ANALYSIS OF TRAINING NEEDS OF EXTENSION AGENTS ON CLIMATE CHANGE ISSUES IN ZAMFARA AGRICULTURAL DEVELOPMENT PROJECT (ZADP) NIGERIA

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ABSTRACT

The study was designed to evaluate and identify the training needs of extension workers on climate change related issues in Zamfara Agriculture Development Project, Zamfara State of Nigeria. A total of 120 sample size was selected and divided into two zones and ADP headquarters namely: Gummi Zone-I (70), Kaura Namoda Zone-II (40) and headquarters (10). Face to face interview was conducted to get the accurate results. Data were analysed using frequencies, mean, percentages and descriptive methods. The research concluded that the extension agents performed six major tasks on weather forecasting on change in climate issues, record keeping, use of multimedia projector, establishing SPATs for monitoring impacts of climate change, use of ICT and Programme Planning. Awareness of respondents with regard to competencies needed by the extension workers on climate change revealed that 40 (33.3%) of the respondents reported measurement of speed of wind. About 18 (15%) agreed to acquire knowledge on desertification issues. A total of 33 (27.5%) and 16 (13.3%) reported measurement of intensity of rainfall and sunshine, respectively. The lowest percentage 2.5% and 8.3% agreed to acquire knowledge on deforestation and internet competencies, respectively. It is recommended that Zamfara ADP extension staff must be given intensive training on the use of ICT, measurement of speed of wind, intensity on sunshine and data collection and analysis to help them in handling climate change related issues.

Keywords: climate change, teaching methods, training needs

INTRODUCTION

Mendelson and Dinar (1999) reviewed the climate change implications for agriculture in particular for developing countries and reported that estimated effects of climate change could be significantly reduced by efficient economic adaptation. Through various channels of adaptation (modifying crops and techniques) on existing farmland, shifting crops to new land and responding to changing market prices; these losses were reversed resulting in small increases

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in production worldwide (0 to 1 percent) even before considering the positive effects of carbon-dioxide fertilizer (Rilly, 1999). In fact, unless one estimate is the effect of climate change worldwide, there is no obvious bound on how much the world market price for agricultural producers can change (in either direction) and hence no way to determine the direction or magnitude of the bias. If adaptation proves to be as effective as Darwin *et al.* (1995) or Mendelson and Dinar (1999) estimate and if carbon dioxide fertilizer effect does increase yield by 10 to 15 percent of agricultural commodities may in fact decline sharply. Although, a price decline would certainly be an economic benefit for consumers, agricultural exporting nations could sustain significant welfare losses. In view of the above developments, the role of farm extension is to diffuse information to the farmers to reduce the harmful climate change effects (MOE, FRN, 2003). Jibowo (2005) stated that the purposes of the Agricultural Development Projects were to enhance production of agriculture and raise the level of farmers income through implementing agricultural extension work in rural areas (Adisa and Balogun, 2012).

Duncan (1957) has suggested that the newly hired extension agent must be trained in the task he is to perform in his job. He added that training is a continuous process in extension work and should be planned and organized regardless of the method used to implement it. Similarly, Anka (2000) had identified skills required by extension workers in Zamfara State of Nigeria and recommended that extension agents should concentrate more on technical competencies such as Agronomy, Crop Protection, Horticulture, Agricultural Economics and Marketing in the discharge of their duties.

It is important to investigate professional competencies needed by extension workers who stand as an intermediary between research stations and small scale farmers on farm related issues (Anka, 2014a). Richardson and Eckard (1972) have identified three roles that professionals in extension gave need to perform. These roles are a learning specialist or instructor as administrator of training and development of staff and climate. To fulfill the need required by these roles they say extension agents should be professionally prepared and must develop different skills and abilities that such roles demand from them. The general perception of the people regarding extension work in Nigeria was that it is performing below expectation. This was as a result of poor planning coordination, monitoring evaluation and implementation of extension programmes. As a result, many extension programmes lacked a coherent link both with their farmers' climate and with the agricultural research stations.

In view of the serious threats of climate change to our communities, it has become extremely important for extension workers at Zamfara ADP to acquire training on various skills that will help them address various problems and challenges of the climate related issues. The study was undertaken with the objective of evaluating the training needs of extension workers on climate change issues in Zamfara State ADP. The specific objectives were: to Identify duties performed by extension workers of ZADP on climate change issues, determine skills gap in specific areas where extension workers of ZADP needed advance training on climate change competencies and recommend some strategies for addressing various problems identified.

METHODOLOGY

The role involves dissemination of information building capacity of farmers through the use of a variety of communication methods and help farmers make informed decisions. For effective extension work ZADP has two zonal offices as follows: Gummi Zonal office and Kaura Namoda Zonal office. The study adopted on the job analysis. This involves identifying the duties of technical staff needs to perform effectively in delivering modern technology to the farmers.

Population for the study

The population for the study consists of selected extension workers in Gummi Zonal office and Kaura Namoda Zonal office and headquarters of ZADP located in the Gusau, the state capital.

