



Assessment of the Effectiveness of Lake Chad Research Institute “Adopted Villages Scheme” in the Dissemination of Improved Farm Technologies in Borno State, Nigeria

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ABSTRACT

This study assessed the effectiveness of “Adopted Villages Scheme” as an approach to improved technology dissemination among beneficiaries in Borno State, Nigeria. Structured interview schedules were used to obtain information from all the thirty (30) participants in Dalori and Dusuman adopted villages of Lake Chad Research Institute (LCRI) Maiduguri. The data collected were analyzed using descriptive (frequencies percentages and mean scores) and inferential statistics (chi-square analysis). The results showed that there was high awareness (more than 80%) of improved technologies by respondents. Findings also revealed that most (70%) of the respondents became aware of improved farm technologies on monthly basis. The level of participation of respondents in trial of improved technologies being disseminated was high in both the high yielding ($\bar{X}=2.836$) and early maturing ($\bar{X}=2.60$) millet varieties. Result and method demonstration was the most effective ($\bar{X}=2.93$) technique used in disseminating improved farm technologies to the respondents. The result equally indicated that result/method demonstration and farmer field school were statistically significant; X^2 calculated (9.800) and (6.812) > P- value (5.991) and (5.991) respectively in effectiveness of dissemination of improved farm technologies in the study area. Lack of finance ($\bar{X}=2.96$) was the major problem affecting the effectiveness of the scheme. It was recommended that loan disbursement under the scheme and basic inputs such as fertilizer, chemicals and implements, be made adequate at the right and at subsidized rates to the beneficiaries.

Keywords: Adopted villages, Assessment, Borno State, Effectiveness, Farm technologies.

1. INTRODUCTION

Background of the Study

Information dissemination is a critical tool for promoting national development. In view of this the Federal Government of Nigeria designed several institutions and programmes to implement geared towards efficient and effective information dissemination in the country [1]. Among such are the Agricultural Extension, Research and Liaison Services (AERLS), the extension services of the Agricultural Development Projects (ADPs), Ministries of Agriculture at both State and Federal levels, Media Forum for Agriculture, Cooperative Extension Centres (CEC) of Universities and the public enlightenment units of the Agricultural Research Institutes, to ensure that farmers become aware and adopt agricultural innovations relevant to their situations [12]. Over the years, deliberate though ineffective efforts have been made by these institutions to bring about agricultural development without much to show for it [12]. The failure can be attributed to the transformation approach to agricultural information dissemination. A major constraint to agricultural information dissemination is the inadequacy of existing programmes- some of these programmes are conceived without well thought out plans and are prepared in a hurry without the farmers whose attitudes are to be changed making any inputs [12].

One of the thrusts of extension is to convey farm information and research findings to resource-poor farmers [3]. The spread of farm information and subsequent adoption of same by farmers is the primary responsibility of extension service all over the world. However, agricultural extension systems are poorly managed and lack essential resources to adequately take research findings to rural farmers [4]. To-date, efforts by extension systems to transfer technologies to farmers have not yielded tangible results [4]. Thus, farmers seldom feel the impact of agricultural innovations either because they have no access to such vital information or because it is poorly disseminated.

The primary responsibility of Lake Chad Research Institute (LCRI) like other research institutes in the country is the development of improved technologies in their mandate areas and crops to solve the major production constraints faced by farmers [10]. The LCRI located in Maiduguri, the Borno State Capital in the North – East Geological zone of Nigeria. The institutes mandate include genetic improvement of millet, wheat, barley, and sorghum; identifying problem of all agricultural extension services. LCRI actively collaborates with the Faculty of Agriculture, University of Maiduguri and Institute of Agricultural Research (IAR) Ahmadu Bello University (ABU) Zaria in executing its mandate.

