Farmers' awareness of climate change in Iwajowa Local Government Area of Oyo state, Nigeria

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ABSTRACT

Climate change poses a great threat to farming in many ways. However, a good knowledge of this phenomenon will assist farmers in mitigating its effects. The study was aimed at determining the awareness of climate change amongst crop farmers in Iwajowa Local Government Area (LGA) of Oyo state, Nigeria. Multistage sampling technique was adopted for this study. In stage one, Iwajowa LGA was divided into five quarters. Second stage had four villages purposely selected from each quarter. In the Third stage, five crop farmers were randomly selected from each village making a total of 100 respondents in all. Contact administration of the questionnaires was adopted and all data collected were processed and analyzed using frequency count and percentage. The results obtained show that majority of the respondents were between the age bracket 40 to 59 years (65%) and had no formal education (43%). Also, 86% of the respondents were food crop farmers and had not been visited by extension agents (84.0%). Regarding climate change awareness, majority (87%) of respondents was aware of the phenomenon and 53.6% got their information from the media. Concerning the perceived causes of climate change, majority (66.67%) of the respondents perceived it was caused by natural processes destined by God. The perception of the respondents as to the effects of climate change on their farming activities showed that majority (33.89%) perceived climate change has been causing reduction in their farm income.

Key words: Climate change, farmers' awareness, Iwajowa LGA

INTRODUCTION

The ability of farmers to adapt to climate change depends greatly on their knowledge of the causes and effects of this phenomenon. African farmers are known to have a low capacity to adapt to changes that accompany climate change (IPCC, 2007), but they have, survived and coped in various ways over time (Hassan and Nhemachena, 2008). The impact of climate change on farmers is enormous as it affects the production, and distribution of both crop and livestock. Climate change also affects pest outbreaks, weed distribution, water supplies, changes the nutritional content of forage due to elevated CO_2, and other factors which in turn influence production (USDA, 2009).

Previous studies by different authors showed that many farmers in Nigeria claimed they had heard about climate change at one time or the other, however, their awareness of the adverse impacts of the weather phenomenon was poor. For example, Nzeadibe *et al.* (2011) stated that majority of the respondents in their report claimed they were aware of climate change in the Niger Delta region of Nigeria . However, the authors pointed out that up to 60% of farmers in the region knew little or nothing about the adverse effects of climate change.

Another study by Adetayo and Owolade (2013) in selected rural communities of Oyo state, Nigeria corroborated the above report as the authors indicated that 87.5 % of the respondents have heard about climate change although their understanding of the possible effects of the phenomenon was poor. However, the observation of Adebayo *et al.* (2012) that 96.47% of the

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farmers in Adamawa state of Northern Nigeria had awareness of climate change and a larger percentage of them claimed it has affected their farming activities negatively in recent years is contrary to the present findings.

In a study by Idrisa *et al.* (2012) in Borno state, Nigeria, it was revealed that 82.22% of the respondents were aware of climate change and got their information from extension agents, friends and neighbours and media. Also, the authors reported that the respondents perceived climate change was caused by deforestation, bush burning and overgrazing by livestock. Farauta *et al.* (2012) observed majority of respondents in Northern Nigeria had knowledge of the changing climate through experience and information received from different quarters. The authors also reported that incidence of climate change in the study area is on the increase and characterized by higher temperature, low rainfall, desertification and low crop yield. Another study by Codjoe *et al.* (2013) indicated that farmers in cocoa growing areas of rural Ghana were aware of climate change although they had divergent views on the causes. To some of the respondents, climate change was caused by God and a sign of end time while others adduced the following reasons for the phenomenon: mechanization and urbanization, deforestation, sinful nature of man, manipulation by "Whites" (developed countries) and ozone layer depletion. In another survey of 8000 farmers by Hassan and Nhemachena (2008) across 11 countries in Africa, it was reported that half of the farmers surveyed perceived long – term temperatures were warming and precipitation declining while one – third believed there had been significant changes in the timing of rains and one – sixth of the respondents thought droughts were more frequent.

This study was aimed at determining the following:

1. The awareness level of crop farmers in Iwajowa LGA of Nigeria of climate change;
2. The level of understanding of climate change as regards the causes and effects by the farmers in the study area.

Parameters measured included the following: farmers' bio data, farm characteristics, awareness of climate change and perceived causes and effects of climate change.

MATERIALS AND METHODS

Description of the study area

This study was carried-out in Iwajowa Local Government Area (LGA) of Oyo state, Nigeria. The LGA covers an area of about 2,529 sq km, and has a population of 102,980 (Federal Republic of Nigeria, 2009). It is located on latitude $7^0 45"$ N of the equator and longitude $3^0 45"$ E of the Greenwich meridian. The area has two seasons: dry from November to March and rainy from April to October.

Data collection and analysis

Data were collected with the use of structured questionnaires. Multistage sampling technique was adopted for this study. In stage one, Iwajowa LGA was divided into five quarters. Second stage had four villages (mostly farming communities) purposely selected from each quarter. In the Third stage, five respondents were randomly selected from each village making a total of 100 respondents from all the five quarters. All questionnaires were recovered as contact administration of the questionnaires was adopted. Parameters measured included the following: farmers' bio data (sex, age, educational status, farming experience), farm characteristics (farm type, farm size, access to extension), awareness of climate change (knowledge of climate change, source of awareness) and perceived causes and effects of climate change. All data collected were processed and analyzed using frequency count and simple percentage.

RESULTS

The bio data of the respondents is shown in Table 1. Majority (67%) of the respondents was male, between the age groups 40 to 59 years (65%), had no formal education (43%) and with 20 – 29 years of farming experience (45%).