Sample selection

Sample selection was done to cover the entire organization using random sampling as follows:

Zone	Number of samples
Zone-I Gummi	70
Zone- II Kaura Namoda	40
Headquarters	10
Total	120

Data collection and analysis

The data was collected from sample respondents on socio-economic backgrounds that include age, occupational status, and educational attainment. A well structured questionnaire was used for collection of data. Data were analyzed with the help of statistical tools relevant to the study such as descriptive statistics, frequency percentage and mean. Other variables like planning demonstration, assessment of trials, the use of ICT relevant to climate change issues was measured with the help of Likert Scale ranging from: Very much (1), More Needed (2), Moderately Needed (3) and Not at all (4). These data were used to rate extension workers suitability for training to update their knowledge on climate change issues and also to identify areas where they do not need training. A mean score of 3 and above showed the areas needing training whereas, a mean score less than 3 showed the areas with no need of trainings.

RESULTS AND DISCUSSION

Personal characteristics of respondents

Sex

Data presented in Table 1a revealed that 90 (75%) of the respondents were male, while 30 (25%) were female respondents in the study areas.

Age

Opinion of respondents regarding age is presented in Table 1b. The results showed that 50 (41.6%) respondents belong to the age group of 20-29. While 30

(25%) respondents are in the age group of 30-39. About 25 (20.8%) belong to 40-49 age group. Finally, 15 (12.5%) are in the age group of 50 years and above. The above findings are in line with Anka (2014b) who reported that extension specialist respondents (24%) were in the age group of 31-50 years, while agricultural professionals respondents were in the 22-32 years of age group.

Education
Percentage of respondents regarding education is presented in Table 1c. The results revealed that 45 (37.5%) extension agents at Zamfara ADP were educated up to National Diploma level. While 43 (35.8%) possessed HND. A total of 22 (18.3%) respondents are graduates holding, B.Sc. Agriculture Hons. Only 10 (8.3%) hold M.Sc. degrees. The above findings are in concurrence with those reported by Adisa and Balogun (2012). The general perception of Nigerians was that extension profession is for those possessing lower qualifications.

Job experience
The results (Table 1d) showed that 24 (20%) had working experience as extension agents between 1-4 years. Majority (50%) had put in 11-20 years. While 20 (16.6%) had been in service for between 21-30 years. Only 16 (13.3%) are in service for 30 years and above. The years of service means level of commitment of a person to his profession. Regular training and retraining programmes is important for extension workers to remain strongly committed to their job.

Marital status
Survey results on marital status of respondents are presented in Table 1e. Data revealed that 66 (55%) respondents were married. Only 5 (4.1%) were single. About 19 (15.8%) remained widowed. A total of 30 (25%) respondents were divorced. The above findings are in concurrent with Anka, (2008) who reported that about 70% extension specialists were married and about 7 (28%) were unmarried or proposing.

Household size
According to data presented in Table 1f related to household size, that 26 (21.6%) are in between 1-4 people. Majority of the respondents are in between 5-9. Only 12 (10%) respondents population are 15 people and above.

Personal characteristics of respondents

Table 1a. Sex

Sex of respondents	Frequency	%
Male	90	75
Female	30	25
Total	120	100

Table 1b. Age

Age of respondents	Frequency	%
20-29	50	41.6
30-39	30	25.0
40-49	25	20.8
50 Years and above	15	12.5
Total	120	100

Table 1c. Education

Educational level	Frequency	%
OND	45	37.5
HND	43	35.8
B.Sc.	22	18.3
M.Sc.	10	8.3
Total	120	100

Table 1d. Job experience

Working experience	Frequency	%
1-10 Years	24	20.0
11-20 Years	60	50.0
21-30 Years	20	16.6
Above 30 Years	16	13.3
Total	120	100

Table 1e. Marital status

Marital status	Frequency	%
Married	66	55.0
Single	05	4.1
Widow	19	15.8
Divorced	30	25.0
Total	120	100

Table 1f. Household size

No. of people	Frequency	%
1-4 people	26	21.6
5-8 people	42	35.0
9-15 people	40	33.3
15 and above	12	10.0
Total	120	100

Tasks performed by respondents on climate change issues
Extension workers are expected to identify issues related to climate change. Survey data in Table 2 have shown six job related duties accomplished by

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extension workers in their respective rural areas. These were: forecasting of weather on change in climate: 22 (18.3%), record keeping on climate change issues: 26 (21.6%) using multi-media projectors to educate climate change related issues: 7 (5.8%) establishing SPATS for monitoring impacts of climate change on the ground: 35 (29.1%) use of Information and Communication Technology (ICT): 16 (13.3%) and planning on climate change programmes: 14 (11.6%). The above findings are supported by Adisa and Balogun (2012) who reported nine major tasks performed by extension workers in Ekiti State ADP.