A major challenge to addressing food security problem in Nigeria is the inaccessibility of small holder farmers to improved technologies emanating from the National Agricultural Research Institutes (NARIs), [8]. To centre these challenges and facilitate the dissemination of improved technologies, in 1996 under the World Bank Assisted Programme of National Agricultural Research Project (NARP), the "Adopted Villages Scheme" was introduced to the National Agricultural Research Institutes (NARIs) in Nigeria; Agricultural Research Council of Nigeria [2]. Most research institutes identified the villages during the NARP era but subsequently after NARP when the funds dwindled, they were unable to carry out activities in these adopted villages. The ARCN in 2008 issued a directive to the NARIs to re-implement the Adopted Villages Scheme with a renewed vigor to help in the early evaluation and dissemination of improved technologies emanating from the research institutes; Institute for Agricultural Research and Training [9]. Each Institute / Collage of Agriculture is expected to identify two communities / school not more than twenty kilometers away from its official location within their mandate areas. Furthermore, the institute will select farmers where farm or field will be used as 'show room' for the communities where the impact of the technologies they are promoting. The selected communities are to help in the early evaluation and dissemination of the technologies generated by a particular research institute in its mandate crops.

In line with the directive, the LCRI identified and established the "Adopted Villages Scheme" in two locations in Dalori and Dusuman communities in Jere and Konduga LGA respectively as a new approach in the dissemination of improved technologies to farmers. The objectives of establishment and management of the adopted villages are:

- Provision of opportunity for community entry and confidence building.
- Facilitation Activities
- Training and Empowerment Activities
- Development Activities
- Promotional and Extension Activities
- Establishment and Management of Outreach Centres / Secondary Schools.

However, since the establishment of the adopted village's scheme in Borno State, there has not been any empirical study into the effectiveness of the "Adopted Village Scheme" in dissemination of improved farm technologies among the beneficiaries. This study was therefore designed to provide empirical information on the perceived effectiveness of the Adopted Villages Scheme in dissemination of improved farm technologies among beneficiaries in Borno State.

2. OBJECTIVES OF THE STUDY

The broad objective of the study was to assess the effectiveness of the 'Adopted Villages Scheme' in dissemination of improved farm technologies among beneficiaries in Borno State. The specific objectives were to:

- i. determine the level of awareness of improved farm technologies among the scheme beneficiaries,
- ii. determine the beneficiaries' level of participation in the trial of improved technologies being disseminated,
- iii. assess the perceived level of effectiveness of the methods of dissemination of improved farm technologies by the beneficiaries, and
- iv. ascertain the problems affecting the effective performance of the Adopted Villages Scheme.

Hypotheses of the Study

There were no significant differences between extension methods and their level of effectiveness of the "Adoption Villages Scheme" among beneficiaries in the study area.

3. METHODOLOGY

The study was conducted in Dalori and Dusuman Villages of Konduga and Jere Local Government Areas respectively of Borno State. Both Konduga and Jere LGAs share boundaries with Maiduguri, the state capital. The study area has a land area of 7,850Km² [5]. The area is located on latitude 11° 15' North and longitude 15° East of the equator [5]. The area has a population of 367,768 people [11]. Both Dalori and Dusuman Villages are within 20Km radius from the Borno state capital, Maiduguri [10]. Both villages are within the mandate area of LCRI and are also into mass production of the mandate commodity of the research institute. This makes the villages to be qualified as the adopted villages of LCRI in line with the directive of the Agricultural Research Council of Nigeria [2].

Primary data were mainly used for the study. The primary data were collected using a structured interview schedule. This was because most of the respondents cannot read or write. A trained enumerator was used for this purpose who understands the local language of the people. Secondary information was collected from report and records of textbooks, LCRI and through oral discussion with the staff of the Extension Department, LCRI.

The sample frames for the study were the beneficiaries of the 'Adopted Villages Scheme' in both Dalori and Dusuman villages of Konduga and Jere Local Government Areas respectively. The sample frame obtained from LCRI was used as the sample size. All the thirty (30) beneficiaries of the

Adopted Villages Scheme in both villages were purposively selected for the study. The list of the beneficiaries was obtained from Lake Chad Research Institute, Maiduguri.

The data collected were subjected to analysis using descriptive statistical tools. Descriptive statistics such as frequency distribution and percentages were used to organize the data while likert-type rating scale was used to compute the mean scores of degree of effectiveness of the adopted village scheme in dissemination of the improved technologies the Likert – type rating scale used were high effectiveness (3 points); medium effectiveness (2 points); low effectiveness (1 point).

