

Sources of Information on Climate Change among Arable Crop Farmers, In Adamawa State, Nigeria

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Abstract: The study assessed the sources of information on climate change among arable crop farmers in Adamawa state, Nigeria. Lessons for Agricultural Extension and specifically, described the socio-economic characteristics of the respondents and identified the sources of information on climate change among the respondents in the study area. A multi-stage random sampling technique was adopted to select 232 respondents for the study. Frequency count, percentage and mean were used to analyze the data of the study. Result revealed that, 58% of the respondents were below the mean age (41 years). Majority of them (66.6%) were males and 69% were married, with 78% of them having acquired one form of formal education or another. The mean farm size, year of farming experience and household size were 4.1 hectares, 16 years, and 8 people respectively. Majority (66.8%) had farming as their primary occupation. Friends, relations and fellow farmers were the most frequent sources of information on climate change among the respondents. It is recommended that, Extension providers should intensify the provision of extension services by insuring increased interaction between arable crop farmers and extension agents to complement indigenous knowledge from fellow farmers and friends and relations.

Key words: Arable crops, climate change, extension, farmers, information,

I. Introduction

Information and communication are essential ingredients needed for effective transfer of technologies that are designed to boost agricultural production. For farmers to benefit from such technologies, they must first have access to the technologies and learn how to effectively utilize such technologies in their farming systems and practices (Ani and Baba, 2009). This should be the function of agricultural extension agents all over the world. Extension agents make use of different approaches, means and media in transferring information on climate change and improved agricultural practices to the end users. Agricultural extension, which is essentially a message delivery system, has a major role to play in agricultural development. It serves as a source of advice and assistance for farmers to help them respond proactively to climate change and improving their production and marketing (Adams, 1988). The task of extension education is accomplished by different extension approaches and methods, which may come under individual, group and mass contacts. The mass contact may which include both the electronic and print media, is potentially expected to play an important role in technology transfer. The electronic media has a central role in facilitating the exposure of arable crop farmers to a variety of information. According to Ladebo *et al.* (1997), 72.5% of the respondents owned radio sets although the functionality of such radio sets could not be ascertained. Hussain (1993) argued that, 66% of the farmers of Pakistan meet their information needs through mass media.

According to Stanley (1990), information is one of the basic needs of human being after air, water, food, and shelter and the developments in society depend largely on the availability and access to accurate and reliable information. There is a popular saying that “if you are not informed, you are deformed” and that “information is power”. Expectedly, the information generated from different sources such as metrological stations should reach the intended users and ultimately meet their needs. Food and Agriculture Organization (FAO, 2001) reported that in many developing countries, adoption of research results by majority of farmers remains quite limited. This therefore, calls for a system which allows adequate information flow from researchers to farmers and vice-versa. Hence, different sources of information including extension services have central role in facilitating the flow of a variety of information to offer the needed exposure of farmer to climate change and innovation for overall development. The research therefore, assessed the sources of information on climate change among arable crop farmers in Adamawa state, Nigeria and iterated lessons for agricultural extension, it is in this purview that the study specifically;

- i. Determined the socio-economic characteristics of the respondents
- ii. Identified the sources of information on climate change among the respondents.

II. Methodology

The study was carried out in Adamawa State, North-eastern part of Nigeria. It lies between latitude 7° 28'N and 10° 55'N of the Equator and Longitude 11° 30'E and 13° 45' E of the Greenwich Meridian, it covers a land area of about 36,917 square kilometre with a population of 3,168,101 (2006 National Population Census of Federal Republic of Nigeria Official Gazette, 2007). Adamawa State is bounded by Borno State in the north, to the east by the Republic of Cameroon, in the south by Taraba and in the west by Gombe and Borno states. It has a mean monthly temperature which ranges from 26.7 °C to 27.82 °C in the south and north eastern parts of the state respectively. The mean annual rainfall ranges from 700mm in the North West to 1600 mm in the south east. The mean annual rainfall is less than 1000 mm in the central and north western part of the state (Adebayo, 1999).

