



## PERCEPTION OF CASSAVA FARMERS OF CLIMATE CHANGE ON CASSAVA PRODUCTION IN IDO LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA.

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### ABSTRACT

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The study examined the perception of farmers on the change in climate condition on cassava production in Ido Local Government area of Oyo State. Data were collected through the use of structured questionnaire which were administered to 76 respondents. Descriptive and multiple regression analysis were used to analyse the result of this study. Results showed that 85.8% of the respondents are male and 14.7% were female, 29.2% were between 31-40years, 70.7% of the respondents received information on climate change through neighbours and friends, 100% of the respondents relied on rainfall as a source of water to the farm, 92% made use of manual planting method, while 61.3% of the respondents perceived that climate change does not have absolute effect on cassava production, also majority 50.7% agreed that extension worker do not enhance productivity, major sources of climate change awareness are through radio and television. Regression result showed that labour used was negative and statistically significant at 1%, extension agents visit has a negative coefficient and significant at 5% while source of farm land and farm size has a positive relationship to cassava output in the study. Therefore, extension agent visit or contact should be improved in order to enhance or assist the farmer on how to militate against climatic change and also to help in the adoption of new technology by the farmers in the study area.

**Contribution/Originality:** This study documents that the cassava farmers labour used could be capital intensive since majority of them used hired labour also decision to have a regular or consistence contact with extension agent could enhance the farmers to acquire basic training, awareness and knowledge intervention in climate change in the study.

### 1. INTRODUCTION

Cassava (*Manihot esculenta*) is a root crop cultivated and consumed as a staple food in most developing world [FAO \[1\]](#). According to [Lancaster, et al. \[2\]](#) cassava leaves may be consumed as a vegetable, or cooked as a soup ingredient or dried and fed to livestock as a protein feed supplement, the stem is used for plant propagation and grafting while the roots are typically processed to remove naturally occurring toxins and provide storable products for human and industrial consumption. As a food crop, cassava fits well with farming patterns of the small holder

farmers in Nigeria, because it gives some yield of carbohydrates and is available all year round farming season, it is more tolerant to low soil fertility and more resistant to drought, pests and diseases compared to other crops. Cassava is very tolerant and has the ability to grow on marginal land where other food crops cannot grow well, but for its highly yield and productivity moderate climatic condition [3]. Cassava is said to be the least affected crop when compared with other staples such as maize, sorghum and millets [4].

Food crop farmers in Oyo State Nigeria provide the bulk of arable crops that are consumed locally and exported as foreign exchange to other countries. The local farmers are experiencing climate change even though they have not considered its deeper effects; this is evidenced in the late arrival of rain, the drying-up of stream and Small Rivers that usually flows all year round [5]. Climate change is a long – term change in the statistical distribution of weather pattern over a periods of time that range from decades to millions of years. It may be a change in the average weather conditions or a change in the distribution of weather events, for example, greater or fewer extreme weather events. Climate change may be limited to a specific region or may occur across the whole earth [6]. In recent usage, especially in the context of environment policy, climate change usually refers to changes in modern climate. According to Awosika, et al. [7] it may also be qualified as anthropogenic climate change, more generally known as global warming or anthropogenic global warming (AGM). Recent evidence indicates that the world has already warmed by 0.8°C since the pre-industrial era [8]

Over the years, our rural farmers depend on indigenous or local knowledge for improved farming system (Animal husbandry). Such knowledge (indigenous or local knowledge) refers to skill and experience gained through oral tradition and practice over many generations [9]. Acquisition of such primitive skills by our rural farmers has not help to improve agricultural yield. Large percentages of the populations of developing countries depend upon agriculture for their livelihoods. Climate change is already affecting agriculture in these countries negatively and this situation is likely to worsen [10]. The poor farmers who depend on agriculture for sustenance and livelihoods in Nigeria are currently faced with the problem of changing climatic conditions. The estimate for Africa is that 25-42% of species habitat could be lost, affecting both food and non food crops [11]. All that is witnessed in our rural agricultural system range from poor farm yield, emergence of new crop and animal diseases. But in recent times, the age- long vibrant African agricultural sector has come under threat from the very factors which have always supported it. One of the most important of these factors is water, of which excess and shortage in alternate seasons is negatively weighing on agricultural productivity throughout the tropical world. With the foregoing, can we say these claims are really true of climatic changes? This study therefore, provides answers to the following research objectives which are to:

Examine the socio-economic characteristics of cassava farmer in the study area.

