli, 2008; Rosenzweig and Tubiello, 2006; Jones and Thornton, 2003; and Mubiru *et al*, 2010) on coping strategies of farmers with climate change but spares literature on farming youths. Hence the need to examine the youth farmers' coping strategies with climate change in Osun State.

The specific objectives of the study are to

- i. describe socio-economic characteristics of farming youths in the study area;
- ii. assess the level of awareness of farming youth about climatic change; and
- iii. examine the coping strategies of farming youths with climatic change for food production enterprises in the study area.

Hypothesis for the study

- i. There is no significant relationship between the coping strategies of farming youth with climatic change and their socio-economic characteristics.

Methodology for the study

The study was conducted in Osun State, one of the states in Southwestern Nigeria. Respondents for this study were selected from the list of ex-trainees between 2004 and 2009 from Leventis Foundation/Osun State School of Agriculture Ilesa. A systematic random sampling technique using list of ex-trainees as the sampling frame was used to select 150 farming youths residing in Osun State for interview. Duly validated and pretested structural interview schedule were used to elicit information from the respondents

Data were summarized with percentage, mean and standard deviation, while Chi-square and Pearson Product Moment Correlation (PPMC) analysis were employed to make inferences from the hypothesis.

Measurement of variable

Dependent variable: The dependent variable for this study was conceptualized as frequency of use of strategies by farming youths to cope with climate change. It was measured by reaction of the respondents to listed coping strategies in each of the food production enterprises (crop production, livestock production and fish production) against 4-point scale of very often (4), often (3), occasionally (2), never (1). The possible minimum/maximum score that a respondent had was calculated by multiplying the number of coping strategies considered (19) by the least or highest point scored by each of the respondent (maximum score of 76 and minimum score of 19).

Result and Discussion

Respondent personal socio-economic characteristics

Results in Table 1 revealed that many (47.3 %) of the youth were between age 25 and 30 years, and the mean age was 27.7 with Standard Deviation (SD) 4.6. This implied that they could be adventurous in coping with climate change. A vast majority (72.0%) of the respondents were male. Many (60.7%) of the respondents were yet to marry which could give them more time to dedicate themselves to farming than their married counterparts. All were literate as the average years spent in formal schooling was 13.9 (SD=1.3). This could help them to read and listen to weather forecast in the media. About three-quarters (74.7%) of the respondents were Yoruba while one-quarter (25.3%) of them were Igbo. More than half (61.3%) of the youth belonged to social group(s). This could widen the source of information on coping strategies with climate change. The average year of farming experience of the youth was 8.6 (SD= 3.8). This indicates that the youth will be able to cope with the challenges of climate change during the course of their farming enterprises. Vast majority of the youth engaged in crop (82.0%) and livestock production (84.7%) while only few (28.7%) engaged in fish production; this could be connected with high capital requirement in fish production.

Table 1: Distribution of respondents by selected personal characteristics

Variables	Frequency	Percentage	n= 150	
			Mean	Standard deviation
Age (years)				
<25	31	20.7		
25-30	68	47.3	27.9	4.6
>30	34	32.0		
Gender				
Male	108	72.0		
Female	42	28.0		
Religion affiliation				
Christianity	114	76.0		
Islam	36	24.0		
Marital status				
Single	91	60.7		
Married	59	39.3		
Years of formal education				
<13	18	12.0		
>13	132	88.0	13.9	1.3
Ethnicity				
Yoruba	112	74.7		
Igbo	38	25.3		
Membership of social group				
Yes	92	61.3		
No	58	38.7		
Years of experience in farming				
<7	59	39.3		
7-12	55	36.7	8.6	3.8
>12	36	24.0		
*Farming enterprise engaged in				
Crop production	123	82.0		
Livestock production	127	84.7		
Fish production	43	28.7		

Source: Field survey, 2012 * Multiple responses

Respondents' awareness of climate change

Result in Table 2 revealed that all the farming youth were aware of alteration in onset of rainfall and in harmattan pattern, a vast majority of them were aware of alteration in stoppage of rainfall (92.7%), alteration in amount of annual rainfall (81.3%), alteration in rain distribution (94.0%), and alteration in ambient temperature (94.0%). These indicate that the youth were fully aware of climate change. This result is in consonance with that of Olayemi (2012) which stated that crop farmers in Ondo State were fully aware of climate change in the area of high temperature, incidence of sudden heavy rain, and increase occurrence of flood.

Table 2: Distribution of respondents according to awareness of climate change

Variables	n= 150	
	Aware F (%)	Not aware F (%)
Alteration in onset of rainfall	150(100.0)	0(00.0)
Alteration in stoppage of rainfall	139(92.7)	11(7.3)
Alteration in amount of annual rainfall	122(81.3)	28(18.7)
Alteration in rain distribution	141(94.0)	9(6.0)
Alteration in ambient temperature	141(94.0)	9(6.0)
Alteration in harmattan pattern	150(100.0)	0(00.0)
Increase occurrence of drought	105 (70.0)	45(30.0)
Increase occurrence of flood	139 (92.7)	11(7.3)

Source: Field survey, 2012 * Multiple responses

Source of information on coping strategies with coping strategies

Results in Table 3 reveal that a vast majority of the respondents got information about coping strategies with climate change from parents and community elders (80.0%); and colleagues (70.7%); more than half (63.3%) of

the youth got their information on coping with climate change through trial and error while few (40.0%) of them got information on coping with climate change through media. This result indicate that many of these coping strategies were passed from the elders to the younger generation, also the media means were great potential source of information that were not explored by the youth.