Primary data was collected for the study; this involved the use of structured questionnaire which was administered to the respondents that were sampled for the study. A multi-stage random sampling technique was used to select the respondents. In the first stage; one local government area, being 20% of the local government areas were randomly selected from each of the Adamawa Agricultural Development Programme (ADADP) zones. This includes Girie, Guyuk, Mubi south and Yola South Local Government areas. In the second stage, 25% of the wards in each LGA were selected, in the third stage; proportionate sampling was used to select a total of 24 villages/settlements in the selected wards. In the fourth stage, snow ball technique was used to select respondents from each village/settlement. In all 240 respondents were selected for the study and only 232 questionnaire were correctly completed and used for the study. Descriptive statistics such as frequency count and percentage was used to analyze the data.

III. Results And Discussion

Table 1 revealed the socio-economic characteristics of the respondents. Respondents' age revealed that, 21.55% were below the age of 30 years, 29.74% of them were between the ages of 30-39 years, 24.57% of the respondents were between the ages of 40-49, 11.64% were between the ages of 50-59, while only a few (12.5%) of the respondents were above 60 years. The mean age of the respondents was 41 years. Farmers that were below the mean age were younger farmers who are at their prime age while those above the mean age were older farmers. In all, 58% were below mean age of the respondents. This corroborates the findings of Akinbile and Ndaghu (2005) that, most of the farmers are between the ages of 20-50 years. So most of the arable crop farmers are in their prime age and are still active farmers that are capable of seeking information on climate change.

Majority (66.6%) of the respondents were males. This implies that men in the study area were more involved in arable crop production than the women. In accordance the prevailing culture, men are to cater for the households needs and may be assisted by other members of the household. This corroborates Olayemi (2012) that, arable crop productions were mostly carried out by men. This finding is also in tandem with Olalayemi (2000) who revealed that, female were usually involved in farming as helpers or suppliers of labour in light farm operations such as planting, weeding, harvesting, processing and marketing and not in muscular labour demanding activities like threshing, farm clearing and digging among other activities.

Majority (69%) of the respondents were married, 23.7% of them were single, 3.9% widowed while only few (3.4%) were divorced. The findings that, majority of the respondents are married may be for the value attached to being married in the study area. Also, married individuals are more concerned with seeking information on climate change and fending for food than the singles or divorced individuals who may tend to consider their personal well being alone. This finding corroborates Ndaghu *et al.* (2012) who found that, most of the farmers in Adamawa state were married. Similarly, Ofuaku (2011) found that, married farmers had responsibilities that most be reflected on their farming activities.

Only 22.8% of the respondents had no formal education, 15.5% of them attained primary education, 24.4% had senior secondary school certificate, and 23.3% had NCE/Diploma, while 12.5% had B.Sc/HND. This implies that most (77.2%) of the respondents had one form of formal education or another. The preponderance of such educated farmers in the study area is expected to influence their information seeking behavior on climate change in the study area. This finding corroborates Edeoghon *et al.*, (2008) that, most farmers had one form of education or another which should be used to boost agricultural production. Majority (37.93%) of the respondents had farm size of two hacters and below, 26.72% of them had farm size of 3-4hacters, 13.36% had 5-6hacters while 21.98% of the respondents had farm size of greater than 6hacters and the mean farm size was 4.1hacters. This implies that farmers in the study area were small-scale farmers operating on subsistence level. This corroborates Ofuaku (2011) who asserted that farmers in central Agricultural zone of Delta state were small-medium holder farmers; they still depend on the use of energy sapping crude implements.

Household size of the respondents revealed that 30.60% had household size of 1-5 people, 44.3% had 6-10 people, 16.81% had 11-15 people, 5.60% had 16-20 people while, only few (2.16%) of the respondents had more than 20 people in their household. This implies that farmers in the study area have smaller household sizes

with a mean household size is eight persons. Household size is assumed to represent the labour input of the farm; large household size is mostly inclined to divert part of its labour force into non farming activities as a means of adaptation strategies to climate change. This corroborates Gbetibouo (2009) who found that, household size enhance the farmers' adaptive capacity to respond to climate change.