Examine the available and sources of information on climatic condition on cassava farmer.

Examine the quantitative impact of climate condition on cassava production.

Examine the problem encountered by the farmers on cassava production

## 2. METHODOLOGY

The study was carried out at Ido Local Government which is one of the rural areas in Oyo State. It lies between Latitude 6.05°N and Longitude 3.02°E. It is bounded to the north by Ibadan Local Government and partially by Oyo Local Government. To the East by Ibarapa South West and Akinyele Local Government respectively and to the West by Oluyole Local Government to the South of Ogun State.

Ido Local Government area of Oyo State occupies a total land mass 986 km square and the population of 103,261 people [12]. The Local Government headquarter is at Ido town and has eleven major prominent villages under its jurisdiction namely Apata, Sango, Apete, Eleyele, Sonso, Idi – oro, Atere, Ayegun, Omi – Adio, Ijokodo, Bode – igbo and Akufo. The season in this area is distinct and the climatic distribution allows the practice of both dry season and rain fed farming. Rainfall of the area is averagely 1520 mm per annum. Therefore crop majorly grow

in this area include fruit, (Citrus spp), maize, cassava, plantain and vegetable at various time of the year. The population comprises of both male and female cassava farmers in the study area, random sample techniques was adopted for the study where 80 respondents was randomly selected from four villages in the local government area.

### 3. DATA ANALYSIS

The data for this study was collected through a well structured questionnaire and interview schedule on cassava farmers. The total numbers of questionnaire were divided into four, where twenty respondents were randomly selected from four villages which are Akufo, Aniseere, Omi –Adio and Araromi village. Descriptive statistics such as frequency table, percentage was used to analyse the socio economic characteristics of respondents, while multiple regression analysis was use to determine the responsiveness of cassava productivity to the explanatory variables.

Regression model in linear form

$$CZ = (bo + X_1 + X_2 + X_3 ..... X_8 + u), \text{ where;}$$

CZ = Cassava output

X<sub>1</sub> = Education

X<sub>2</sub> = Social organization

X<sub>3</sub> = Source of farm land

X<sub>4</sub> = Extension agent visit

X<sub>5</sub> = Rainfall before planting

X<sub>6</sub> = Labour used

X<sub>7</sub> = Size of farm land

X<sub>8</sub> = Age

bo = Constant

u = Error term

### 4. RESULTS AND DISCUSSION

The table 1 on socio economic characteristics of the farmers showed that 29.2% of the respondents were between the ages of 31-40 years while 24.0% were between the ages of 41-50 years, this shows that majority of the farmers were still within their active working age and involved in the production of cassava, therefore were expected to be active and contribute immensely to cassava production, 85.3% were male, majority 80% had one form of formal education while 20% had no formal education, 54.7% had household size between 1-5 person while 6.7% had between 11-15 household size. 66.7% used hired labour while 33.3% used family labour, this could be due to the tedious activities involved in cassava production, 43.9% source their credit through contributions while 1.3% through governments, 64.0% source their farmland through inheritance while 5.3% leased and purchase their farm land also majority 66.7% used between 1-5 hectares of farm size while 13.3% used above 11 hectares of farm size, this shows that majority of the farmers are operating a small scale farming system in the study area.

Table-1. Socio Economic Characteristics of the Respondents

Variable	Frequency	Percentage
<b>Age (years)</b>		
21 – 30	11	14.6
31 – 40	22	29.2
41 – 50	19	24.0
51 – 60	9	11.9
61 – 70	7	9.3
71 and above	7	9.2
<b>Gender</b>		
Male	64	85.3
Female	11	14.7
<b>Educational level</b>		
No formal education	15	20.0
Adult education	13	17.3
Primary	14	18.7
Secondary	16	21.3
Tertiary	17	22.7
<b>Household size</b>		
1 – 5	41	54.7
6 – 10	29	38.6
11 – 15	5	6.7
<b>Labour used</b>		
Family labour	25	33.3
Hired labour	50	66.7
<b>Years of farming</b>		
0 – 5	23	30.6
6 – 10	17	22.6
11 – 15	5	6.6
16 – 20	6	8.0
21 and above	25	31.8
<b>Source of credit</b>		
Friend	7	9.3
Government	1	1.3
Bank	7	9.3
Loan	23	30.7
Contribution	37	49.3
<b>Source of farmland</b>		
Rent	9	12.0
Inherited	48	64.0
Gift	8	10.7
Leased	4	5.3
Borrowed	2	2.7
Purchased	4	5.3
<b>Farm size (hectare)</b>		
1 – 5	50	66.7
6 – 10	15	20.0
11 and above	10	13.3
<b>Total</b>	<b>75</b>	<b>100.0</b>

