



## **ASSESSMENT OF THE ROLES OF AGRICULTURAL EXTENSION SERVICES IN IMPROVING THE LIVELIHOOD OF FOOD CROP FARMERS IN KWAYA-KUSAR LOCAL GOVERNMENT AREA OF BORNO STATE, NIGERIA**

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### **ABSTRACT**

This study assessed the roles of agricultural extension service in improving the livelihood of food crop farmers in Kwaya-Kusar local government Area of Bono State, Nigeria. Multi-stage random procedure was used to select 120 respondents from the study area. Data collected and administered through the use of structured questionnaires were also analyzed using both descriptive and inferential statistics. The results revealed that many (43.3%) of the respondents were between the ages of 36-40 years. Furthermore, from the findings of multiple regression analysis, age, sex, marital status, annual net income, farm size, household size, educational level and extension per person were significant at  $P \leq 0.05$  level, respectively, while farming experience and access to credit were significant at  $P \leq 0.01$  level in that order. It was concluded that male dominated food crop production their by putting the female counterparts at the disadvantage side. The study therefore, recommended that the female respondents should be highly involved or encourage to participate actively in food crop production. Also, on poor government funding toward extension service delivery, government, policy makers and other non-governmental organizations (NGOs) should help the farmers by providing funds to boost their production capacity.

**Keywords:** Agriculture, Assessment, Extension, Food Crop Farmers, Livelihood.

### **INTRODUCTION**

Agricultural extension is an important service for assisting the rural people to enhance their Livelihoods. Public sector extension was severely attacked in the 1980s for not being relevant, effective and efficient. Extension is the organized exchange of information and the purposive transfer of skills in order to capacitate the rural actors for continuous relevance in a commercial economy. Agricultural Extension system refers to the total fabrics of extension organization action as a conduit through which educative and problem-solving innovations are delivered to the appropriate target b a specialized agent (Ogunfiditimi and Ewuola, 1995; Oredipe, 2015).

Agricultural extension and advisory services play a crucial role in agricultural development and can contribute to improving the welfare of farmers and other people living in rural areas. However, the public extension system is being replaced by the private sector provider or NGO (Non-government organization Sector) advisory system (Bashasha *et al.*, 2011). In Principal terms, the private extension services providers are being called upon to take up dissemination roles and investigate demand for the services among farmers. Also, Shift in public and private extension delivery approach is threatened by a number of issues ranging from whether and how effective agricultural productivity will be increased, poverty will be cut and ultimately, livelihood would be raised (David, 2016). By and large, smallholder and traditional farmers who use rudimentary production techniques, with resultant low yields,



cultivate most of this land. The smallholder farmers are constrained by several problems including poor access to modern inputs and credit, poor infrastructure, inadequate access to markets, land and environmental degradation, and inadequate research and extension services. Agricultural Extension Services are very important in development of rural knowledge and innovation system for farmers. These services are the key in informing and influencing rural household decisions, especially in the developing countries which are generally more in need for such guidance services (Garforth, 2011). The goals of agricultural extension include transferring information from the global knowledge base and from local research to farmers, enabling them to clarify their own goals and possibilities, educating them on how to make better decisions, and stimulating desirable agricultural development.

Agricultural extension activity is an important agrarian- political instrument of the state, which stimulates the development of agricultural production. Agricultural extension services must be designed to develop agricultural skills among farmers, teach them communicate efficiently with producers and stimulate them to acquire new knowledge (MahmudulHaq, 2012). The aim of all extension agents is to teach people living in rural areas (farmers) how to raise their standard of living by their own effort using their own resources of manpower and materials, with minimum assistance from government. One of the most remarkable features of extension services has been its rate of expansion in programme like Agricultural Development Programme (ADP).

