



Perceived Effects of Climate Variability on Arable Crop Farmers' Socio-economic Status in Ekiti State, Nigeria

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Abstract

Climate variability is an observed unpredictable weather condition that is recently affecting agricultural production worldwide. Variability in climate has made the onset of rainfall and dry season unpredictable which may not enable the farmers to plant appropriately. The study was conducted to assess arable crop farmers' perception of climate variability effects on their socio-economic status in Ekiti State, Nigeria. Multistage sampling procedure was used to select two hundred and thirty-three respondents (233) for the study. Interview schedule was used to collect relevant information from the respondents. Descriptive statistics used were frequency counts, percentages and mean. Logistic regression was used to test the relationship between perceived effects of climate variability and socio-economic status. The result revealed that the mean age of the respondents was 57 years. The mean household size was 7 members while 65.6% of the respondents were literates. Majority (92.2%, 89.1% and 78.1%) of the respondents remarked that, temperature, rainfall and sunshine, respectively were the climatic parameters that brought about climate change in the area. Majority (89.3%) of the respondents perceived the effects of climate variability on their socio-economic status as unfavourable. The logit regression analysis result revealed that there was no significant relationship between perceived effects of climate variability and social economic status of the respondents as reflected by logit regression coefficient (-0.349702, $p > 0.05$) with odd ratio of 0.967 in 2021 while there was significant relationship as reflected by logit regression coefficient (0.0261579, $p < 0.05$) with odd ratio of 1.094 in 2023. This study concluded that the farmers were aware of climate variability and perceived its effects on socio-economic status as being unfavourable in the study area. It was hereby recommended that farmers should form themselves into cooperative societies to pool fund together for the establishment of irrigation system.

Keywords: Climate; Climate Variability; Arable Crop; Socio-economic status

Introduction

Agricultural production be it crops, livestock, fishery, and the like has been a dominant issue of discussion in national economic development of this country. However, despite government campaigns, farm production has not kept pace with food demand (Nsoaya and Nema, 2011). Some of the reasons that can be adduced to this; are high prone of the country to serious environmental hazards from low rainfall, extreme temperature, deforestation and unhindered desert encroachment (Okringbo, *et al*, 2017). However, agriculture still remains the main source of food, employer of labour, employing 60-70% of the population (Agboola and Fayigba, 2016). Climate variability is an observed weather condition that causes climatic parameters to change within smaller time frames such as a month, a season or a year. According to Obiora (2011), Climate change is a global natural phenomenon involving discrepancies in

the occurrence and magnitude of sporadic weather events and the concomitant rise in the world mean surface temperature which possess serious environmental and health hazards. This variation in climate has made the onset of rainfall and dry season unpredictable and this unlike before will not enable farmers on many occasions to plant rightly.

Socio-economic status is the position that an individual or family occupies with reference to the prevailing average standard of cultural possessions, effective income, material possession and participation in the group activities of the community (Akinbile, 2007; Oyeyinka, 2002).

It is therefore not an effort in futility to assess the effects of climate variability on some of these socio-economic status variables as they rest on farmers' productivity that depends on weather conditions. Farmers with higher socio-economic status are much more likely to



become involved in voluntary actions than lower status people and it is of major importance in extension programs because for extension to be successful it must start where people are. Therefore, the study had described the socio-economic characteristics of the respondents, identified the climate parameters that influence climate variability, assessed the perceived effects of climate variability on the socio-economic status, categorised the arable crops farmers in the study area, based on their perception and identified the coping strategies employed to mitigate the effects of climate variability on their socio-economic status.