Primary occupation of the respondents revealed that, majority (66.8%) were in to farming as their primary occupation, 26.3% of them were civil servant 5.6% were traders while 0.9% and 0.4% were artisan and students respectively. This shows that majority of the respondents were farmers, this could be as a result of the fact that over 70% of Nigerian population are rural dwellers where farming activities is the major occupation (Mark, 2011).

IV. Respondents' Sources Of Information On Climate Change

Table 2 shows that, most of the respondents (42.28%) did not get information from extension agents. This implies that, respondents did not have access to information from extension. The respondents however, got information from several other sources. The veracity and technical competence of such sources may not have been proven. Also, more than half (58.62%) of the respondents obtained information on daily basis from friends and relations while, 15.52%, 5.60%, 0.86% and 13.79% of them obtained information weekly, fortnightly, monthly and once in several weeks respectively. The implication of this result is that, farmers may not get adequate technical information from friend and relatives on climate change, most of the information they may get are indigenous. This finding is in consonance with the view of Anthult (1994) that, there is rise in farmers' preferring friends and fellow farmers as the first hand information source on climate change and agricultural production. This may be due to the apparent ineffectiveness of the public extension service in developing countries.

Table 2 further shows that, 29.31% of the respondents did not use internet as sources of information at all, only 10.75% of them used the internet daily while, 6.89%, 3.88%, 5.17% and 20.26 used the internet weekly, fortnightly, monthly and once in several weeks respectively. Use of internet among the respondents is low, this may be as a result of low knowledge and skills needed for computer operation among the respondents and the fact that, accessing information from the internet may be difficult especially in rural areas where there is poor internet infrastructure and low computer skills among the inhabitants.

Majority (57.76%) of the respondents did not used radio as a source of information on climate change but rather for other purposes, only 12.07% of them used radio daily, 11.21% used weekly while, 2.59%, 3.45% and 12.93% used fortnightly, monthly and once in several weeks respectively. The findings contradicts Omotayo *et al.* (1997) whose finding revealed that, 40 - 50% of those who had access to radio, obtained information on improved farming practices through it. It may be attributed to differences in the nature of programmes aired by the radio stations. This implies that radio messages is not fully utilized as sources of information on climate changes among the respondents or radio stations in the study area were not airing adequate information related to climate change issues.

The result also indicates that, 28.45% of the respondents did not used television as sources of information on climate change, 32.76% of them used daily, 14.66% used weekly .While, 3.88%, 4.74% and 15.52% used fortnightly, monthly and once in several weeks respectively. Television as sources of information was seldom used by the respondents, this may be due to erratic power supply, and most of the rural dwellers have no television in their houses nor connected to electric power supply. Only a few (18.10%) of the respondents did not used newspapers as sources of information, 27.59% of them used daily, 14.22% used weekly while 6.47%, 7.33% and 26.29% used newspapers fortnightly, monthly and once in several weeks respectively. The use of newspapers is common among urban dwellers as rural farmers may not patronize information from newspapers due to its cost, accessibility and low literacy level. The implication of this is that, most of relevant information on climate change found in newspapers may not reach rural farmers.

Table 2 further revealed that, about 45.69% of the respondents did not used information on climate change from extension bulletin/posters sources, 5.17% used daily, 9.05% used weekly while 7.33%, 6.90% and 25.86% used fortnightly, monthly and once in several weeks respectively. Most of the respondents were not able to access information on climate change in extension bulletin/posters, the release of such are rare nowadays due to inefficiency in extension service delivery system. Similarly, 37.93% of the respondents did not used GSM phones as sources of information on climate change, 35.78% used daily, while, 5.17%, 4.74%, 1.29% and 15.09% used weekly, fortnightly, monthly and once in several weeks respectively. The use and knowledge of GSM phones are increasing daily due to its availability at affordable price by farmers. However, availability and efficiency of extension services is not in place to use such media to pass climate change information to farmers. Respondents most likely used GSM phones to only call their friends, fellow farmers, relatives and the like instead of calling their contact extension agent for information on climate change and other production technologies.