According to Asmah (2011), livelihood diversification is explained as the upkeep and constant adjustment of a highly varied array of activities and works to curtail household income variability lessen the hostile impacts of seasonality, and offer occupation or additional income. Livelihood diversification enables rural household farmers to device other means to promote their level of income and minimize susceptibility to different livelihood shocks. According to Chikaire *et al.* (2011), livelihood diversification could either be through diversification into an agricultural related activities e.g. production of agri-foods or cash crops or into non-agricultural enterprises (engaging in casual jobs or migration). Extension is dependence upon the ability for a limited staff of advisers to inspire rural people and to create a desire for more efficient production and better living in rural community. In order for EAS to improve livelihoods as opposed to simply improving agronomic knowledge, service providers must be aware of the different needs of all types of farmers' men, women, youth, elderly, laborers and pastoralists. These could include issues such as markets, nutrition, climate resilience, mechanization and others. This includes providing complementary information (for example, on nutrition), focusing on the agricultural activities most common for different types of farmers (for example, poultry rearing or vegetable cultivation with women), or holding different types of events that are particularly engaging or accessible for that type of farmer (for example, women-only events). This study therefore is aimed at assessing the roles of agricultural extension services in improving the livelihood of food crop farmers in kwaya-kusar local government area, Borno State.

The populations in Borno State are located in rural areas and engage primarily in agriculture, rising populations and the consequent pressures from competing socioeconomic demands for land and other resources; it has become imperative to evaluate the implications of these challenges on livelihoods of the rural farming households (International Institute for Tropical Agriculture [IITA], 2009).

Agricultural extension services are the most important public service rendered with the widest range of responsibilities for agricultural information dissemination via agricultural extension workers. It is important to have an effective media of communication. To achieve this Group/Association Model or Method involve bringing farmers together in one form or



another by the extension worker in order to undertake his extension work. This method takes into account the inclination of an extension worker to respond to the pressures and opinions of groups in which he participate and to listen to views of others before arriving at a decision about making changes. This method promotes interactions among members. When the extension worker presents an idea to a group, the group members may ask questions, exchange ideas with one another and may stimulate one another into participation or action. Group/Association model is frequently used in extension work because it enables the extension worker to reach more farmers at a time thereby saving cost and time. (BOSADP).

Food insecurity has been on the increase in most rural areas of Nigeria. Rural food shortages results largely from low productivity, agricultural shocks and decreasing purchasing power. In recent years, farmers in Borno State have also been faced with the problems of crop failure, or low yield arising from climate variability particularly the delayed onset of rains and the increasing length and frequency of dry spells during the growing season as well as conflict and insecurity. In addition, the problem of high temperature and incidences of pests and diseases have also aggravated the famers' losses, which consequently increase the incidence of poverty and food insecurity in the study area.

The level of staffing was inadequate to meet the agricultural extension services requirements. It is therefore envisaged that effective provision of Agricultural extension services can only bridge the productivity gap. It is in this light that the study was conducted to assess the role of agricultural extension services in Kwaya-kusar local government area, Borno State. The general objective of this study were to investigate the role of Agricultural Extension Services in improving the livelihood of food crop farmers in KwayaKusar local government area. The specific objectives were to:

- i. Describe the socio-economic characteristic of the respondents;
- ii. Investigate the livelihood activities of food crop farmers;
- iii. Describe the roles of extension services;
- iv. Determine the relationship between agricultural extension services and socio-economic characteristic; and
- v. Describe the constraints to effective extension services delivery.

## **MATERIALS AND METHODS**

### **The Study Area**

Kwaya-kusar is located in the southern part of Borno State, Nigeria. The head quarter is located in the town of Kwaya-kusar. It has an area of 732 km<sup>2</sup> and population of 56,500 at the 2006 census of Nigeria. Kwaya-kusar lies between latitude 10.5311°N and longitude 11.843°E. It shares border with Shani to the south, Hawul to the east, Bayo to the west and lastly Biu to the North as illustrated in Figure 1. It is one of the four Local Government Areas (LGAs) that constitute the Biu emirate, a traditional state located in Borno State Nigeria. It has 10 wards which are Peta, Yimirdalang, wadaBiriJara, Kubuku, Wawa, BilaGusi, Guwal madi mallam, wandali, kwaya-kusar, KurbaGayi (Bwala *et al.*, 2020). The people of the area predominantly farmers, therefore mainstay of the economy is Agriculture. The major food crops cultivated are maize, millet, sorghum, cowpea, groundnut, rice, soya beans, onions, tomatoes, cotton, pepper, garden egg. Livestock reared are cattle, sheep, chicken and goat (International Institute for Tropical Agriculture [IITA], 2009).