Methodology

The state is divided into three agricultural zones, notably having dry and wet seasons. The vegetation pattern is of rainforest in the south and savannah in the north. The climate favours crops like maize, yam, cassava, tomato, millet, cocoa, plantain, cashew. Multistage sampling procedure was used to select two hundred and thirty-three respondents (233) for the study. Ekiti state by Ekiti State Agricultural Development Programme (EKSADEP) zoning system consists of three zones namely, Aramoko zone, Ikere zone, and Isan-Ekiti zone. Fifty percent (50%) of the zones were randomly selected making two zones. In order to avoid sampling from the same vegetation zone, Aramoko and Isan-Ekiti zones were purposively selected as Aramoko zone represents forest area while Isan-Ekiti zone represents savanna area in Ekiti State, Nigeria. Twenty percent (20%) of the cells in each zone were randomly selected for the study; making 7 cells in Aramoko zone and 5 cells in Isan-Ekiti zone. Ten percent (10%) of the registered arable crop farmers from the selected cells were randomly chosen to give one hundred and ten (110) arable crop farmers and one hundred and twenty three (123) arable crop farmers from Aramoko zone and Isan-Ekiti zone making two hundred and thirty three (233) respondents for the study.

Results and Discussion

Socio- economic characteristics of the respondents

Table 1 showed that the mean age of the respondents was 57 years. This implies that

many of the respondents were in their old age and they may not have ability to improve on their socio-economic status by increasing their productivity. This is in line with the statement of Lauren (1995) that, it is a common belief that the productivity of a farmer increases with age, reaches some mid-age peak, and then decreases with further age. The Table further showed that majority (85.9%) of the respondents were married, while only fifteen percent were single. It implies that majority of the respondents were responsible adults capable of holding positions in the society. This is in line with Igbalajobi *et al.* (2013) that being married implied that the respondents were mature and responsible to cater for their households as well as having clear knowledge of their well-being. The mean household size was 7 members. This is similar to the findings of Igbalajobi *et al.* (2013) that the mean household size was 7 members. It indicated that there was large household size among the respondents in the study area. This had implication on level of dependents and hence the level of poverty in the household since the larger the household the higher the number of people to be fed and vice-versa. On the other hand, it has positive implication on family labour availability for farming enterprises. It was also revealed that 65.6% of the respondents were literate and 34.4% had no formal education. High level of literacy among the respondents in the study area is likely to make adoption of innovation easier. This is in line with Adeola (2013) finding that education influences adoption. The result further showed that only 17.2% of the respondents earned below ₦50,000 in a year while 76.5% earned between ₦50,000 and ₦500,000 as their annual income. This implies that majority of the farmers in the study area were small scale farmers that worked with primitive implement like hoes and cutlasses to carry out their farming activities as the mean cultivated land was also 2.3 hectares. The mean farming experience was 20 years. This implies that the respondents have acquired much experience in farming enterprise. It will therefore assist the farmers to use various coping strategies to mitigate the perceived effect of climate variability on their socio-economic status.



Table 1: Distribution of respondents by socio-economic characteristics n=233

Socio economic characteristics	Frequency	Percentage	Mean
Age			
20-29	18	7.8	57yrs
30-39	22	9.4	
40-49	58	25.0	
≥50	135	57.8	
Marital Status			
Married	200	85.9	
Single	7	3.1	
Separated	15	6.3	
Widow	11	4.7	
Educational level			
No formal Education	80	34.4	
Primary school education	91	39.1	
Secondary school education	62	26.6	
Tertiary education	-	-	
Income (#) per/annum			
Below 50,000	40	17.2	52,500
50,001-100,000	109	46.9	
100,000-500,000	69	29.7	
Over 500,000	15	6.3	
Household size			
≤5	22	9.5	7
6-10	153	65.6	
11-15	36	15.6	
16-20	22	9.4	
Farming Experience			
1-10	55	23.7	20
11-20	104	44.6	
21-30	31	13.2	
31-40	23	9.9	
41-50	10	4.3	
>50	10	4.3	

Source: Field Survey, 2023

Climatic Parameters that influence climate change in the study area.

The result in Table 2 revealed that 92.2%, 89.1% and 78.4% of the respondents remarked that temperature, rainfall and sunshine, respectively were the climatic parameters that brought about climate variability in the area. This claim was supported by Bareja (2011) that climatic factors such as rainfall and water, light and temperature are the factors that influence plant growth and development. It was also in line with the claim that climate change is a long-term shift in weather conditions identified by changes in temperature, precipitation, winds and other indicators (climate change.gc.ca.2015)

Table 2: Distribution of respondents by perceived climatic parameters that influence climate change in the study area.

