

**IMPACT OF NATIONAL AGRICULTURAL EXTENSION AND RESEARCH
LIAISON SERVICES ADOPTED VILLAGE PROJECT ON BENEFICIARIES'
LIVELIHOOD IN ABIA AND OYO STATES, NIGERIA**

BY

**ThankGod Chijioke ODUEHIE
(MSc /AGRIC /41589 /2012-13)**

**A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE
STUDIES, AHMADU BELLO UNIVERSITY, ZARIA, IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE
DEGREE IN AGRICULTURAL EXTENSION AND RURAL SOCIOLOGY**

**DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY,
FACULTY OF AGRICULTURE,
AHMADU BELLO UNIVERSITY
ZARIA, KADUNA STATE
NIGERIA.**

DECEMBER, 2015

DECLARATION

I hereby declare that this dissertation titled “**Impact of National Agricultural Extension and Research Liaison Services Adopted Village Project on Beneficiaries’ Livelihood in Abia and Oyo States, Nigeria**” has been written by me and it is a record of my research work. No part of this work has been presented in any previous application for another degree or diploma at any institution. All borrowed information have been duly acknowledged in the text and a list of references provided.

ThankGod Chijioke ODUEHIE
Student

Date

CERTIFICATION

This dissertation titled “**Impact of National Agricultural Extension and Research Liaison Services Adopted Village Project on Beneficiaries’ Livelihood in Abia and Oyo States, Nigeria**”, by ThankGod Chijioke **ODUEHIE** meets the regulations governing the award of the Degree of Master of Science, Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

Dr M. W. Musa
Chairman, Supervisory Committee

Date

Prof E. B. Tologbonse
Member, Supervisory Committee

Date

Prof Z. Abdulsalam
Head of Department

Date

Prof K. Bala
Dean, School of Postgraduate Studies

Date

DEDICATION

This dissertation is dedicated to God Almighty and my lovely parents late Mr. Paulinus Oduehie and Mrs. Lovelyn Oduehie for bringing me thus far.

ACKNOWLEDGEMENTS

I specially express my deep appreciation and sincere gratitude to my supervisors, namely Dr. M.W. Musa and Prof. E.B. Tolongbonse for their invaluable assistance, suggestion and pieces of advice that aided the completion of this research work. Dr. Kenneth Ekwe of NRCRI who was always there to guide me. Also Prof. T.K. Atala, Prof. J.G. Akpoko, Dr. M.A. Damisa, Dr. E.A. Kehinde and Prof. Z. Abdulsalam (HOD) and all staff of NAERLS South-East and South-West Zones for their support and encouragement. God bless them all.

However, I can't forget my able friends who have shared with me and contributed in one way or another during my stay in school. Therefore it is my pleasure to acknowledge Mr. A. Gomina, Mr. I.B Hena. and all members of M.Sc/Agric/2012-2013 set. God bless them all.

TABLE OF CONTENTS

Content	Page
Title Page.....	i
Declaration	ii
Certification.....	iii
Dedication.....	iv
Acknowledgements.....	v
Table of Content.....	vi
List of Tables.....	x
List of Figures.....	xi
Abstract.....	xii
CHAPTER ONE.....	1
1.0 INTRODUCTION.....	1
1.1 Background to the Study.....	1
1.2 Problem Statement.....	3
1.3 Objectives of the Study.....	5
1.4 Justification of the Study.....	6
1.5 Hypotheses of the Study.....	6
CHAPTER TWO.....	7
2.0 LITERATURE REVIEW.....	7
2.1 Socioeconomic Characteristics of Smallholder Farmers.....	7
2.2 Extension Activities of the Adopted Village Project.....	10
2.3 Impact Assessment of Intervention Projects	12

2.4	Factors Influencing Farmers’ Participation	15
2.5	Constraints to Effective Implementation and Participation in Adopted Village Projects.....	18
2.6	Theoretical Framework.....	19
2.6.1	The theory of social change.....	19
2.6.2	Participatory development model.....	20
2.7	Conceptual Framework.....	21
2.7.1	The concept of impact assessment.....	21
2.7.2	The concept of adopted village.....	22
2.7.3	The concept of participation (Farmers’ Involvement).....	24
2.7.4	The concept of livelihood.....	25
2.8	Conceptual Model.....	26
CHAPTER THREE.....		28
3.0	METHODOLOGY.....	28
3.1	The Study Area.....	28
3.2	Sampling Procedure and Sample Size.....	31
3.3	Methods of Data Collection.....	32
3.4	Analytical Techniques.....	32
3.5	Operational Definition and Measurement of Variables.....	35
3.5.1	Independent variables.....	35
3.5.2	Dependent variables.....	36
3.5.3	Expected outcomes measurement.....	37
CHAPTER FOUR.....		38
4.0	RESULTS AND DISCUSSION.....	38

4.1	Socio-Economic Characteristics of Respondents.....	38
4.1.1	Age distribution	38
4.1.2	Sex distribution.....	39
4.1.3	Educational level.....	39
4.1.4	Household size.....	40
4.1.5	Farming experience.....	41
4.1.6	Marital status.....	41
4.1.7	Contact with NAERLS staff.....	42
4.2	Extension Intervention Activities Introduced to Beneficiaries of the Project in the Study Areas.....	44
4.3	Impact of the Project on Output of the Respondents in the Study Areas.....	48
4.3.1	Impact of the project on income of the respondents in the study areas.....	49
4.4	Socio-economic and Institutional Factors Influencing Performance of the Project in the Study Areas.....	50
4.5	Constraints Faced by Beneficiaries Participating in the Adopted Village Project.....	55
CHAPTER FIVE.....		57
5.0	SUMMARY, CONCLUSION, RECOMMENDATIONS AND CONTRIBUTION TO KNOWLEDGE.....	57
5.1	Summary.....	57
5.2	Conclusion.....	59
5.3	Recommendations.....	60
5.3	Contribution to Knowledge.....	62
REFERENCES.....		63
APPENDICE.....		70