Vegetation of Kwaya-kusar is semi-arid tropics, sub-tropical, semi-arid zone and it has a temperate climatic condition. Average weather condition of Kwaya-kusar, the wet season is hot, oppressive and overcast and the dry season is sweltering, windy, and part cloudy. Over the course of the year, the temperature typically varies from 61°F to 103°F and is rarely below 56°F



or above 108°F. The hot season lasts for 2.4 months, from February 16 to April 28, with an average daily high temperature about 99°F. The hottest day of the year is March 28, with an average high of 103°F and low of 75°F. The cool season lasts for 3.0 months from July 10 to October 12, with an average daily high temperature below 87°F. The coldest day of the year is January 1, with an average low of 61°F and high of 92°F (Kwaghe, 2006).

### Method of Data Collection

The data for this study was obtained mainly from primary sources. The primary data were collected from the respondents through administration of structured questionnaires. Trained enumerators were aid in the administering the structured questionnaire. Additionally, Secondary information was obtained from Journals, relevant websites, conference proceedings and other revealed published materials.

### Sampling Procedure

The target population of this study is the Food crop farmers in kwaya-kusar local government Area of Borno State, Nigeria. Multi-stage random procedure was use in drawing the respondent for this research. The first stage involved purposive selection of two (2) wards that are easy to reach by the researcher out of the 10 wards in the study area (Wandali and Wawa). The second stage involved random selection of villages from the study area. Lastly, the third involved proportionate selection of respondents from the sampling frame. A total of 120 respondents were used for the study.

**Table 1:** Number registered farmers and sample size selected for the study

Selected wards	Number			
	Villages	Villages selected	Registered farmers	Selected respondents
Wandali	19	6	45	40
Wawa	23	7	100	80
2	42	13	145	120

Source: Field survey (2021)

### Analytical Techniques

This study was analyzed using both descriptive and inferential statistics. Descriptive statistics such as; mean, frequencies, percentages was used to analyze objective i, ii, ii, iv and vi, while inferential statistics was used in the form of multiple regression to analyze objective v. The multiple regressions are expressed thus;

Y = Role of Agricultural Extension Service in improving the livelihood of food crop farmers

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_{10} X_{10} + e \quad \dots(1)$$

X = Independent variables;  $\beta$  = Estimated coefficient; and e = Error term

$X_1$  = Age (years)

$X_2$  = Sex1 (Male), 0 (Female)

$X_3$  = Marital status (Married=1 otherwise 0)

$X_4$  = Farm income (₦)

$X_5$  = Farm size (Ha)

$X_6$  = Educational status (years spent in school)

$X_7$  = Household size (number)

$X_8$  = Extension contact (number of contact per season)

$X_9$  = Farming experience (years)

$X_{10}$  = Access to credit (access 1, otherwise 0)