Table 3: Distribution of respondents according to sources of information on coping strategies with climate change

n= 150		
*Variables	Frequency	Percentages
Trial and error	95	63.3
Parents and community elders	120	80.0
Colleagues	106	70.7
Media	60	40.0

Source: Field survey, 2012 * Multiple responses

Coping strategies of the respondents with climate change

Results in Table 4 reveal that planting of early maturing crops (56.0%) and delay in planting (56.0%) were the strategies very often used in coping with climate change in crop production, while agroforestry (14.7%) was least used. The least use of agroforestry might be due to ownership of land is required which many of the youth do not have access to. Furthermore, rearing disease resistant breeds (64.7%) and early maturing breeds (51.3%) were strategies very often used to cope with climate change in livestock (pigs and poultry) production in the study area. Sinking of deep well (48.0%) was the strategy very often used to cope with climate change in fish production; this may be due to low cost implication than other strategies. This findings support Apata *et al.* (2009), who reported that main strategies for reducing climate risk is to diversity production and livelihood system which include mixed cropping, mixed farming and crop diversification.

Table 4: Distribution of respondents according to coping strategies with climate change

n= 150				
*Coping strategies	VO	OF	OC	N
	F(%)	F(%)	F(%)	F(%)
Crop production				
Mixed cropping	51(38.0)	68(45.3)	18(12.0)	7(4.7)
Agroforestry	22(14.7)	59(39.3)	25(16.7)	44(29.3)
Crop diversification	47(31.3)	63(42.0)	29(19.3)	11(7.3)
Organic farming	68(45.3)	39(26.0)	29(19.3)	14(9.3)
Planting drought resistant crops	69(46.0)	69(46.0)	12(8.0)	-
Planting early maturing crops	84(56.0)	66(44.0)	-	-
Mulching	34(22.7)	97(64.7)	11(7.3)	8(5.3)
Crop rotation	32(21.3)	64(42.7)	47(31.3)	7(4.7)
Sequential planting	60(40.0)	77(51.3)	13(8.7)	-
Delay in planting	84(56.0)	53(35.3)	13(8.7)	-
Livestock (pigs and poultry) production				
Mixed farming	55(36.7)	95(63.3)	-	-
Rearing disease resistant breeds	97(64.7)	53(35.3)	-	-
Rearing early maturing breeds	77(51.3)	73(48.7)	-	-
Feed adjustment to climatic conditions	48(32.0)	80(53.3)	15(10.0)	7(4.7)
Artificial cooling system during hot weather	37(24.7)	68(45.3)	38(25.3)	7(4.7)
Fish production				
Polyculture	-	31(20.7)	64(42.7)	55(36.7)
Construction of concrete ponds	-	18(12.0)	47(31.3)	85(56.7)
Sinking of deep well	72(48.0)	7(4.7)	71(47.3)	-
Provision of water reservoir	18(12.0)	7(4.7)	32(21.3)	93(62.0)

Source: Field survey, 2012 * Multiple responses VO= Very Often OF= Often
 OC= Occasionally N= Never

Hypothesis testing

Results in Table 5 reveal that gender ($\chi^2=29.04$), religion affiliation ($\chi^2=40.45$) and ethnicity ($\chi^2= 36.51$) of the farming youth show significant association with their coping strategies with climate change. This implies that the coping strategies chosen by the farming youth is directly influenced by their gender, religion affiliation and ethnicity.

Results in Table 6 reveal that age ($r = 0.346$), years of formal education ($r = 0.484$), farming experience ($r = 0.514$) of the respondents show significant relationship with their coping strategies with climate change. These imply that chosen of coping strategies by the farming youth is directly influenced by their age, years of formal education and farming experience. This result is in corroboration with that of Olayemi, (2012) which stated that for every 1 unit increase in age, years of formal education, farming experience and farm size of farmers there is probability of increase in coping strategies employed.

Table 5: Results of Chi-Square analysis of the association between socio economic characteristics of respondents and coping strategies with climate change

Variables	χ^2 - value	DF	P-Value	Decision
Gender	29.04	14	0.000*	S
Religion affiliation	40.45	28	0.000*	S
Marital status	6.83	28	0.009	NS
Ethnicity	36.51	28	0.000*	S
Membership of social group	7.71	15	0.006	NS

Source: field survey, 2012 S=Significant NS=Non Significant

*Significant at $P < 0.05$ DF= Degree of Freedom

Table 6: Results of Correlation analysis of the relationship between socio economic characteristics of respondents and coping strategies with climate change

Variables	Correlation coefficient (r)	P Value	Decision
Age	0.346	0.000**	S
Years of formal education	0.484	0.000**	S
Farming Experience	0.514	0.000**	S

Source: Field survey, 2012 **Significant at the $P < 0.01$ level S= Significant

Conclusion and recommendation

Climate change is inevitable, there is need to devise strategies to cope with it devastating impact especially among the youth farmers. Some of the coping strategies employed by farming youths in the study area for crop production enterprise were sequence planting, planting early maturing crops and planting drought resistant crops; for livestock production (poultry and piggery) enterprise were mixed farming and rearing early maturing breeds; for fish production were polyculture and sinking of deep wells. It is recommended that getting information on coping strategies and using integrated strategies to cope with climate change be explored by the youth farmers in the study area

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