LIST OF TABLES

Table 1: Sample distribution of respondents	31
Table 2: Distribution of beneficiaries and non-beneficiaries by socio-economic characteristics.....	43
Table 3: Distribution of extension interventions activities introduced to the beneficiaries of the adopted villages project.....	47
Table 4: Results of Z-test statistic of the impact of project on the crop output of respondents.....	48
Table 5: Results of Z-test statistic of the impact of project on income of respondents.....	49
Table 6: Results of socio-economic and institutional factors influencing participation of the project.....	54
Table 7: Constraints faced by the beneficiaries participating in the adopted village project.....	56

LIST OF FIGURES

Figure I: A model of the impact of NAERLS adopted village project on beneficiaries' livelihood (output and income) in Abia and Oyo States, Nigeria.....	27
Figure II: A map of the study area	30

ABSTRACT

The study sought to analyze the impact of National Agricultural Extension and Research Liaison Services (NAERLS) of Ahmadu Bello University Adopted Village Project on beneficiaries' livelihood (crop output and income) in Abia and Oyo States. A multi-stage sampling technique was used to select a sample size of 140 respondents for the study. The data for analysis was based on 2013/2014 cropping season and were collected using a structured questionnaire. Data collected were analyzed using descriptive statistics such as frequency distribution, percentages, mean and inferential statistics such as t-statistic and multiple regression. Results of data analysis reveal that the mean ages of beneficiaries and non-beneficiaries of the Project were 43 and 41 years for Abia and Oyo states, respectively. All (100%) the beneficiaries of the Project had contact with NAERLS staff with a mean of 2.4, while all (100%) the non-beneficiaries had no contact with NAERLS staff. It was found that beneficiaries in Abia and Oyo states ranked fertilizers, insecticides and herbicides as the foremost, improved seed/breeds was ranked 2nd, while maize seed and cassava cuttings was ranked 3rd among the input received. The result from Z-test reveals that the mean annual crop output of the beneficiaries of the Project was significantly higher (10827.86 kg) than the mean annual crop output of the non-beneficiaries (9910.71kg) by 917.15kg. ($z=2.931$; $P<0.01$). Also it was found that the mean annual income of the beneficiaries of the Project was significantly higher (₦634112.80) than the mean annual income of the non-beneficiaries (₦ 498,955.70) by ₦135,157.10. ($z=2.281$; $P<0.05$), this imply that the NAERLS Adopted Village Project had a significant impact on the crop output and income of beneficiaries of the project. The results from multiple regression analysis reveals that age ($t=10.999$; $P<0.01$), household size ($t=9.008$; $P<0.01$), income ($t=6.64$; $P<0.01$), contact with NAERLS staff ($t=12.405$; $P<0.01$), access to inputs ($t=1.883$; $P<0.1$), cooperative association ($t=10.815$; $P<0.01$) and amount of credit ($t=4.31$; $P<0.01$) were found to significantly influence participation in the Project with R^2 value of 0.609. This imply that the above mentioned independent variables collectively contributes about 61% of the variation in the participation of the beneficiaries. Poor market was mentioned as part of the constraints faced by beneficiaries of the Project in the study area but limited land was ranked 1st. It is recommended that the Land Use Act of 1990 should be reviewed to facilitate access to land by landless peasantry who produce the bulk of agricultural produce. Farmers should also form a production clusters to improve their market accessibility in groups. In each group, there should be an advisory committee trained by specialist in various aspects of marketing to enable them have access to up-dated pricing information and make it available to farmers on time. Storage and processing facilities should be made available to farmers by stakeholders so as to avoid food wastage and to enhance value chain of products. High cost of agricultural product could be reduced through provision of good and accessible roads by stakeholders which will in-turn cause a reduction in high cost of transportation.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Poverty is acknowledged to be largely a rural phenomenon where agriculture is the predominant occupation (Adeolu *et al.*, 2004). Agriculture has been an important sector in the Nigerian economy, It accounts for the highest employer of labour, provision of food, eradicating poverty and contributing to the overall growth of the economy, However, the sector is characterized by low yields, low level of inputs, limited land area under cultivation and traditional production tools capable of generating very little income for the farmers (Izuchukwu, 2011).

In the early 1960s to 1980s, Nigeria was largely self-sufficient in food production, Agriculture contributed about 42% of the Gross Domestic product (GDP), employing over 65% of the labour force in Nigeria (Emeka, 2007). However, there has been a gradual decline in agriculture's contributions to the nation's economy. For instance, the index per capita food production, which was 150 in year 2000/2001 was only 120 in year 2002/2003 (Manyong *et al.*, 2005). The major reason for this was largely due to poor extension services. Presently, less than 50% of the Nigeria's cultivable land is under cultivation and are cultivated by subsistent smallholder farmers, cropping about 1-2 hectares under a traditional system characterized by low yield (Olajide *et al.*, 2012).