e = error in term

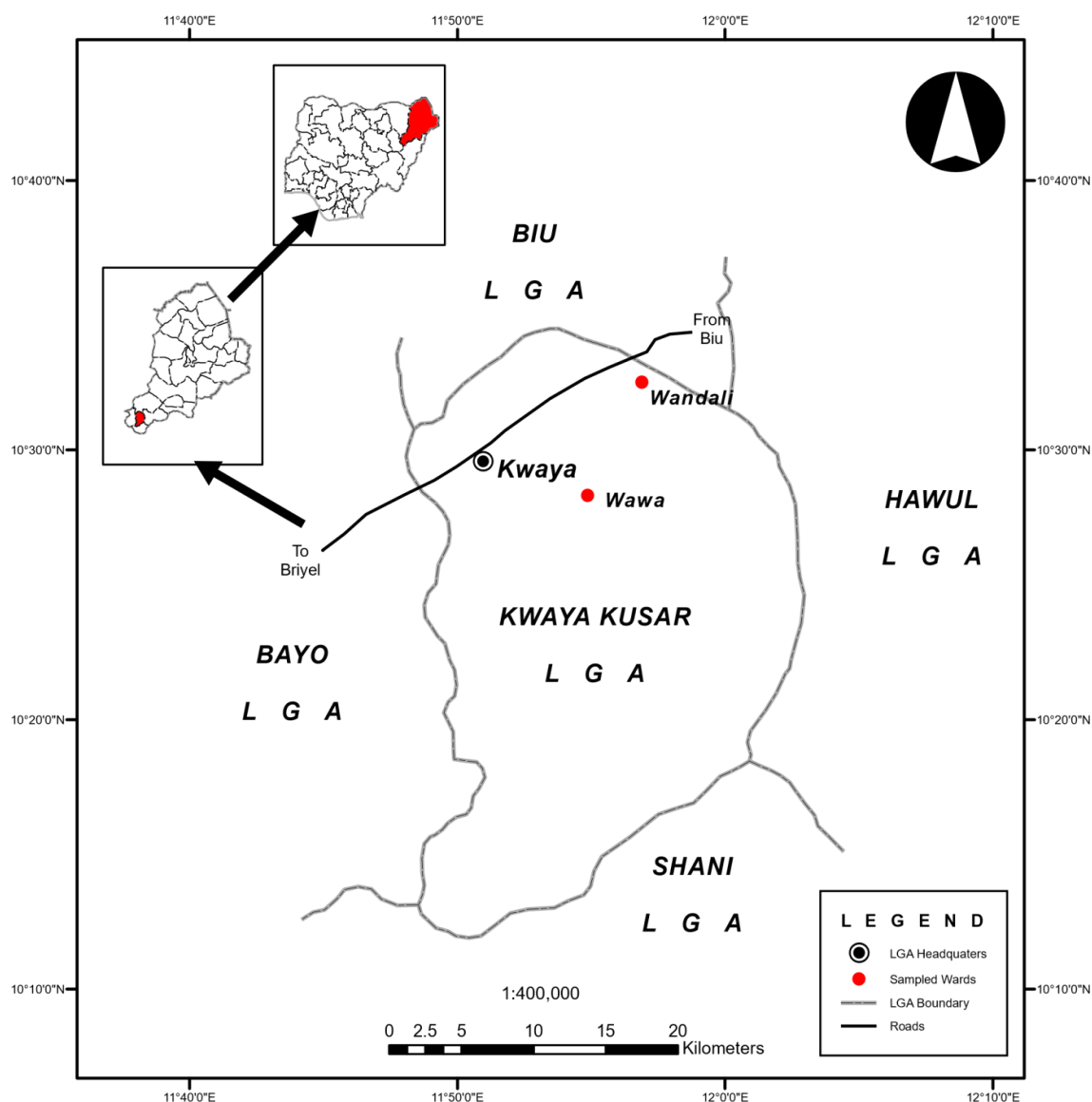


Figure 1: Map of Borno State showing the location of Kwaya-Kusar LGA and sampled wards.  
Source: Department of Geography, University of Maiduguri (2021).

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of the Respondents

Table 2, reveals that many (43.3%) of the respondents were within the age bracket of 36-40 years and 19% were from the age bracket of 31-35 years. The implication of this study is that majority of the respondents were Youths. This implies that those who were active in extension activities were youths that are full of energy, risk takers and exuberant in nature.



**Table 2:** Socio-economic Characteristics of the Respondents

Variables	Frequency	Percentage
<b>Age (years)</b>		
16—20	2	1.7
21-25	5	4.2
26-30	19	15.8
31-35	23	19.2
36-40	52	43.3
41-45	11	9.2
46-50	6	5.0
<b>Sex</b>		
Male	77	64.2
Female	43	35.8
<b>Marital status</b>		
Single	23	19.2
Married	87	72.5
Divorced	10	8.3
<b>Annual net income from crop production (₦)</b>		
<50,000	14	11.7
50,000-100,000	20	16.7
100,001-150,000	42	35.0
150,001-200,000	26	21.7
200,000 and above	18	15.0
<b>Farm size (ha)</b>		
<5	89	74.2
5—10	23	19.2
10—15	7	5.8
<b>Educational level (years)</b>		
Never	14	11.7
Primary	39	32.5
Secondary	55	45.8
Tertiary	12	10.0
<b>Household size</b>		
1—5	23	19.2
6—10	73	60.8
11—15	16	13.3
<b>Extension contact per farming season</b>		
1—2	94	78.3
3—4	16	13.3
5—6	8	6.7
<b>Farming experience (years)</b>		
1—5	8	6.7
6—10	12	10.0
11—15	76	63.3
16-20	17	14.2
21 and above	7	5.8
<b>Access to credit</b>		
Yes	45	37.5
No	75	62.5