The scores obtained by respondents on questionnaire items were weighted in order to get their mean score. Weighted score refers to the respondents' scores against each questionnaire item multiplied by the scores under each likert scale point. The products were added up together on each column in order to find out the average (mean score) using the number of respondents involved. The computation of the mean score was explicitly expressed as follows:

$$\bar{X} = \frac{V_1 F_1 + V_2 F_2 + V_3 F_3}{F_1 + F_2 + F_3} \dots \text{(i)}$$

Where,

\bar{X} = Mean Score

V_1 = Value of Column 1

F_2 = Value of Column 2

V_3 = Value of Column 3

F_1 = Frequency of respondents in column 1

F_2 = Frequency of respondents in column 2

F_3 = Frequency of respondents in column 3

The mean scores obtained were interpreted as follows:

Mean Score Range	Interpretation
≤ 1.55	Low effectiveness
1.56-2.55	Medium effectiveness
≥ 2.56	High effectiveness

4. RESULTS AND DISCUSSION

Awareness of Improved Farm Technologies by Respondents

The improved farm technologies studied include; high yielding millet variety, early maturing millet variety, recommended fertilizer application, recommended weeding, recommended spacing and recommended chemical application as presented in

Table 1. The result shows that majority (not less than 80% and above) of the respondents were aware of all the improved farm technologies under the Adopted Village Scheme. The high level of awareness to improved technologies from the scheme could be attributed to high mobilization of the beneficiaries and the variety of methods used by LCRI in dissemination of the technologies. [6] reported the significance of awareness of improved farm technologies by farmers adding that non

awareness would lead to non-usage of the improved farm technologies. This is in line with the assertion by [3] that variety of methods used in teaching leads to increased awareness and subsequent adoption. The implication could be that, the beneficiaries could have increased productivity which consequently improves their living standards.

Respondents' participation in Trial of Improved Farm Technologies

Table 2 shows the level of participation of respondents in dissemination of improved farm technologies. Table 2 shows that respondents' participation in the trial of improved farm technologies of high yielding and early maturing millet varieties were high with mean scores \bar{X} of 2.83 and 2.60 respectively. There was medium participation in trial for fertilizer application, weeding and spacing as compared to chemical application which was low. The high level of participation in trial in high yielding and early maturing millet varieties could be attributed to common interest developed by farmers on these technologies. While the low participation recorded in chemical application might not be unconnected with their associated costs to the respondents in the study area. Farmers participation in research and extension have been found to be effective in ensuring uptake of new technologies, promoting farmer to farmer extension and positive attitudes to innovation [8]

Level of Effectiveness of Methods of Dissemination under the Scheme as perceived by the respondents

Table 3 shows the methods used in dissemination of improved farm technologies to respondents and the perceived effectiveness of the methods by mean scores. Table 3 revealed that result/method demonstration and farmer field school were highly effective with mean scores \bar{X} of 2.93 and 2.83 respectively in dissemination of improved farm technologies under the scheme. Lecture/speech and group discussion were moderately effective in dissemination of improved farm technologies to the respondents. Result and method demonstration in term of effectiveness was in line with what [7] posited that if effectively planned and carried out, result and method demonstration are the most effective methods of teaching. Therefore, it could be implied that the methods used by the scheme in dissemination of improved farm technologies were effective in the study area.

Problems Affecting the Effective Performance of the 'Adopted Villages Scheme'

Perceived problems and their level in affecting the performance of the scheme by the respondents were determined and presented in Table 4. It is pertinent from the table that lack of finance was the major problem ($\bar{X}=2.96$) affecting the effective performance of the 'Adopted Villages Scheme'. Inadequacy of inputs as a problem was perceived to be medium

($\bar{X}=1.96$), which indicates that once there is finance, inputs can be obtained. Poor participation by beneficiaries ($\bar{X}=1.16$) was lowly perceived as a problem probably because the time of activities under the scheme is convenient to most of the beneficiaries. The low level of education of beneficiaries ($\bar{X}=1.93$) is found to be medium problem to the effective performance of the scheme. The finding was in agreement with that of [2] who reported that most of the "Adopted Villages Scheme" of Research Institutes in Nigeria were unable to carry out their activities as a result of dwindled funding.