In recent times, deliberate efforts have been made to improve agricultural production through the establishment and dissemination of agricultural programmes. The spread of such programmes and subsequent adoption of same by farmers is the primary responsibility of extension services.

However, agricultural extension systems are poorly managed and lack essential resources to adequately take research findings to rural farmers, thus, efforts by extension systems to transfer technologies to farmers have yielded very little result (Babaleye, 2007). Farmers rarely feel the impact of agricultural innovations either because they have no access to such innovation or because the technologies were poorly disseminated (Babaleye, 2007)

The “Adopted Villages Scheme” was introduced to the National Agricultural Research Institutes (NARIs) in Nigeria by the Agricultural Research Council of Nigeria (ARC/N) in 2009 following the collapse of National Agricultural Research Project (NARP). The National Agricultural Extension and Research Liaison Service is one of the NARIs that has adopted the scheme in the six geo-political zones, among which are Abia and Oyo States in the South-east and South-west, respectively (National Agricultural Extension and Research Liaison Services, 2014).

The National Agricultural Extension and Research Liaison Services (NAERLS) is one of the research institutes under the National Agricultural Research Institutes directed by the Agricultural Research Council of Nigeria to establish the adopted village scheme within 20km distance from their respective head offices to serve as laboratories for showcasing agricultural technologies developed by the research institutes. Thus, the offices of the adopted villages serve as Agricultural Research Outreach Centers (AROCs), jointly managed by the farmers and the NARIs (NAERLS, 2014).

NAERLS, in collaboration with the West Africa Agricultural Productivity Project (WAAPP-Nigeria) conduct activities in seven adopted villages located in five agro-ecological zones across the country. These include Sakadadi in Kaduna State (North West); Nasarawan-Buhari, Kaduna; Tudun-Iya, Katsina; Shuwari in Borno State (North East); Nwogi, Niger State (North Central); Okaragu, Rivers State (South South); Okolo, Oyo State (South West), and Lodu-Imenyi, Abia (South East).

The objectives of the NAERLS Adopted villages are: to enhance food security and market competitiveness; to empower resource-poor farmers; to enhance job and self-employment opportunities for youths and women and to augment sustainable natural resource management efforts of the communities. These objectives are to be achieved through; facilitation, establishment of management training plots (MTP), capacity building of rural men and women, community development and school programmes.

1.2 Problem Statement

There is growing concern for provision of effective and sustainable agricultural extension services to majority of smallholder farmers in whose hands the bulk of agricultural production lies. The smallholder farmers are constrained by many problems including those of poor access to modern inputs and credit, poor infrastructure, inadequate access to markets, land and environmental degradation, and inadequate research and extension services. These problems have caused low agricultural production and a continuous rise in the country's import bill on food items over the years in spite of the fact that the country has the human and natural resources to produce sufficient quantity of the food need of the people (Egwemi and Odo, 2013).

In a bid to solve the problem of food production and poverty reduction in the country, the National Agricultural Research Project (NARP) under the World Bank assisted programme in 1997, introduced the Adopted Villages concept. The Agricultural Research Council of Nigeria (ARCN), following the collapse of the NARP, directed the National Agricultural Research Institutes (NARIs), of which the National Agricultural Extension and Research Liaison Services (NAERLS) is one, to revive the Adopted Village, culminating into the take-off of the adopted Village project in 2009 (ARCN, 2011). The aim of the adopted village project is to improve the economic and livelihood status of the beneficiary household within the villages in the six geo-political (south-east, south-south, south-west, north-east, north-west and north central) zones.

The technologies transferred to the communities by the NAERLS adopted village project includes: Double-row maize production, maximum density rice production techniques, millet production, cassava rapid multiplication, yam mini set, oil palm seedling, use of pesticides, sensitization on HIV/AIDS, skill acquisition and training on soap making, Vaseline production and marketing of product among women, linkage with agricultural banks (NAERLS, 2014).

However, despite the existence of the NAERLS adopted village project in the study area, adopted village beneficiaries' livelihood is still at its lowest ebb. Consequently, this study was designed to assess the impact of adopted village project of NAERLS on beneficiaries in Abia and Oyo States. To achieve this, the following research questions are necessary:

- i. What are the socio-economic characteristics of the beneficiary and non-beneficiaries in the study area?
- ii. What are the extension interventions introduced to the beneficiaries?
- iii. What is the impact of the interventions on the livelihood of the beneficiaries and non-beneficiaries?
- iv. What are the factors that influence participation in the adopted village project in the study area?
- v. What are the constraint faced by the beneficiaries participating in the Adopted village project?

1.3 Objectives of the Study

The general objective of this study was to assess the impact of NAERLS Adopted village project on the livelihood of participating smallholder farmers in the study area. The specific objectives were to:

- i. describe the socio-economic characteristics of beneficiaries and non-beneficiaries in the study area;
- ii. identify the extension intervention activities introduced to beneficiaries of the project in the study area;
- iii. assess the impact of the interventions on the livelihood of the beneficiaries;
- iv. determine the factors influencing participation in the Adopted village project, and
- v. identify the constraints faced by the beneficiaries participating in the Adopted village project.

1.4 Justification of the Study

Since independence in 1960, the Nigerian government have adopted various strategies and methods aimed at alleviating rural poverty and improving the livelihood of the rural people which forms the bulk (over 70%) of the Nigerian farmers that feeds the nation (Ocheni and Nwankwo, 2012). Thus various agricultural development programmes have been evolved with the aim of improving the farmer's technical knowledge and skills for greater output and higher standard of living (Ikotun, 2002).

