Climate Change, Vol. 2, No. 6, April-June, 2016 RESEARCH

ISSN 2394–8558 EISSN 2394–8566

Climate Change

Information needs of extension agents in climate change management

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Article History
Received: 05 February 2016
Accepted: 16 March 2016
Published: 1 April 2016

Citation
Ale AB, Okogbue EC, Alfred SDY. Information needs of extension agents in climate change management. *Climate Change*, 2016, 2(6), 110-119

ABSTRACT

Climate change has become a global issue affecting various sectors including agriculture and its management requires changes in skills and resilience capacities of farmers. In achieving this aim,

agricultural extension is saddled with the responsibility of educating the farmers and to do this information is crucial. The study was conducted to determine the information needs of extension agents in South west Nigeria. Questionnaire was administered on a total of 297 extension agents in the study area to determine their information needs and the usefulness of the sources information on climate change. The top four areas of need identified were knowledge of drought resistant varieties of crops and animals ($\bar{X}$=2.53), sustainable pest and disease control ($\bar{X}$=2.51), knowledge of afforestation and deforestation initiatives for climate change ($\bar{X}$=2.48), processing of crops to reduce post-harvest loss ($\bar{X}$=2.46). The most useful source of information was the electronic media. It was recommended that information should be made available by research on the areas of needs through training, seminars and the electronic media.

Key words: Information, Climate, Needs, Extension Agents

1. INTRODUCTION

Information can be defined as data that have been put into a meaningful and useful context which is communicated to a recipient who uses it to make decisions. Information's quality rests on three solid pillars; Accuracy, timeliness, and relevance (Mgbada, 2006). It is important to know that using information is a key issue in the information age. The major challenge is not producing information or storing information, but getting people to use the information. Extension alongside education and research should be seen as a public or private service that responds to the needs of farmers and rural people for knowledge that they can use to improve their productivity; income and welfare and to manage the natural resources on which they depend in a sustainable way (Kirit N Shelat *et al*., 2015; Gopichandran and Dipayan Dey, 2015).

Information in extension has its own importance because communicating information and knowledge from information resources or developers to extension clientele is an important part of the agricultural extension process (Blackburn and Flaherty, 1994).

Agbamu (2004) defined agricultural information as "All published or unpublished knowledge in all aspects of agriculture. He classified agricultural information into four categories namely; technical, commercial, socio-cultural and legal. Information on climate change can be classified as technical information. Access to adequate information on climate change is therefore very essential to increase agricultural productivity. Buford (1990) believes that agricultural extension depends largely on the exchange of information between farmers on one hand and a broad range of other actors such as meteorological stations in this case on the other hand. Forecast information, based on sound research and backed up with effective extension can consequently enhance climate change management. In many cases, farmers evaluate the credibility of information and advice based on its source (Jones, 2000).

Radhakrishan and Thompson (1996) believe that what, when and how information is gathered and used by extension managers and specialists is of vital importance to meet their information needs and consequently the needs of the clientele they serve. Information needs has been shown to depend on workers tasks (Ingwersen, 1992). A study carried out by Mohammadi (2002) revealed that extension workers seek information majorly to hold training courses and solve daily problems of farmers as well as up-dating their knowledge or information. It therefore means that unless climate change is seen as crucial, they may not seek information about it.

Some sources of climate information available in literature are meteorological services, international climate institutions, government agriculture extension services, farmer associations, non-governmental development organizations, input suppliers, influential farmers or village leader and the media (Jones, 2000; Jagtap *et al*, 2002; Ayogu *et al*. 2015). The media is identified as providing the broadest dissemination at the lowest cost, but with the fewest safeguards for the quality and relevance of the information (Hansen, 2002).

Farmers, most of the times act on information that comes from sources they know and trust. It therefore shows that if extension agents perform their duties as they ought, the farmers will find it easy to make use of the information they receive via extension. Climate information systems must ensure that tailored climate information to users' needs should get into the hands of the users in a timely fashion in order to have some influence on practical decisions. There would not be much benefit for society if the results of climate applications research remain in the academic or research area.

However information may not be accessed by extension agents if it is not found to be useful in day to day relation with the farmers. It is therefore necessary to ascertain the area of need of information on climate change crucial to their effective performance. As a result, the perception of the extension agents on the usefulness of the sources is essentially required.