Climatic Parameters*	Frequency
Percentage	
Rainfall	215
Temperature	213
Wind	74
Sunshine	206

*Multiple Responses

Source: Field Survey, 2023

Perceived effects of climate change on socio – economic status



Table 3 showed that majority (90.6%) agreed that due to the effect of climate change their annual income has reduced drastically. Also, 89.0% of the respondents agreed that it had led to evasion of commodity tax. Other statements on perceived effects of climate change on their socio-economic status followed the same trend as revealed by the following statements; borrowing money from people (86.0%); children cannot go beyond primary education (82.8%), involvement in extension activities which is a source of knowledge has reduced (76.6%), they cannot service membership in social organization (75.0%); health deteriorating daily due to fear and too much laboring (73.4.0%) children had to go to schools in turns (70..3%); farming enterprise reduced to subsistence level (59.4%); and no possession of additional valuable materials (68.8%).The weighted

mean score for each statement shows that climate change effect on socio-economic status has led to the use of fairly used clothes (2.85), has reduced the respondents annual income (2.67) and they have been shying away from extended family obligations (2.56).Among these effects, eating what is available was ranked first while planning to leave village and look for job in cities was the least. This implies that the respondents were just after how to make the two ends meet. Therefore, it could be inferred that the general trend of the respondents' perception of climate change effects was that it influenced their socio-economic status, because all the perceptual statements have WMS of above 1.5 which was the midpoint score. It should be, however, noted that the closer the WMS of any of these perceptual statements to 3, the more the respondents affirm the trend.

Table 3: Perceived effects of climate variability on socioeconomic status in Ekiti State

Perceived effects of climate variability on socio-economic status	Agreed	Undecided	Disagreed	WMS	RANK
I have withdrawn many children from sch.	189(81.3)	29(12.5)	15(6.3)	2.75	4 th
My children go to school in turns	164 (70.3)	-	69 (29.7)	2.41	23 rd
Many children cannot go beyond pry. edu.	193 (82.8)	29 (12.5)	11 (4.7)	2.78	2 nd
It was long I have attended farmers' field day	189 (81.2)	7 (3.1)	36 (15.6)	2.66	9 th
My involvement in ext. activities has reduced	178(76.6)	-	55 (23.4)	2.53	15 th
Annual income has reduced	211 (90.6)	7 (3.1)	15 (6.3)	1.94	26 th
Swapping property for money	160 (68.8)	11(4.7)	62 (26.6)	2.42	22 nd
Borrowing money from people	200 (86.0)	7(3.1)	25 (10.9)	2.75	4 th
Cannot go to town frequently	197 (84.4)	-	36 (15.7)	2.68	8 th
Planning to leave village and look for job in city	186 (79.7)	-	47 (20.3)	2.59	12 th
I cannot feed my family	186 (79.7)	-	47(20.3)	2.59	12 th
I ration food for my family	175(75.0)	-	58(25.0)	2.50	16 th
We eat what is available	200 (86.0)	4 (1.6)	29 (12.6)	2.73	6 th
I cannot feed my children	193 (82.9)	-	40 (17.2)	2.66	9 th
Support towards community declined	175 (75.0)	-	58 (25.0)	2.50	16 th
Cannot service membership in social org.	175 (75.0)	25 (10.9)	33 (14.1)	2.61	11 th
Evasion of commodity tax	207 (89.0)	11 (4.7)	14 (6.2)	2.83	1 st



Shying away from extended family obligations	207 (89.0)	-	25 (10.9)	2.78	2 nd
I cannot buy clothes for my children	197 (84.4)	-	36 (15.6)	2.69	7 th
Prestige and honour reduced in the society	171 (73.4)	7 (3.1)	55 (23.4)	2.50	16 th
No possession of additional valuable materials	160 (68.8)	22 (9.4)	51 (21.9)	2.47	20 th
Enterprise reduce to subsistence level	138 (59.4)	18 (7.8)	76 (32.8)	2.27	24 th
I buy fairly used clothes	178 (76.5)	4 (1.6)	51 (21.9)	2.55	14 th
Cannot afford household utilities	109 (46.9)	18 (7.8)	106 (45.5)	2.02	25 th
Cannot build house	98(42.2)	15 (6.3)	120 (51.5)	1.91	27 th
Health deteriorating daily	171 (73.4)	7 (3.1)	55 (23.5)	2.50	16 th
Looking older than my age	160 (68.8)	15 (6.3)	58 (25.0)	2.44	21 st