This study, therefore evaluated, the outputs and effects of the NAERLS adopted village project with the view to ascertain whether the planned and implemented interventions have produced the intended and desired outcomes on the target population or not. The results of the study would be of benefits to researchers, policy makers, non-governmental organizations (NGOs) and donor agencies in scaling up further intervention projects aimed at increasing agricultural production as well as increasing the standard of living of small-scale farmers. Furthermore, the information from this research would add to the body of existing knowledge on intervention projects available to serve as reference materials for researchers and students and would also form a base for further research.

1.5 Hypotheses of the Study

The following hypotheses were tested in the null form:

- i. NAERLS Adopted village project has no significant impact on the crop output and level of income of the participating farmers.
- ii. Socio-economic and institutional factors have no significant influence on farmers participation in the adopted village project.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Socioeconomic Characteristics of Smallholder Farmers

Oruche *et al.*, (2012) in his study on the Impact of National Special Programme for Food Security on Livestock Farmers in South East, Nigeria noted that 30 percent of the respondents were female while 70 percent were male. Only 14 women participated in the programme against 46 men. On the other hand, 22 out of 36 females were recorded as non-participants against 38 non-participants men. The low participation on the part of the women may be attributed to culture, values and norms which may hinder women from fully participating in the programme. This is in line with the study by Oni and Yusuf (1999) in which they found that women were seriously under-represented in agricultural production as a result of social and cultural values and women were engaged in other businesses like buying and selling, sewing and basket making.

Similarly, Oruche *et al.* (2012) pointed out that the age of participant and non-participant farmers within the age bracket 30-39 was 5%, while the age above 60 was 53%. A recent study on socio-economic characteristics of pig farmers in Oyo-State by Adesehinwa (2002) state that ages of farmers involved in pig were between 51 and 60 years as there were none in age group 21-30 years. He also revealed that approximately 5% of the farmers attended adult education, while 46.7% had

primary education. For those who were formally educated, 31.7% had secondary education, while 6.7% had tertiary education. The low percentage of those with formal education may be due to limitation of educational facilities in the villages which to a great extent could adversely influence adoption of innovations in livestock production. Average family size range between 5 and 9.

In a study on commercialization of smallholder agriculture in Imo state, Onyebinama (2004) reports that about 75% of the sample farmers were at least 50 years old, while the average age of the sample farmers was 56. In Osun state, about 75% of sample farmers were at least 40 years old with an average age of 47 years, while in Ogun state, an average age of about 58 years has been reported (Lawal-Adebowale *et al.*, 2007). Farinde *et al.*, (2005) reported that sample farmers in a study in Delta state were on the average 52 years old with 80% of the farmers between 45-71 years old. They attribute the old age of farmers in the state to rural-urban migration of able-bodied young men and women among other factors. They argue that with such an aged agricultural work force productivity is bound to be low. The contention, is that old farmers tend to be conservative and risk averse. A risk averse farmer is less likely to be innovative. Onyebinama (2004) contends that innovation adoption will likely decrease, while sensitivity to risk will likely increase as the age of the farmer increases. Since the essence of entrepreneurship is innovation, old age will probably constrain entrepreneurial (technical and managerial) capacity.

The level of literacy among smallholder farmers is low (Lawal *et al.*, 1999). Low literacy levels imply limited ability to cope with the complexities of new innovations, the intricacies of product and factor markets and the bureaucratic procedures of government agencies that provide services for agriculture. Skills acquired through special training in agriculture are important to the farmer in

identifying activities and operations, materials, equipment and people needed to undertake the activities and operations and in allocating responsibilities (Onyebinama, 2004). There are indications that education enables farmers to acquire and make better use of production information.

Lawal- Adebawale *et al.*, (2004) also posit that farmers with formal schooling tend to be more efficient in food production due probably to their enhanced ability to acquire technical knowledge. Old age and illiteracy among Nigerian farmers are probably a consequence of out migration. Onyebinama (2004) contends that there is a shift of manpower out of agriculture into other sectors of the economy and into urban areas in spite of the already high levels of unemployment in urban centers and the existence of positive marginal products in agriculture. The out migration has three qualitative features with important implications for agricultural production. The out migration is age, skill and gender selective. The out migrants are relatively young, mostly males and often literate and skilled. As a result, elderly, illiterate and unskilled men and women have become the dominant labour force and entrepreneurs in agricultural production.

Oyegbami *et al.*, (2007) contends that women probably constitute >60% of this labour force. He refers to these elderly, unskilled and illiterate women as the invisible agricultural producers in the rural communities. These women participate in all aspects of agricultural production. Oyegbami *et al.* (2007) posits that as the out migration continues, more and more women will take over what was traditionally men's work. Women, in addition to old age, illiteracy and lack of skill in agricultural production are constrained by biological factors such as child bearing and rearing and household management.

According to Onyebinama (2004) previous experience in farm business should enable farmers set realistic time and cost targets, allocate, combine and utilize resources efficiently and identify production risks. Paradoxically, farmers in Nigeria are known to have >20 years and up to 50 years of farming experience (Lawal *et al.*, 2007) and still operate at subsistence levels and without production plans. Rogers (1995) posit that such subsistence farmers are inclined to mistrust which negatively affects co-operation and organization beyond the family circle. According to him subsistence farmers are also fatalistic, little inclined to save and invest exhibit a lack of interest in innovation, a low level of aspiration and limited attention for the future. These attitudes adversely impact on entrepreneurial capacity. This is probably why most farmers in Nigeria have limited technical and managerial capacity. Consequently, they perform more of laborious tasks and less of entrepreneurial (technical and managerial) functions and are therefore unable to exploit the improvements that have been made on the physical, social and economic environment of agricultural production in Nigeria.