Source: Field survey (2021)

From Table 2, it was gathered that male dominated food crop production as 64.2% were male and 35.8% were female. It could be because of family burden that male dominated food crop production (feeding, clothing, shelter, education, medical bills). Table 2 further discovered that 72.5% of the food crop farmers were married, 19.2% were singles and 8.3% divorced. The implication of this finding was that married respondent dominated food crop





production. It can be deduced that married people carry out every livelihood activities with enthusiasm because of the family responsibilities such as feeding, schooling of kids shelter. Table 2 results also found that many of the respondents (35.0%) earned 100,001-150,000 Naira, while the least (11.7%) earned <50,000 Naira. The result indicated that majority earned poorly per annum. This could be because of poor financial status to use input for crop production. Furthermore, it could be because of poor access/lack of credit. Furthermore, majority of (74.2%) had <5 ha farm land. The implication of this finding was that majority had fragmented land, perhaps due to increase in population or divided as a result of inheritance. On the education level of the respondents, 45.8% had secondary school and primary (32.5%). The implication of this result was that majority were fairly educated as they can read and write.

Majority (60.8%) of the respondent had 6-10 household members. The implication of this result was that the study area had adequate household members to handle the food crop production, regarding the nature of the farm land. It was also gathered that majority (78.3%) had 1-2 contact per farming season. This result indicated that majority had fairly extension contact per farming season. This could attribute to poor annual income of the respondents. From the Table 2, it was established that 63.3% had 11-15 years of food crop production. The implication of this figure was that majority had also, 62.5% had no access to credit while 37.5% had access to credit. The implication of this finding was that majority had no access to credit. Credit is a strong base for farm input such as fertilizer, pesticides, hiring of farm land. The poor access to credit resulted in the poor annual income of the food crop farmers in the study area.

### **Livelihood Activities of the Food Crop Farmers**

Table 3 discovered the various livelihood activities of the food crop farmers in the study area. It was revealed that 96% were involved in raising of crops for their livelihood. Additionally, 63.3% involved in rearing of animals.

**Table 3:** Livelihood Activities of Food Crop Farmers

<b>Livelihood of food crop farmers</b>	<b>Frequency</b>	<b>Percentage</b>
Raising of crops	116	96.7
Rearing of animals	76	63.3
Raising of animals and raising of crops	45	37.5
Marketing of farm produce	54	45.0
Tailoring	32	26.7
Petty trading	78	65.0
Cap weaving	12	10.0
Food crop value addition	32	26.7
Civil servant	43	35.8
Shoe Fabrication	9	7.5
Fashion Designing	4	3.3

Source: Field survey (2021)

The implication of the findings of Table 3 was that overwhelming majority of the respondents were deeply in agriculture. However, 65%, 45%, 35.8%, respectively, were involved in petty trading, market of farm produce, civil service, respectively. It is evident that in spite the fact they involved in agriculture deeply, they also involve in diversification of their income.



### **The Roles of Agricultural Extension Services**

The roles of agricultural extension services are to provide necessary service to the food crop farmers' in order to revamp food crop production. From Table 4, it is gathered that 96.7% of the respondent received help on how to increase their output. Consequently, 93.3%, 82.5%, 81.7% and 78.3% received adoption of new agricultural innovation in the rural settings, facilitate programs, and help in market linkage, respectively. From the result discussed above, it can be deduced that agricultural extension services amply assisted the respondent and played a significant role.

**Table 4:** Roles of Agricultural Extension Services

<b>Rule of extension service</b>	<b>Frequency</b>	<b>Percentage</b>
Link between research institute and rural food crop farmers	87	72.5
Transformation of attitude and behaviour	69	57.5
Facilitator	98	81.7
Bring about innovation in a rural setting	99	82.5
Encouraging farmers participation in extension activities	78	65.0
They facilitate adoption of new agricultural innovation	112	93.3
Enlightens rural food crop farmers about their right	60	50.0
Help them in food crop value addition	70	58.3
Help them in market linkage	94	78.3
Help them on how to increase their output	116	96.7

Source: Field survey (2021)