1.1. Objectives of the Study

The objectives of the study were to:

1. determine the information needs of extension agents in climate change in the study area
2. ascertain the usefulness of the extension agents' sources of information on climate change in South-West Nigeria.
3. Determine the relationship between socio-economic characteristics of extension agents and their information needs.

2. MATERIALS AND METHOD

The study area was South West geo-political zone of Nigeria, located in West Africa. The geo-political zone consists of six states which are Ondo, Oyo, Ogun, Lagos, Ekiti and Osun States. Purposive sampling was used to select three states from the six states in the South westgeo-political zone of

Nigeria. They were Ekiti, Ondo and Osun States. They were selected because they contain two ecological zones; the rainfall and savannah zones and will have varying climatic conditions. The population consisted of extension agents from the Agricultural Development Project (ADP) from the three selected states. A total of 287 extension agents from the three selected states constituted the sampling population. The instrument used for data collection was a questionnaire because the respondents were all literate. Data collected included Socio-economic characteristics which included age, sex, level of education, marital status, designation and rank of the respondents.

A list of the area of information need was measured by placing the severity of need on a 4 point scale where, No need=1, little need =2, Moderate need =3, and Great need =4. The usefulness of the sources of information on climate variability and change was measured using a 3 point scale and scored as follows: very useful=3, useful=2 and not useful=1.

The study made use of statistical tools such as percentages, means and tables to interpret the data. The hypothesis was tested using Chi square.

3. RESULTS AND DISCUSSIONS

The socio-economic characteristics of the extension agents are presented in Table 1. Results revealed that the percentage of respondents, with ages between 31 and 40 years formed the majority (47.7 percent). The mean age of the respondents was 41.3 years. The mean age implies that majority of the extension agents in the study area are in their active years and are expected to be agile, and articulate on their job. It was found that 73.2 percent of the extension personnel were males while 26.8 percent were females reiterating the preponderance of males in agriculture. Also, majority of the respondents were married (88.9 percent), 9.8 percent were single, and 1.4 percent were widowed.

All the respondents were literate because of the skill required in extension work. Majority of the respondents (80.9 percent) had either H.N.D or B.Sc, and 13.9 percent had M.Sc. and above. Only 5.2 percent of the respondents had ordinary National Diploma (OND) certificate. Findings showed that15.7 percent of the respondents had an income below ₦216, 000.00 per annum, while 25.1 percent had an annual income between ₦216,000-500,000 per annum. Majority of the respondents (44.6percent) had and annual income of ₦500,000-700,000. This is approximately between ₦46,000 - ₦62,500 per month. About 14.6 percent earned above ₦750, 000.00 per anuum.

Table 1 Socio-economic Characteristics of Respondents

Variable	Frequency	Percentage
Age (years)		
<30	13	4.5
31-40	137	47.7

41-50	107	37.3
51-60	30	10.5
Total	287	100.0
Sex		
Male	210	73.2
Female	77	26.8
Total	287	100.0
Marital status		
Single	28	9.7
Married	255	88.9
Widowed	4	1.4
Total	287	100.0
Annual income (Naira)		
<N216000	45	15.7
N216001-500000	72	25.1
N500001-750000	128	44.6
N750001-1000000	15	5.2
>N1000000	27	9.4
Total	287	100.0
Educational qualification		
OND	15	5.2
HND	98	34.1
B.Sc	134	46.7
M.Sc	39	13.6
Ph .D	1	0.3
Total	287	100.0

Source: Field survey

Job Designation of Respondents

As represented in Figure 1, the respondents were mainly extension agents (63.1 percent). Zonal managers were 0.7 percent, Zonal Extension Officers 7 percent, and Assistant Zonal Extension officers 5.6 percent, others were Block Extension Agents (11.8 percent) and Subject Matter Specialists 6.6 percent. All the ranks were interviewed because climate change is viewed as a crucial issue that is germane to extension staff irrespective of their designations. Any climate change based training should endeavour to involve all the staff of extension irrespective of their designation.