Agbelemoge *et al.*, (2001) had revealed in their separate studies that socio-economic characteristics such as age, household size, literacy level, farming experience and size of farm holding have significant effects on the perception, view, interest and acceptance and use of certain recommended farm practices. Such characteristics of farmers have also been found to influence their level of participation in implementation of agricultural programmes.

2.2 Extension Activities of the Adopted village project

The main aim of the adopted village project is to encourage large-scale adoption of improved technologies to empower resource poor farmers economically, create job opportunities and ensure food security. Specifically, the adopted villages' project is to: create awareness in the villages and build people's organizations/groups for various developmental activities through workshops and meetings; facilitate convergence/integration of various programmes of State, Local Governments and other agencies in the villages; ensure socio-economic and livelihood advancement with enhanced credit support and financial inclusion of all families in the villages; identify capacity building needs of the villagers; assist in infrastructure development in the villages through participation of people/local institutions; protect forests and preserve the village ecosystem and conserve soil-health and other natural resources and monitor progress of implementation of the project (Akinola, *et al.*, 2013).

According to Akinola *et al.* (2013) some of the intervention activities in the adopted village project includes facilitation of enterprise planning and group situation analysis, provision of livestock ambulatory services, linkage between farmers and financial institution such as Agricultural banks, linkages with produce markets and input agencies, organizing and conducting joint field days, farmers exchange visits and participation in research institute open days. He further noted that activities such as skill acquisition, training on soap making, Vaseline production and marketing of products for women group, farm record keeping, double-row maize production, maximum density rice production techniques, millet production, cassava rapid multiplication, yam miniset, oil palm seedling, use of pesticides, sensitization on HIV/AIDS are some of the innovations thought to the farmers.

According to IAR&T, (2011) some of the activities carried out in the adopted village since inception includes; Evaluation of organic-base fertilizer for cassava/maize; on farm testing of high yielding and pest resistant varieties of rice; Green maize trial; Transfer of home-level soya bean processing technologies to women groups in the adopted villages; Construction of Bamboo crib with farmers using participatory approach; Identification of training needs of women farmers; Dissemination of snail farming to farmers; Dissemination of ethno-veterinary technologies and improved management practices to sheep and goat farmers; On-farm evaluation of some newly developed maize varieties for yield performance under recommended and farmer production practice; Demonstration of processing and food safety practice.

As a strategy, research institutes are using the adopted village scheme to change the fortunes of local farmers. Subsequently, successful researches from the adopted villages are adapted and replicated in new locations to benefit farmers. In support of this initiative, the World Bank has approved a major funding for ARCN to implement a project known as the West African Agricultural Productivity Project (WAAPP) to promote value chain innovation platforms in the adopted villages (ARCN, 2011).

2.3 Impact Assessment of Intervention Projects

Impact studies have faced both conceptual and empirical challenges, partly due to the complexities of the relationships between agricultural technology and rural livelihoods. As the goals of

agricultural technology development change from increasing food production to the broader aims of reducing poverty, both technology development and studies of its impact become more complex. Yet, examining the impacts and impact pathways of different types of agricultural technologies is essential to guide future research in ways that will make the greatest contribution to poverty reduction. The sustainable rural livelihoods framework (SRLF) has been adapted and used in assessing the impact of new agricultural technologies on livelihoods (Meinzen-Dick, 2001). In impact assessment, the assets upon which people build their livelihoods are of particular interest.

Impact assessment of agricultural research is a continuous process (Manyong *et al.*, 2011). Impact assessment, being a process, is better conceptualized as a cycle involving different types of impact studies at the different stages. Impact studies essentially have the same process as technology development itself. Based on the technology development process, therefore, four stages of impact assessment would constitute the impact cycle. These include impact for priority setting (i.e., *ex ante* impact), on-farm technology evaluation, adoption, and *ex-post* impact. The different types of impact studies are not mutually exclusive; they rather serve distinct and at the same time complementary functions in the technology development and dissemination process.

Ex ante impact assessment is undertaken before the project or program is initiated as an aid in priority setting, based on the potential impacts of alternative research portfolios on aggregate net benefits or on poverty alleviation. *Ex ante* impact studies are conducted to estimate the expected returns from current alternative research efforts. Assessment of future impact includes measures of productivity impacts, distribution of economic benefits, and effects on environmental quality. *Ex*

post impact assessment is conducted after a technology has been widely adopted by farmers in the target areas. *Ex post* impact assessment develops the confidence of scientists, research managers, and stakeholders and makes the case for enhanced research support (Biradar, 2008).

Ex ante studies are increasingly recognised as vital to improve allocation of scarce resources to activities that contribute to the development objectives of the research organisation. A blend of models and tools are required to secure data answering four basic questions: 1) where is the impact likely to occur; 2) by whom will the impact be felt; 3) which impacts will be generated; and 4) what is the value of these impacts?" (Thornton *et al.*, 2003).