### **Relationship between Agricultural Extension Services Delivery and Socio-economic Characteristic of the Farmers**

Multiple regression analysis was used to determine relationship between agricultural extension services delivery and socioeconomic characteristic of the farmers. The model exhibits an  $R^2$  of 0.813, which mean about 81.3% of the variation in dependent variable were explained by the independent's variable. This mean the model fitted very well, the results are presented in the Table 5. It was discovered that age was positive and significant at 5% level. These indicated that age strongly assisted in getting support and enhance their food crop production. Put differently, age is a factor influencing the participation in Agricultural production. Sex was found not to be significant (NS) and therefore, it cannot influence on the extension services. Results in Table 5 found out that marital status was positive and at 5% level. This implies that, married individual participate more in agricultural extension service delivery than the unmarried counterparts. The annual income was positive and significant at 5% level. This implies the annual income of the respondents were fairly okay. The farm size of the respondents were positive and significant at 5% level. This revealed that farmers with bigger farm size tend to participate in Agricultural extension activities. The household size, extension contact, educational level were positive and significant at 5% level, respectively. This further revealed that any addition on the variable mentioned earlier will positively influence the participation in agricultural extension activities and subsequent improvement on food crop production. Consequently, farming experience, access to credit were positive and significant at 1% level. This implies that any addition on farming experience or access to credit will positively influence the participation in extension programs which will boost food crop output.





**Table 5:** Relationship between Agricultural Extension Services Delivery and Socio-economic Characteristic of the Farmers.

Variables	Coefficient	Std. Err.	t-value
Age	0.7191	0.3709	1.94**
Sex	0.0320	0.1308	0.24 NS
Marital status	0.5879	0.1460	4.03**
Annual income	0.5753	0.0740	7.77**
Farm size	0.3346	0.1007	3.32**
Household size	0.1517	0.0607	2.50**
Extension contact	.0409	.0136	3.0**
Educational level	0.8793	0.1882	4.67**
Farming experience	0.9898	0.3063	3.23***
Access credit	0.1971	0.0744	2.65***
Constant	5.5979	0.8002	7.00**
R <sup>2</sup>	0.8125		

Note: \*\*, \*\*\*Significant at 5%, 1% and not significant, respectively; and NS = Not significant  
Source: Field survey (2021)

### Constraints to Effective Extension Service Delivery

Often, the extension service delivery encounters obstacle while discharging their duties. It was gathered that the constraints to effective extension service delivery encountered were 93.3% was lack of access to modern technology (Table 6). Consequently, (91.7%, 81.7%, 74.2% and 63.3%) were poor governmental funding of extension services, poor medium of communication, improper ratio of extension agent and clientele and poor rural road network, respectively. These findings reveal that the respondent encountered problem or difficulty to assess extension service.

**Table 6:** Constraints to Effective Extension Services Delivery

Constraints	Frequency	Percentage
Poor governmental funding of extension service	110	91.7
Poor rural road network	76	63.3
Attitudinal problem of clientele	65	54.2
Incompatibility of extension message	43	35.8
Improper ratio of extension agent & clientele	89	74.2
Lack of access to modern technology	112	93.3
Poor medium of communication	98	81.7
Language barrier	56	46.7
Gender issues	45	37.5
Cultural differences	34	28.3

Source: Field survey (2021)

### CONCLUSION AND RECOMMENDATNS

The study concluded that male dominated food crop production (64.2%) putting their female counterparts at the disadvantage side. Majority (72.5%) of the respondents were married. Extension contact per farming season ranged from 1-2 contact. Farming experience of the farmers raged from 11-15 years. The major challenges faced by extension service delivery were lack of access to modern technology. Agricultural extension service plays a



pivotal role in improving the livelihood of food crop farmers' in the study area. The following recommendations were made:

1. Male dominated food crop production putting the female counterparts at the disadvantage side; as such female should be highly involved or encourage in participating actively in food crop production.
2. Poor government funding toward extension service delivery; government, policy makers and other NGOs should help the farmers' by providing funds to boost their production and economic level.
3. Lack of access to modern technology is one of the major problem faced during extension service delivery; as such there should be provision of more modern technology that can be access, easy to adopt and affordable.
4. Majority of the farmers' has lower annual net income (₦100,001-₦150,000); government, policy makers, and other non-governmental organizations (NGOs) should try and help the farmers' by providing or creating opportunities they can engage in so that they will not involve in raising of crops only as their source of livelihood.

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