Training needs of extension agents

Perception of respondents regarding training needs areas of extension workers related to climates change (Table 3) revealed that 13 (10.8%) need skills on weather forecasting, while 6 (5%) extension agents were agreed on skills of agro-chemical trainings for reducing weeds. Majority (40) of the respondents (33.3%) reported training on statistical analysis of climate change field data. A total of 15 (12.5%) and 32 (26.6%) agreed that they need skills on technologies related to climate change and to record and report impacts of climate change, respectively. Only 14 (11.6%) reported with a training need on using cultural practices for mitigating climate change impacts. The above findings are supported by Wahab *et al.* (2014) who reported that the most frequent key areas where trainings are needed were long duration (16%), short duration refresher training (32%), beginning of the season training (9%), strategic management training for administrative staff (50%) and some specialized trainings for extension officers (49%).

Table 2. Percentage distribution of respondents on the basis of tasks performed

Tasks performed	Frequency	%
Weather forecasting on climate change	22	18.3
Record keeping on climate change issues	26	21.6
Use of multi-media projector to teach issues on climate change	07	5.8
Establishment of SPAT to monitor climate change impacts	35	29.1
Use of information and communication technology (ICT) Program	16	13.3
Planning on climate change issues	14	11.6
Total	120	100

Table 3. Perception of respondents of Zamfara ADP on areas of training needs concerning climate change

Tasks performed	Frequency	%
Weather forecasting on climate change	13	10.8
Agro chemical skills training to reduce weeds	06	05.0
Statistical analysis of field data on climate change issues	40	33.3
Evaluation of trials on climate change related technology	15	12.5
Recording and report climate change Impacts	32	26.6
Use of cultural practices to mitigate climate change impacts	14	11.6
Total	120	100

Perception of respondents regarding competencies needed by extension agents on climate change is presented in Table 4. The results revealed that, 40 (33.3%) of the respondents reported the measurement of speed of wind. About 18 (15%) agreed to acquire knowledge on desertification issues. A total of 33 (27.5%) and 16 (13.3%) reported measurement of the intensity of sunshine and the amount of rainfall. While, the lowest percent of respondents 3 (2.5%) and 10 (8.3%) agreed to acquire knowledge on deforestation and E-mail/Internet competencies, respectively. The above findings are in line with Onyeme and Lwuchuku (2012) who reported training needs on climate change issues. It is clear from the above findings that extension workers in Zamfara State ADP require training on climate change issues. This will help them to take protective measures and advice the farmers to act accordingly. Thus, Agbamu (2005) identified some problems in Nigeria being faced by extension workers.

According to information presented in Table 5 regarding technical competencies needed by extension agents to help their farmers. The results show that 28 (23.3%) of the respondents agreed on spreading of information on pest control and 32 (26.6%) teaching new skills to farmers. About 20 (16.6%) offer to assist subject matter specialists in areas of needs. Majority (34) of the respondents (28.3%) agreed to offer training on agro-chemicals to reduce weeds. Only 6 (5%) were interested to offer result method demonstration for teaching farmers.

Table 4. Distribution of respondents by climate change competencies needed by extension agents

Competencies needed	Frequency	%
Measurement of speed of wind knowledge	40	33.3
Desertification	18	15.0
Measurement of intensity sunshine	33	27.5
Measurement of amount of rainfall knowledge	16	13.3
Deforestation	03	02.5
Acquisition of E-mail/Internet competencies	10	8.3
Total	120	100

Table 5. Distribution of respondent by technical competencies needed by extension agents to help farmers

Skills needed to help farmers	Frequency	%
Educating farmers on pest control	28	23.3
Rendering of technical advice to farmers	32	26.6
Assisting subject matter specialists in areas of need	20	16.6
Agro-chemical skills training to reduce weed control	34	28.3
Result/ method demonstration for teaching farmers	06	5.0
Total	120	100

Table 6. Distribution of respondents regarding teaching methods on climate change

Teaching methods	Frequency	%
Select, develop and use appropriate instructional materials	34	28.3
Present information with sound/ motion pictures and video taped materials	25	20.8
Conduct group/panel discussions, seminars and other group dynamics techniques	12	10.0
Employee problem solving approach to develop decision making skills	26	21.6
Plan organize and conduct tours, field trips and other mass communication methods	15	12.5
Utilize computers in extension teaching	08	6.6
Total	120	100

Teaching methods on climate change

Opinion regarding teaching methods on climate change is presented in Table 6. The results show that 34 (28.3%) of the respondents agreed to select; develop and use appropriate instructional materials. While 25 (20.8%) thought it suitable to present information with sound/motion pictures and videos taped materials. Similarly, 12 (10%) opinoined that conducting group panel discussions, seminars, and other group dynamics techniques would be helpful. About 26 (21.6%) and 15 (12.5%) considered employing problem solving approach to develop decision making skills and plan, organize and conduct tours, field trips and other mass communication methods would be appropriate teaching methods. Finally, 8 (6.6%) agreed to utilize computers in extension teaching.

CONCLUSION

The major conclusions drawn from this study were: weather training is very important for making predictions on the status of weather on a regular basis, agro-chemicals use basis training skills are needed by extension agents to teach the farmers modern techniques on reducing weeds, statistical analysis training is needed by extension workers to teach them how to analyze statistical data that could be used by policy makers and finally training on cultural practices is needed by extension workers to help in climate change mitigation.

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