Source: Field survey, 2014

Table 2 showed the Sources of information on climate change by the respondent it was revealed that 37.4% of the farmers frequently source information through the use of radio while 41.3% less frequently and 13.3% not at all, 21.3% frequently source information through television while 52.0% less frequently while 17.3% do not have access to television, 16.0% frequently source their information through internet while 50.7% of the respondent could not have access to internet source while 9.3% of the respondent are more frequently. More than half (53.5%) of the respondents could not have access to information through extension workers and research institutions respectively

while 8.0% and 18.7% of the respondents had more frequent contact to extension worker and research officers respectively in the study area.

**Table-2.** Respondents Sources of Information on Climate Change in the Study

VARIABLE	FREQUENCY	PERCENTAGE
<b>RADIO</b>		
Not at all	10	13.3
Less frequently	31	41.3
Frequently	28	37.4
More frequently	6	8.0
<b>TELEVISION</b>		
Not at all	13	17.3
Less frequently	39	52.0
Frequently	16	21.3
More frequently	7	9.4
<b>INTERNET</b>		
Not at all	38	50.7
Less frequently	18	24.0
frequently	12	16.0
More frequently	7	9.3
<b>EXTENSION WORKER</b>		
Not at all	40	53.3
Less frequently	21	28.0
Frequently	8	10.7
More frequently	6	8.0
<b>RESEARCH INSTITUTION</b>		
Not at all	40	53.3
Less frequently	13	17.3
Frequently	8	10.7
More frequently	14	18.7
<b>TOTAL</b>	<b>75</b>	<b>100.0</b>

Source: Field Survey, 2014

**Table-3.** Sources of Awareness of Climate Change in the study area

VARIABLE	FREQUENCY	PERCENTAGE
<b>PUBLIC AWARENESS AND CAMPAIGN</b>		
Not at all	26	34.7
Less frequently	33	44.0
Frequently	11	14.7
More frequently	5	6.6
<b>TALK SHOW AND SEMINAR</b>		
Not at all	41	54.7
Less frequently	19	25.3
Frequently	13	17.3
More frequently	2	2.7
<b>PRINT MEDIA</b>		
Not at all	35	46.7
Less frequently	32	42.7
Frequently	4	5.3
More frequently	4	5.3
<b>NEIGHBOUR / FRIEND</b>		
Not at all	7	9.3
Less frequently	53	70.7
Frequently	9	12.0
More frequently	6	8.0
<b>TOTAL</b>	<b>75</b>	<b>100.0</b>

Source: Field Survey, 2014

Table 3: Shows that 44.0 % of the respondents are less frequently aware of climate change through public awareness and campaign while 6.6% of the respondents are more frequently aware of climatic change through P/A and C. It shows that 54.7% of the respondents do not have access to information through talk show and seminar while only 2.7% of the farmers are more frequently has access to information on climatic change through talk show and seminar. 46.7% of the respondents are not aware of climate change trough print media while only 5.3% of the respondent could not source information about climate change through neighborhood and friend.

**Table-4.** Farmers' perception of climate change on cassava farming

Variable		
<b>PERCEIVED CLIMATIC CHANGE</b>		
Yes	35	46.7
No	40	53.3
<b>CLIMATE CHANGE CAUSES LOSS</b>		
Yes	29	38.7
No	46	61.3
<b>TOTAL</b>	<b>75</b>	<b>100.0</b>
<b>EFFECT ON PLANTING PERIOD</b>		
Yes	32	42.7
No	43	57.3
<b>CLIMATIC EFFECT ON CASSAVA</b>		
Yes	27	36.0
No	48	64.0
<b>REDUCED DUE TO CLIMATIC CHANGE</b>		
Yes	37	49.3
No	38	50.7
<b>TOTAL</b>	<b>75</b>	<b>100.0</b>

Source: Field Survey, 2014

Table 4 revealed that 53.3% of the respondent did not perceive any climate change while 46.7% of the respondent's perceived climate changes, 61.3% of the respondent perceived that climate change did not cause any severe loss on the cassava while 38.7% perceived that climate change causes loss to the cassava production. Also, shows that 57.3% perceived that climate change does not affect the planting period in cassava production while 42.7% perceived that climate change has effect on the period of cassava, 50.7% of the farmers perceived that quality of cassava produce reduces due to climatic change while 49.3% perceived that there is no reduction in the quality of cassava produced in the study area. It could be deduced that there is a little slight effect on the quality of cassava production due to climatic change during the farming season in the study area.