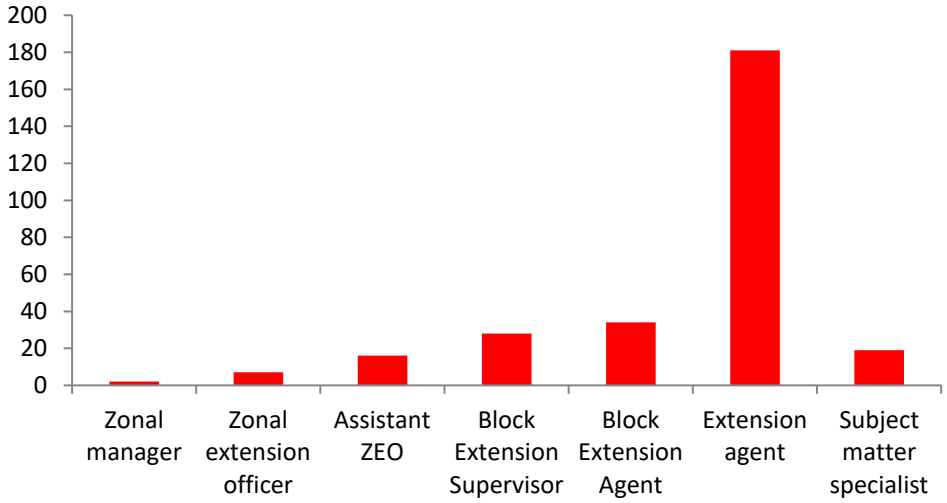

Figure 2

Job Designations of Respondents in the Study Area

Source: Field survey, 2012

Information Needs of Extension Agents

The information needs of extension agents is presented in Table 2.The study revealed that extension agents had need for all the areas of information on climate change as confirmed by the grand mean of ($\bar{X}$=2.31). The mean scores for area of need on the table showed that knowledge of drought resistant varieties of crops and animals ($\bar{X}$=2.53), sustainable pest and disease control ($\bar{X}$=2.51), knowledge of afforestation and deforestation initiatives for climate change ($\bar{X}$=2.48), processing of crops to reduce post-harvest loss ($\bar{X}$=2.46), knowledge of water conservation practices for human and agricultural purposes ($\bar{X}$=2.39), were rated (ranked) highest (1^{st}-5^{th}). Other areas of knowledge with means scores above the grand mean were knowledge of climate change associated illnesses among livestock and poultry ($\bar{X}$=2.38), knowledge of climate change associated illnesses among farmers ($\bar{X}$=2.32), knowledge of mulching and planting of cover crops ($\bar{X}$=2.32).

The respondents however did not have significant need for knowledge of irrigation practices ($\bar{X}$=1.99), which may be as a result of their perceived effect of high rainfall intensity in the study area.

Table 2 Respondents' Area of Information Need

Area of Information need	Great Need	Moderate need	Little need	No Need	Mean
Knowledge of drought resistant crop and animal varieties	187(65.2)	82(28.6)	14(4.9)	4(1.4)	2.53*
Sustainable pests and diseases control	169(58.9)	97(33.8)	18(6.3)	3(1.0)	2.51*

Knowledge of afforestation/reforestation initiatives for climate change management	171(59.6)	87(30.3)	25(8.7)	4(1.4)	2.48*
Knowledge on processing of crops to reduce post-harvest losses	161(56.1)	103(35.9)	16(5.6)	7(2.4)	2.46*
Knowledge of water conservation practices for human and agricultural purposes	139(48.4)	125(43.6)	19(6.6)	4((1.4)	2.39*
Knowledge of climate change associated health and sicknesses among livestock/poultry	137(47.7)	129(33.8)	13(4.5)	8(2.8)	2.38*
Knowledge of climate change associated health and sicknesses among farmers	135(47.0)	119(41.5)	24(8.4)	9(3.1)	2.32*
Knowledge of mulching and planting of cover crops	138(48.1)	112(39.0)	29(10.1)	8(2.8)	2.32*
Knowledge of actual growing season	138(48.1)	109(38.0)	32(11.1)	8(2.8)	2.31*
Diversification practices in crop enterprise	141(49.1)	102(35.5)	37(12.9)	7(2.4)	2.31*
Knowledge on heat management of livestock	122(42.5)	139(48.4)	15(5.2)	11(3.8)	2.30*
Knowledge on changes in timing of land preparation activities	109(38.0)	142(49.5)	28(9.8)	8(2.8)	2.23*
Knowledge of indigenous climate change adaptation measures	108(37.6)	136(47.4)	35(12.2)	8(2.8)	2.20*
Knowledge of indigenous climate change mitigation measures	118(41.1)	119(41.5)	38(13.2)	12(4.2)	2.20*
Knowledge of interpreted weather forecasts and pure climatic predictions	109(38.0)	116(40.4)	53(18.5)	9(3.1)	2.13*
Knowledge of use of organic	104(36.2)	136(47.4)	43(15.	4((1.4)	2.18*

manure			0)		
Knowledge of irrigation practices	99(34.5)	110(38.3)	55(19.2	23(8.0)	1.99