Relationship between Extension Methods used and Level of Effectiveness of the "Adopted Villages Scheme"

Table 5 shows the association of extension methods and their level of effectiveness of the "Adopted Villages Scheme" among respondents in the study area. The result indicates that results/methods demonstration (X^2 calculated; 9.800 > p-value; 5.991) and farmer field school (X^2 calculated; 6.812 > P-value; 5.991). Hence, the methods could effectively disseminate improved farm technologies under the "Adopted Villages Scheme". However, the table indicates that lecture/speech and group discussion were found to be statistically insignificant; X^2 calculated (2.600 and 1.400) > P – value (5.991 and 5.991) respectively, implying that they could be less effective in the dissemination of improved farm technologies under the "Adopted Village Scheme in the study area.

5. CONCLUSION

The 'Adopted Villages Scheme' was found to be effective in dissemination of improved farm technologies among beneficiaries in Borno State. This was because of the high level of awareness and involvement of farmers in dissemination of the technologies. The result shows that result/method demonstration and farmer field school were significantly effective in the dissemination of farm technologies under the "Adopted Village Scheme". However, lecture/speech and group discussion were found to be statistically not significant. Lack of finance was the major problem affecting the effective performance of the "Adopted Village Scheme".

6. RECOMMENDATIONS

On the bases of the findings of the study, the following recommendations are proffered;

- 1 Provision for loan disbursement should be made under the scheme so as to empower the beneficiaries to adopt and disseminate improved technologies in the study area.
- 2 Basic inputs such as fertilizer, insecticides, herbicides, seeds, tractors, etc should be made adequate and at subsidized rates to enable beneficiaries take advantage

- of technical complimentarily since most agricultural improved technologies are multi-component package.
- 3 The scheme should work with women groups as part of the guidelines giving by ARCN in order to ensure family empowerment.
- 4 LCRI must see to it that the technologies developed are not only economically viable, technologically feasible, socially acceptable, ecologically adaptable but also culturally compatible to the existing agricultural practices of the farmers.

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Table 1: Distribution of Respondents based on their Awareness of Improved Farm Technologies introduced through the Adopted Villages Scheme (N=30).

Variables	Frequency*	Percentage (%)*
High yielding millet variety	30	100
Early maturing millet variety	30	100
Recommended fertilizer application	27	90.0
Recommended weeding	24	80.0
Recommended spacing	25	83.3
Recommended chemicals application	27	90.0

Source: Field survey, 2010*multiple response exists; hence total frequency and percentage > 30 and 100% respectively.

Table 2: Distribution of Respondents based on their Level of Participation in Trial of Improved Farm Technologies (n=30)

Variables	Mean score \bar{X}	Interpretation
High yielding millet variety	2.83	High
Early maturing millet variety	2.60	High
Recommended fertilizer application	2.40	Medium
Recommended weeding	1.83	Medium
Recommended spacing	2.30	Medium
Recommended chemicals application	1.53	Low

Source: Field survey, 2010

Table 3: Distribution of Respondents based on Perceived Effectiveness of the Methods of Dissemination by the Scheme

Variables	Mean score \bar{X}	Interpretation
Result/method demonstration	2.93	High
Farmer field school	2.83	High
Group discussion	1.90	Medium
Lecture/speech	1.76	Medium

Source: Field survey, 2010

Table 4: Distribution of Respondents' Perceived Problems affecting the Effective Performance of the Scheme

Variables	Mean score \bar{X}	Interpretation
Lack of finance	2.96	High
Inadequacy of inputs	1.96	Medium
Low level of education of beneficiaries	1.93	Medium
Poor participation by beneficiaries	1.16	Low

Source: Field survey, 2010.

Table 5: Chi-square Results between Extension Methods and their Level of Effectiveness of the "Adopted Village Scheme"

Extension method	χ^2 calculated	P-Value	Decision
Result / Method Demonstration	9.800	5.991	SS
Farmer Field School	6.812	5.991	SS
Lecture / Speech	2.600	5.991	NS
Group Discussion	1.400	5.991	NS

Source: Field survey, 2010.

 χ^2 = Chi-square StatisticsSS = Statistically Significant at $P \leq 0.05$ NS = Statistically Insignificant at $P \leq 0.0$