Table 2 further more reveals that, only a few (10.34%) of the respondents did not used information on climate change from fellow farmers, majority of them (57.33%) used information daily from fellow farmers, 7.33% used weekly, 6.90% used fortnightly while, 4.74% and 13.36% used monthly and once in several weeks respectively. Fellow farmers are becoming the major sources of information among most farmers in developing countries as most the respondents used information obtained from their fellow farmers daily. The result is congruent to the finding of Anthult (1994) who earlier found that, there is rise in farmers preferring other farmers as the first hand information source on climate change and agricultural production.

V. Conclusion And Recommendations

Most of the arable crop farmers in the study area were small-scale farmers who were in their primary age of production having relatively few years of farming experience. Farming was the primary occupation of most of them. Respondents' sources of information on climate change were mostly from fellow farmers, friends and relations. It is recommended that, extension providers should intensify the provision of extension services by insuring increased interaction between arable crop farmers and extension agents to complement indigenous knowledge from fellow farmers and friends/relations.

Table 1: Socio-economic characteristics of the respondents

Variables	Frequency	Percentages
Age (years)		
<30	50	21.55
30-39	69	29.74
40-49	57	24.57
50-59	27	11.64
60 and above	29	12.5
Total	232	100
Mean	41	
Sex		
Male	155	66.8
Female	77	33.2
Total	232	100
Marital status		
Single	55	23.7
Married	160	69.0
Widowed	9	3.9
Divorced	8	3.4
Total	232	100
Educational attainment		
No formal education	53	22.8
Primary education	36	15.5
SSCE	59	25.4
NCE/Diploma	55	23.75
B.Sc./HND	29	12.5
Total	232	100
Farm size (hectares)		
2 and below	88	37.93
3-4	62	26.72
5-6	31	13.36
Above 6	51	21.98
Total	232	100
Mean	4.1	
Farming experience (years)		
1-10	75	32.33
11-20	74	31.89
21-30	56	24.94
31-40	13	5.60
Above 40	14	6.04
Total	232	100
Mean	16	
Household size (people)		
1-5	71	30.60
6-10	104	44.83
11-15	39	16.81
16-20	13	5.60
Above 20	5	2.16
Total	232	100
Mean	8	
Primary occupation		
Farming	155	66.8
Trading	13	5.6
Civil servant	61	26.3

Artisan	2	0.9
Student	1	0.4
Total	232	100

Source: Field survey, 2012

Table 2: Respondents' Sources of Information on climate change N=232

Sources of information	Don't use		Daily		Weekly		Fortnightly		Monthly		Once in several weeks	
	(F)	%	(F)	%	(F)	%	(F)	%	(F)	%	(F)	%
Extension agents	112	48.28	7	3.02	7	3.02	4	1.72	21	9.05	81	34.91
Farmers association	74	31.90	42	18.10	28	12.07	8	3.45	30	12.93	50	21.55
Friends and relatives	13	5.60	136	58.62	36	15.52	13	5.60	2	0.86	32	13.79
Internet	68	29.31	25	10.78	16	6.90	9	3.88	12	5.17	47	20.26
Radio	134	57.76	28	12.07	26	11.21	6	2.59	8	3.45	30	12.93
Television	66	28.45	76	32.76	34	14.66	9	3.88	11	4.74	36	15.52
Extension Bulletins/posters	106	45.69	12	5.17	21	9.05	17	7.33	16	6.90	60	25.86
Newspapers	42	18.10	64	27.59	33	14.22	15	6.47	17	7.33	61	26.29
GSM phone	88	37.93	83	35.78	12	5.17	11	4.74	3	1.29	35	15.09
Fellow farmers	24	10.34	133	57.33	17	7.33	16	6.90	11	4.74	31	13.36

Source: Field survey, 2012 F = frequency, % = percentage

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