Source: Field Survey, 2023 WMS = Weighted Mean Score

Categorization by perceived effect of climate change on socio-economic status

Data in Table 4 showed that 89.3% of the respondents perceived the effects of climate change on their socio-economic status as unfavourable while only 10.7% perceived the effects on their socioeconomic status as favourable. The implication was that adoption of technologies may be difficult by farmers in the area as socio-economic status of farmers is a determinant in the adoption process. This is supported by findings of Mafimisebi *et al.* (2006) that variables that were critical determinants of adoption rate include average

income from farming activities, level of education, years of experience, membership of trade, or cooperative association and source of credit for farming. Therefore, wealthy, highly experienced and educated farmers should be identified and used as contact farmers by extension agents as these are some of the socio-economic status indicators. Ragahu and Sen (2014) stated that actual adoption of new technology depended heavily on economic well-being of farmers. The few that favourably perceived the effects of climate change were probably those that did not take arable crop production as their primary occupation

Table 4: Categorization of respondents on perceived effect of climate change on socio-economic status n = 233

Perceived effect Scores categories	Frequency	Percentage
Unfavourable 90 – 135 (> $\bar{X}$ -SD)	209	89.3
Favourable 54 - 77 (< $\bar{X}$ - SD)	24	10.7
Total	233	100

Source: Field survey, 2023.

Mean ($\bar{X}$) = 106.38

Sd = 20.751

From Table 5, it was revealed that in Ekiti state, majority (87.1%) of the respondents used family labour to mitigate the effect of climate variability. This will reduce the cost of production and increase their income. Also, 85.4 percent change their agricultural systems in order to suit the emerging weather condition at a particular period in the area. Occasional visit to town (74.2%), withdrawal

of children from school (67.8%), formation of cooperative societies (58.8%) and reduced spending at ceremonies were major coping strategies engaged in by the respondents to reduce the climate variability effects on their Socio-economic status. The Table further revealed that reduction in number of wives (19.3%), change to permanent crop (34.8%), family planning adoption (39.1%) and loan from banks (39.1%) were not prominent



among the mitigation strategies employed by the respondents in the area. This shows how number of wives and children are important to farmers. It also shows non-access of farmers to loan facilities in the area. This may probably be associated with the bottleneck that indigent

farmers could not contend with as only 39.1% of respondents agreed that loan from bank was among their coping strategies to mitigate climate variability effects on their socio-economic status.

Table5: Distribution of respondents by coping strategies to mitigate the effects of climate change on socio – economic status.

Coping strategies*	Frequency	Percentage
Change in agriculture systems	199	85.4
Family planning adoption	91	39.1
Use of family labour	203	87.1
Formation of cooperative society	137	58.8
Many sources of livelihood	123	52.8
Women empowerment	89	38.2
Change to permanent crops	81	34.8
Loan from banks to meet domestic needs	91	39.1
Withdrawal of children from school	158	67.8
Occasional visit to town	173	74.2
Reduced spending at ceremonies	131	56.2
Reduction in number of wives	45	19.3

*Multiple Responses.

Source: Field Survey, 2023

Test of hypothesis

The Logit regression presented in Table 5 revealed the relationship between perceived effect of climate variability and socio-economic status of the respondents in 2021, 2022 and 2023. The Chi-square value of 76.8 is significant at 1% and the pseudo R²-value of 0.497 revealed that 49.7% variation in perceived effect of climate change reported by the respondents were been explained for by

the socioeconomic status and the remaining 50.3% are due to error term. In 2021, there was no significant relationship, but there were significant relationships in 2022 and 2023. This implies that climate variability had affected the crops thereby reducing the yields. The reduction in the yields resulted in reduced revenue accrued to the farmers thereby leading to lower socio-economic status (SES).