**Table-5.** Regression Analysis On the effect of Climate Change on Cassava production

Variables	Coefficient	Standard error
bo = Constant	134.539	47.614
X <sub>1</sub> = Years of education	1.171	0.787
X <sub>2</sub> = Social organisation	-18.147	14.146
X <sub>3</sub> = Source of farmland	10.405**	4.113
X <sub>4</sub> = Extension agent visit	-26.709**	11.183
X <sub>5</sub> = Rainfall before planting	-4.458	5.674
X <sub>6</sub> = Labour used	-50.493***	14.214
X <sub>7</sub> = Size of farmland	3.593***	0.016
X <sub>8</sub> = Age	0.453	0.408

Note: \*\*, and\*\*\* = Significant of 5% and 1% level

The regression analysis revealed that labour used and size of farmland used were statistically significant at 1% level but coefficient of labour used assume a negative sign which shows that labour used could be reduced in other to enhance productivity also source of land acquisition and contact or visit by the extension agent were statistically significant at 5% level, but the coefficient of extension contact was negatively signed, this could brought about a reduction in level of cassava output, however, this may be as a result of the number of times the farmers had contact with the extension agent. Therefore extension visit or contact should be improved by the government agent in other to enhance or assist the farmer on how to militate against climatic change in the study and also to help in the adoption of new technology by the farmers, though this did not support the apriori expectation.

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## REFERENCES

- [1] FAO, *Food and agricultural organization of the United Nations*. Rome, Italy: FAO, 1993.
- [2] P. A. Lancaster, J. S. Ingram, M. Y. Lim, and D. G. Coursey, "Traditional cassava-based products: Survey of processing techniques," *Economic Botany*, vol. 36, pp. 12-45, 1982. [View at Google Scholar](#) | [View at Publisher](#)
- [3] W. B. Akanbi, O. S. Olabode, J. O. Olaniyi, and A. O. Ojo, *Introduction to tropical crops*. Ibadan: Published by Raflink Computer Eleyele, 2004.
- [4] J. Andy, R. Julia, V. H. Beatricz, and N. R. Carlos, "Is cassava the answer to African climate change adaptation?," *Tropical Plant Biology*, vol. 5, pp. 9-29, 2012. [View at Google Scholar](#) | [View at Publisher](#)
- [5] T. G. Apata, K. D. Samuel, and A. O. Adeola, "Analysis of climate change perception and adaptation among arable food crop farmers in South Western Nigeria," presented at the Conference of International Association of Agricultural Economics, 2009.
- [6] IPCC (Intergovernmental Panel on Climate Change), *Impacts, adaptations and mitigation of climate change: Scientific-technical analysis*. Cambridge, UK: Cambridge University Press, 1996.
- [7] L. F. Awosika, G. T. French, R. T. Nicholls, and C. E. Ibe, "The impact of sea level rise on the coastline of Nigeria [O' Callahan J. (E.d.)] In: Global climatic change and the rising challenge of the sea," in *Proceedings of the IPCC Workshop of Margarita Island Venezuela, 9-13 March 1992*. National Oceanographic and Atmospheric Administration, Silver Spring, M.D., U.S.A, 1992, p. 690.
- [8] FME (Federal Ministry of Environment), *Nigeria's first national communication under the United Nations framework convention on climate change*: The Ministry of Environment of the Federal Republic of Nigeria Abuja, 2010.
- [9] R. H. Norem, R. Yoder, and Y. Martin, "Indigenous agricultural knowledge and gender issues in third world agricultural development," presented at the Joint Meeting of the Society of Social Studies of Science and the European Association of Science and Technology, 1988.
- [10] V. V. Louis, V. N. Meine, K. Serigne, T. Tom, O. Chin, A. Alain, M. Jens, B. Cynthia, K. V. Anupama, and P. Cheryl, "Climate change: Linking adaptation and mitigation through agro forestry," *Mitig Adapt Strat Glob Change*, vol. 12, pp. 901-918, 2007. [View at Google Scholar](#)
- [11] R. C. Khanal, "Climate change and organic agriculture," *Journal of Agriculture and Environment*, vol. 10, pp. 100 -110, 2009. [View at Google Scholar](#)
- [12] NPC, *National population commission, population figure*. Abuja: Federal Republic of Nigeria, 2006.

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