According to Thornton *et al.*, (2003) Some approaches to ex ante assessment includes:

Village workshops/discussions, stakeholder consultations, key informant interviews; community-level formal surveys; community-level formal surveys for looking at adoption and impact; financial and economic analyses of the production effects of new technologies; transect walks, aerial photography; spatial analysis, GIS, satellite imagery; market studies; economic surplus methods; in-depth anthropological/sociological and characterization studies, farmer assessments; participatory nutrient flow diagrams; follow the technology, participatory technology development; hard biophysical simulation models of component processes and interactions; softer biophysical models of component processes and interactions; multiple objective mathematical programming models of the household; rule-based (softer) models of the household.

Livelihood approaches are also used with increasing frequency in multi-dimensional impact assessments (e.g. Adatao and Meinzen-Dick 2007). Livelihood is mostly used to address the issues of poverty that is people oriented, non-sectional and grounded in the multi-dimensional reality of daily life (Dekker, 2002). Developmental agencies have adopted the livelihood concept as central to their development strategies and activities, this is due to the fact that the livelihood approach to rural development is founded on the belief that people require a range of assets, access to limited resource and participation in income generating activities to achieve positive livelihood outcome. Access to resources indicates that individuals, households or groups are able to use these, increase their income and improve their livelihood (Birada, 2008).

Majority of the rural families according to Birada (2008) are dependent on agriculture for their livelihood. However, due to denudation of natural resources, fragmentation of their land holdings and fluctuating climatic conditions, the income and output from agriculture has been dwindling. Rural men and women, especially in poor households engage in diverse and multiple activities to improve their livelihood. These activities may include on-farm, non-farm and other non-agricultural activities.

2.4 Factors Influencing Farmers' Participation

Studies have shown that farmers have different reasons for participation in agricultural development programmes. Edi, *et al.*, (2007) pointed out that projects that provides easy access to farming inputs, and are environmentally friendly and provide adequate leisure time encourages participation. Similarly, studies in Nigeria have also shown that participation in community programmes is affected

by the citizens' perception of the share of the anticipated benefit which will accrue to them as individuals (Ekong, 2010). Moreover, the extent to which community members will take the initiative and also fully participate in community development programmes, depend on their perception of their roles vis-à-vis the role of the government with respect to that particular social issue or problem.

According to Peter (1991) participation in developmental programmes is one critical component of its success, the quality of participation determines the success of any organization as well as its programmes and that any agricultural programme that does not involve the people it is meant for is bound to fail.

Participation by farmers is seen as a right, not just the means to achieve the project goal, this is why active participation which allows farmers to realise their full potential and make their best contribution to society is an end in itself and not just a means (pretty, 1995). Be that as it may, pretty, pointed out seven types of participation which include: Interactive participation; manipulative participation; passive participation; participation by consultation; self-mobilization; functional participation and participation for material incentive

In his opinion the interactive participation is most appreciated because it gives room for the farmers to participate in organization of development project right from the decision making process up to the stage where the project is been evaluated.

Rogers (1995) noted that the adoption of innovation is related to innovation decision process through which an individual passes from first knowledge of an innovation to forming an attitude towards the innovation, deciding to adopt or reject the innovation and implementing decision. This implies that farmers can participate in extension programmes when they have passed through the innovation to decision process and after these farmers have picked interest concerning this project, they tend to seek for more information on their own and when this happens participation takes place.

According to Peter (1991) Effective participation of farmers in their development projects is largely influenced by the social and cultural factors of the actors. The participation level depends on; the literacy level of the farmers which may limit their level of involvement in decision making process; culture which determines compatibility of programmes and its eventual acceptance, role of the facilitator/change agent who facilitate the process of change; availability of resources including both human and material resources for use at local levels and exposure of the farmers which affects readiness to accept new ideas.

According to Sinkaye and Ajayi (2012) Effective participation of beneficiaries in their development project is largely dependent on the social and cultural factors of the actors. The participation level of beneficiaries depends on: Educational/literacy level of rural farmers. Most rural people have low literacy level, this may limit their level of involvement in decision making process; Level of exposure of the rural farmers, and relevant experiences of community members would determine their level of participation in a given project; Culture of the people, Culture determines compatibility of

programmes and eventual acceptance. If participating in a project implies acting at variance with existing norms and values, the people would not willingly and readily participate in such projects; Role of facilitator/ change agent who facilitate the process of change, most grassroots facilitators are not skilled in participatory approaches which does not allow community empowerment. Some also experience low morale due to lack of interest or poor working environment, which hampers participation; Availability of resources including both human and material resources for use at local levels also influence farmers participation in intervention projects.

Sinkaye and Ajayi (2012) also noted that, holding of regular meeting, assignment of specific responsibility to members, involvement of members in all community project activities, creation of leadership from among the general members, creating awareness and sensitization on poverty alleviation, are other factor which would help to promote farmers participation in intervention projects.

2.5 Constraints to Effective Implementation and Participation in Development Projects

Ekong (2010), opined that the project implementation and participation has been characterized by many impediments, among which are the “top-down” approach in which farmers are not involved in the decision making, planning, monitoring and evaluation of projects that affects them, this often leads to failure in the project implementation, participation and in actualization of the goals of the project.

Similarly, illiteracy among the smallholder farmers, makes it difficult for them to comprehend instructions and the situation is not helped by the rather poor extension agent who are not properly trained (Centre for Technical Agriculture, 1996).

Lack of access to credit is another factor that hinders effectiveness of a project on the part of the participants. According to Ekong (2010) majority of the rural farmers face problems when seeking for credit due to government policies, lack of information, lack of collateral and prejudice against them.