Data on the farm characteristics (Table 2) show that majority of the respondents (86%) were food crop farmers and operated 6 – 10ha of land (37%). Majority of the farmers were not receiving any visits by extension agents.

The awareness of climate change by the respondents is shown in Table 3. Majority (87%) of the respondents were aware of the changing climate. Of that figure, 53.6% got their information about climate change from the media (radio and television), 18.4% from friends and neighbours, and 15.2% through extension agents, while 12.8% got the information from Non Governmental Organizations (NGOs).

Data on the perception of the respondents

on the causes and effects of climate change show that majority (66.67%) of the respondents perceived climate change as being caused by natural processes destined by God. Other respondents perceived that industrial activities, emissions by vehicle and domestic activities were the causes of climate change. Also from the table, the perception of the respondents on the effects of climate change on their farming activities shows that majority (33.89%) of them perceived climate change caused reduction in their farm income. This was followed by reduced crop yield, spoilage of farm produce, and wilting of crops.

DISCUSSION

The results of bio-data of the respondents is an encouraging situation as aging populations are less able to engage in modern agricultural practices as they are less able to source and synthesize information relative to younger farmers. The lack of education has negative implications for the level of awareness of the farmers on climate change and also for the development of adaptive strategies to mitigate the negative effects of the weather phenomenon. Education plays an important role in creating awareness in farming communities because educated people are better equipped to source information. Idrisa *et al.* (2012) asserted that a minimum threshold in terms of educational qualification is necessary for understanding the scientific and technical nature of modern agriculture. Education also helps farmers understand where to access farm inputs as well as how to use them. It has been observed that education affected agricultural productivity by increasing the ability of farmers to produce more output from given resources and by enhancing the capacity of farmers to obtain and analyze information (Asfaw and Admassie, 2004; Bamire *et al.,* 2002). Education could also influence the ability of farmers to adjust quickly to farming disequilibria (Idrisa *et al.,* 2012).

Small-scale farmers, as observed by Oyekale (2009), operate at subsistent level thereby making them vulnerable and less able to cope with the consequences of climate change. Also majority of the farmers surveyed were not visited by extension agents. This underscores the importance of interpersonal communication in creating awareness. The extension agents are the main source of technical information to farmers. Rogers and Shoemaker (1983) stated that extension agents are not able to work closely with all farmers in a farming community, rather, they work with few farmers (the contact farmers or the opinion leaders) who become the agents to spread the information in their own communities.

Concerning the awareness of climate change in the study area, this report corroborated the findings of many other authors (Ezeadibe *et al.,* 2011; Adebayo *et al.,* 2012; Idrisa *et al.,* 2012; Farauta *et al.,* 2012; Adetayo and Owolade, 2013 and Codjoe *et al.,* 2013) that the respondents in their study areas were aware of climate change although their levels of understanding of the weather phenomenon varied from one another. The report also shows that majority of the respondents got their information on climate change from the media (radio and television). This shows the importance of the media, especially the radio in information dissemination because of its wide coverage relative to other sources of information.

This report also reflects the level of ignorance the respondents were plagued with on the perceived causes of climate change. It could be because majority of them did not have formal education thereby comforting themselves with traditional believes that had no scientific basis. This result was supported by report of Codjoe *et al.* (2013) who stated that rural cocoa farmers in Ghana adduced the cause of climate change to God and a sign of end time. Regarding the effects of climate change causing reduction in their farm incomes, other factors (reduced crop yield, spoilage of farm produce, wilting of crops and unpredictable nature of the rainfall patterns in recent times) were stated by the respondents as the effects of the adverse weather condition because all of them were contributory to this.

CONCLUSION

The results of the findings showed that the majority of the farmers in the study area were aware of climate change although they had a shallow knowledge of the causes of the weather condition which may be attributed to their low level of formal education. Also, the respondents submitted that climate change had affected their farming activities in recent years. The effects mentioned included reduced crop yield, spoilage of farm produce, wilting of crops and unpredictable nature of the rainfall patterns in recent times.

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Table 1: Bio data of respondents

Item	Criterion	No.	%
Sex	Male	67	67
	Female	33	33
Age (years)	20 – 39	30	30
	40 – 59	65	65
	60 above	05	05
Formal Educational status	None	43	43
	Primary	27	27
	Secondary	23	23
	Tertiary	07	07
Farming Experience (years)	< 10	16	16
	10 – 19	14	14
	20 – 29	45	45
	– 39	25	25

Table 2: Farm characteristics

Item	Criterion	No.	%
Farm type	Food crops	86	86
	Cash crops	08	08
	Food and cash crops	06	06
Farm size (ha)	< 5	24	24
	6 – 10	37	37
	11 – 15	20	20
	16 – 20	15	15
	20	04	04
Access to Extension services	Yes	16	16
	No	84	84

Table 3: Awareness of climate change

Item	Criterion	No	%
knowledge of climate change	Yes	87	87.0
	No	13	13.0
Source of awareness	Friends and neighbors	23	18.4
	Media (radio and television)	67	53.6
	Extension agents	19	15.2
	NGOs and input sales agencies	16	12.8

Table 4: Perceived causes and effects of climate change

Item	Criterion	No	%
Causes	Industrial activities	22	17.05
	Domestic activities	08	6.20
	Emission by vehicles	13	10.08
	Natural process destined by God	86	66.67
Effects	Wilting of crops	12	6.67
	Unpredictable rainfall pattern	25	13.89
	Reduced crop yield	47	26.11
	Spoilage of farm produce	35	19.44
	Reduction in farm income	61	33.89