*Source: Field survey *Significant need; Mean = 2.00 Grand Mean =2.31*

Extension Agents' Sources of Information on Climate Change

There are various sources of information for extension agents. The most useful sources of information on climate change however, as presented in Table 3 is the electronic media comprising of the television and radio ($\bar{X}$ = 2.76) . This is closely followed by training ($\bar{X}$=2.74). This attests to the fact that training is a veritable tool for providing information on climate change. This is in agreement with Nnadi *et al.* (2013), that a staff of extension organisation needs to be retrained so as to acquire necessary skills and knowledge in climate risk management.

Conferences and seminars ($\bar{X}$=2.65) ranked 3rd while the 4th on the list of ranking were from the boss and research stations with mean of (X =2.51) each while clientele that is, the farmers, ranked 7th. This shows that the farmers themselves are sources of information on climate change management. Colleagues, bulletins, and books and journals ranked 8th, 9th and 10th respectively with means of 2.46, 2.44 and 2.43 respectively.

Table 3 Usefulness of the Sources of Information on Climate Change

Information source	Very useful	Useful	Not useful	Mean	Rank
Boss	186 (64.8)	98 (34.1)	3 (1.0)	2.63	4
Clientele	144 (50.2)	139 (48.4)	4 (1.4)	2.49	7
Colleagues	136 (47.4)	147 (51.2)	4 (1.4)	2.46	8
Training	215 (74.9)	71 (24.7)	1 (0.3)	2.74	2
Research stations	191 (66.6)	91 (31.7)	5 (1.7)	2.63	4
Books and journals	134 (46.7)	142 (49.5)	11 (3.8)	2.43	10
Electronic media	223 (77.7)	60 (20.9)	4 (1.4)	2.76	1
Internet	165 (57.5)	104 (36.2)	18 (6.3)	2.51	6
Bulletins	140 (48.8)	134 (46.7)	13 (4.5)	2.44	9
Conference and seminar	191 (66.6)	91(31.7)	5 (1.7)	2.65	3

Source: Field survey. Grand mean=2.57

Relationship between Socio-economic Characteristics and Information Need of Extension Agents

The result in Table 4 showed the chi-square analysis of the relationship between the socio-economic characteristics of the respondents and their information needs. The result revealed that the designation of the extension agents was significant (P = 0.04) having a relationship with information needs. This shows that information needs increased as the rank increased.

Table 4 Chi-Square Analysis of Socio-economic Characteristics and Information Need

Socioeconomic Characteristics	Calculated X^2	Df	P value	Decision
Sex	0.111	1	0.739	Not Significant
Marital status	1.269	2	0.586	Not Significant
Religion	2.567	3	0.463	Not Significant
Educational qualification	5.957	4	0.202	Not Significant
Designation	13.347	6	0.038	Significant

Source: Field survey. Level of significance = 0.05

4. CONCLUSION

Extension agents in South West Nigeria need information in major areas of climate change that can help them in advising farmers on various issues that can ameliorate its effect thereby boosting agricultural productivity in the area. It is therefore necessary for climate research stations, researchers, institutions of higher learning provide information through publications and other sources that will help them in discharging their duties effectively.

RECOMMENDATIONS

The following recommendations are therefore made for the study:

1. Research institutions should make available in journals, bulletins, information concerning climate change with special emphasis on knowledge of drought resistant varieties of crops and animals, sustainable pest and disease control, knowledge of afforestation and deforestation initiatives for climate change, processing of crops to reduce post-harvest loss, knowledge of water conservation practices for human and agricultural purposes.
2. Periodical training in form of conferences and seminars should be conducted for the extension agents to furnish them with new information on climate change.
3. Training should be done based on designation and ranks after identifying the information needs of each of the extension agents at the various levels.

4. The electronic media should provide accurate information via climate change oriented programmes as it is a veritable tool for climate change information dissemination.

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