Table 5: Summary of logistic regression analysis showing relationship between perceived effect of climate variability and socio-economic status (N = 233)

Perception	Coefficient	P>Z	Odd ratio	Constant Remark
2021	-0.349702	0.264	0.967	1.025404 NS
2022	-0.0020555**	0.036	1.049	1.097596 S
2023	0.0261579**	0.015	1.094	1.177326 S

Source: Field Survey, 2023

NS = Not significant, S= Significant

Conclusion and Recommendations

It can be concluded from the findings that farmers were aware and perceived the effects of climate change on socio-economic status as being unfavourable in the study area. Having perception of climate variability on socio-economic status is a precondition for adoption of appropriate coping strategies to be

employed in order to mitigate the unfavourable effects unleashed on socio-economic status. Hence, appropriate coping strategies would lead to improved socio-economic status. Also, there was relationship between their perception of climate variability effects and socio-economic status. Based on the findings of this study, it was recommended



that the Policies and programmes that will stimulate the interest of young people into arable crop farming as a business should be put in place by all the tiers of government since the farmers in the study area are aging, also arable crop farmers should come together to form cooperative societies so as to pull fund together and increase their individual farm size to improve their annual income.

References

Adeola, R.G. (2013): Factors influencing Adoption of Green Manure for sustainable soil fertility Management in Oyo State. *International journal of current Research*, 5(12):3872-3875.

Agboola, P and Fayiga, A.O. (2016): Effects of climate change on agricultural production and rural livelihood in Nigeria. *Journal of Agricultural Research and development*, 15(1): 1596-5511

Akinbile, L.A. (2007): Standardization of Socio-Economic Status (SES) scale for farm families in South west Nigeria. *Journal of social Sciences*, 14(3): 221-227.

Bareja B.G. 2011. Climatic Factors Affecting Plant Growth (online).

<http://www.cropsreview.com/climaticfactors.html> (Accessed 3 Mar 2016).

Climate Change. gc.ca .2015. Canada's Way Forward on Climate Change. Canada's International Action. www.climatechange.gc

FAO, 2007. Floods and Cudlones cause heavy crop losses in parts of Southern Africa. <http://www.fao.org/newaroom/en/news/2007/1000518/index.html>.

Igbalajobi O., Fatuase A.I and Ajibefun .(2013): Determinants of poverty incidence among Rural Farmers in Ondo State, Nigeria.. AIRD 1, Issues 5.

Mafimisebi T.E, Onyeka, U.P, Ayinde, I and Ashaolu, O.F. (2006): Analysis of Farmer-Specific socio-economic determinant of Adoption of modern livestock management Technologies by farmers in Southwest, Nigeria.

Journal of Food, Agriculture and Environment 4(1): 183-186

Nsoaya, L.N and Nnenna, M.G. (2011): Adoption of improved cassava production technologies in Anambra East local government area of Anambra state, Nigeria. *Journal of Research in National Development*, 9 (2), 1596-8308

Obiora, S. (2011): Climate Change: Nigeria Risks Food Scarcity, Health Hazards; Nigeria Compass Newspaper, Western Publishing Company Limited, Isheri, Ogun State, 4 (1134):5.

Okringbo, I.J., Ibe, M.N. and Oduechie, T.C. (2017): Perceived effects of Climate variability on Arable Crop Production in Bayelsa State, Nigeria. *International Journal of Environment, Agriculture and Biotechnology*, 2(5), 2328-2335

Oyeyinka R.A 2000. Impact of Nigeria Agricultural and Cooperative Bank Small Holder Direct Loan Scheme on Farmers in Oyo State, Nigeria, Ph.D. Thesis, Unpublished. Dept. of Agricultural Extension, Ibadan, University of Ibadan.

Raghav, S. and Sen, C. (2014): Socio-Economic Status of Farmers and their Perception About Technology Adoption: A case study EPRA *International Journal of Economic and Business Review*; 2 (3), 7-13.