Lack of appropriate institutional framework and inappropriate technology is another factor to effective implementation of projects (Kolawale, 1990), he argued that most of the technologies were designed without taking into consideration the socio-economic realities in the country and that most technologies are expensive and are beyond the means of the smallholder farmers. Land possession, village-family structure, income, lack of linkages between the government agencies charged with the responsibility for implementing the scheme and research institute in terms of management are also among factors that hinders project implementation and farmers participation (Kolawoale, 1990).

According to Mustapha *et al.*, (2012) lack of finance, inadequate supply of inputs and low level of education are the major factors affecting the effective implementation and participation in the “Adopted Village Scheme”.

2.6 Theoretical Framework

Ekong (2010) noted that a theory is a set of interrelated definitions and relationships that guides our understanding of the empirical world in a systemic way. He further reiterated that theoretical framework is a broad system of explanation that is founded not so much on prior research findings but largely on interest and improvable assumption. This Study will be guided by the social change theory and participatory development Model.

2.6.1 The theory of social change

According to Ijioma (2013) Change means that an aspect of function or structure differs at later time from what it was at earlier times. Rogers (1995) and Ekong (2010) defined social change as the process by which alteration or modification occurs in the structure and function of a social system. The significant alteration of the social structures i.e. of patterns of social action and interaction), including consequences and manifestations of such structures embodied in norms, values, cultural products and symbols. Based on this definitions, social change assumes that modifications in human attitudes and behavior pattern as a result of education e.g. when farmers come to develop a more specific innovation as a result of extension activities and therefore decide to change their farming system by incorporating that innovation (Wilbert, 2003).

Social change may be planned or unplanned, planned change entails the direct human intervention in shaping the direction of change towards some predefined goals while unplanned change that which happens accidentally (Ekong, 2010). The concept of social change assumes the introduction of 'change materials' into the society by the presentation of alternative practices to change or

supplement the existing ones. The NAERLS Adopted Village Project is a planned effort aimed at improving the economic and livelihood status of its beneficiaries.

2.6.2 Participatory development model

According to Nwosu (2013) The Participatory Development Theory as a strategy for rural development, is premised on the principle of collective participation of the people in decision making especially in those programmes that affect their destiny. This theory is built on the assumption that no government or agency, no matter its resources can develop the rural areas without the active involvement of the rural people themselves and without tapping their wisdom, talents, resources and institutions as foundation for development (Nkom, 1995).

This model also assumes that people will identify with and appreciate any development programme only when they are effectively informed of in terms of its nature, sponsorship, functionality, benefits the role they are expected to play and wider expectations of the project on their community. Unless there is full participation of the rural farmers in the whole process of rural development, there will not be any sustainable development. (Centre for Technical Agriculture, 1996).

This study is therefore, premised on the theoretical concept of social change and the participatory development model. The foregoing description of social change and the participatory development model, shows how changes have occurred over time in the livelihood of the smallholder farmers as a result of their participation in the NAERLS Adopted Village Project.

2.7 Conceptual Framework

A framework is seen as a theoretical structure of some assumptions, principles and rules that holds together the ideas comprising a broad concept. It is the basic structure about which a project is built (Asika, 2001).

2.7.1 The Concept of Impact Assessment

The term impact assessment or evaluation is used in different ways by different people. According to IAEG (1999), Impact refers to the Broad, long term economic, social and environmental effects resulting from research while assessment or evaluation is the Judging, appraising or determining the worth, value or quality of research in terms of its relevance, effectiveness, efficiency and impact.

Manyong *et al.* (2005) viewed assessment as a periodic evaluation of the relevance, performance, efficiency and impact of the project in the context of its stated objectives.

Impact assessment of agricultural project has always been viewed as an important activity to ensure accountability, maintain credibility, and improve internal decision-making processes and the capacity to learn from past experience. Impact assessment is a critical component of agricultural research in that it helps to define priorities of research and facilitate resource allocation among programs, guide researchers and those involved in technology transfer to have a better understanding of the way new technologies are assimilated and diffused into farming communities, and show evidence that clients benefit from the research products (Manyong *et al.*, 2005).

2.7.2 The concept of Adopted Village

Adopted village concept was one of the innovations introduced into the Nigerian agricultural research by National Agricultural Research Project (NARP) in 1997. The concept originated from India for agricultural technology testing on the farmer's field and eventual transfer to the teeming farmers. Akinola, Odu and Baiyegunhi, (2013) posited that the adopted village concept is an extension model whereby villages where new ideas have been introduced in the past and households within the villages found to be receptive and willing to adopt new technologies are selected to be developed in an integrated manner. This includes economic development, infrastructure development and other aspects of human development such as education, health, drinking water supply. In other words, it is a multidisciplinary approach involving any willing Government/Non-Governmental Agencies such as Research Institutes, Universities, Farmers' Clubs, Individual Rural Volunteers, Cooperatives and Bank Branches (Atala and Hassan, 2012).

In Nigeria, the concept of adopted village was initiated to facilitate the trial of new research findings by scientists under the farmers' environmental conditions. The scheme has the added advantages of involving the farmers in the trial either as observers, in the case of researchers' managed, or executors in the case of farmers' managed trials.

The involvement of farmers will in turn speed up the rate of adoption of such technologies by neighbouring farmers, as the trial also serve as demonstration plot. In the Adopted Village Scheme,

technologies generated in research institutes are introduced and disseminated to farm families. The adopted village activities are jointly identified before they are conducted and the method for the identification is a bottom-top approach (NAERLS, 2014). Farmers are facilitated to identify their constraints, strengths, challenge`s and possible solutions to their farming business and living environment. Thus the major activities conducted by National Agricultural Extension Research Liaison Services in adopted village includes facilitation, establishment of management training plots (MTP), capacity building of rural men and women, community development and school programme.

According to ARCN (2011), the criteria for selecting the adopted village is that villages should not be farther than 20km from the institute or college, as much as possible and there should be no known agricultural programme of the government or major NGO in the village. Similarly, community members must be willing to work with the Institute and willing to work in groups. The communities are to provide facilities to be used as outreach centers and no two institutions are to adopt the same village.

Apart from the National Agricultural Extension Research Liaison Services (NAERLS) Adopted Villages, other adopted villages include that of the Institute of Agricultural Research (IAR) ABU Zaria, which has made success in two adopted villages-Tudun muntsira and Jaja in Sabon-gari Local Government of Kaduna State. The Institute of Agricultural Research and Training (IAR&T), Ibadan, also has two adopted villages. They are Oniyo village in Orire Local Government Area of Oyo State. It is about 21kms Northwest of Ogbomoso town. The second is Moloko-Ashipa, located in Obafemi Owode Local Government Area of Ogun State. Some of the activities carried out in adopted villages include

evaluation of organic-base fertilizer for cassava/maize/melon, on-farm testing of high yielding and pest resistant varieties of rice and dissemination of ethno-veterinary technologies and improved management practices to sheep and goat farmers (Atala and Hassan, 2012).

Similarly, Agricultural colleges are adopting nearby villages to help farmers improve their methods and increase yields. In Oda village, Ondo State, the Federal College of Agriculture (FECA), Akure has a success story to tell with educating farmers in modern poultry management. The result is better eggs production and daily sales. The maize/cassava inter-cropping system chosen by Eleyewo village farmers was used as a training resource for improving productivity in the system (ARCN, 2011).

2.7.3 The Concept of Participation (Farmers' Involvement)

According to Ekong (2010), Participation is defined as Playing active, though not necessarily direct roles in community decisions, knowledge of local issues, and attendance at public meetings, related attempt to influence proposed measures through individuals and groups actions, belonging to groups and committees and financial contributions towards community programmes.

The involvement of farmers in any agricultural project from decision making stage, planning, implementation, execution, operations and even evaluation is called participation. Participation may involve multi-sectorial approach whereby people take part in decision making, this include prior consultation with the beneficiaries to ascertain their "felt-needs" as well as their priorities and other factors that can lead to equitable access and use of productive resources that will improve their livelihood standard (Kolawole, 1990).

He further noted that participation is often justified on the grounds that; It allows for the tapping of under-used human resources and gets many people to understand and co-operate with measures called for in planners' strategy for development; It acts as an antidote to psychological alienation and rootlessness among the masses thereby making people develop a sense of belonging and meaningful achievement; For the poor neglected masses, organized participation takes advantage of the weight of numbers, offers the only real hope of obtaining from the society more favourable responses to their immediate needs-larger incomes, security of livelihood, access to better services etc; Popular participation is democratic; that participating democracy is superior method of conducting community affairs and people tend to support what they have helped to create and so if citizens have had any opportunity to develop programmes, they will work to carry them out.

2.7.4 The Concept of Livelihood

Frankenberger and McCaston (1998) considered livelihood as the sustainable access to resources to meet basic needs including adequate access to food, portable water, health facilities, educational opportunities, housing, time for community participation and social integration. According to Ekong (2010), a person's livelihood refers to their "means of securing the basic necessities food, water, shelter and clothing- of life". Livelihood is defined as a set of activities, involving securing water, food, fodder, medicine, shelter, clothing and the capacity to acquire above necessities working either individually or as a group by using endowments (both human and material) for meeting the requirements of the self and his/her household on a sustainable basis with dignity. The activities are

usually carried out repeatedly. For instance, a fisherman's livelihood depends on the availability and accessibility of fish.

Five livelihood or capital assets lie at the center of sustainability. These assets represent all spheres of materials, services, and opportunities available to people to use in meeting their basic needs, and in mitigating or adapting to disruptive change. Five types of assets were defined as follows: Natural capital which includes; land, water, forests, marine resources, air quality, erosion protection, and biodiversity; Physical capital which includes; transportation, roads, buildings, shelter, water supply and sanitation, energy, technology, communications, or other household assets; Financial capital; savings (cash as well as liquid assets), credit (formal and informal), as well as inflows (state transfers and remittances); Human capital which includes; education, skills, knowledge, health, nutrition, and labour power and Social capital which includes; networks that increase trust, ability to work together, access to opportunities, reciprocity; informal safety nets; and membership in organizations (DFID, 1999).

2.8 Conceptual Model

A model is seen as an attempt made at classifying the major elements of an entity or phenomenon with regards to their functions and inter-relationship in order to observe more closely causal relationship, these relationships and functions can be represented schematically (Asika, 2001).

The conceptual model developed for this study took cognizance of the socio-economic characteristics (such as age, years of formal education, sex, farm size, family size and farming experience) and the project intervention or institution factor (such as contact with NAERLS staff, subsidized input, facilitation, linkages with credit institutions) as the independent variables. Availability and accessibility of this intervention (involvement) by the beneficiaries is expected to cause a change in their livelihood (crop output and level of income) (figure I).

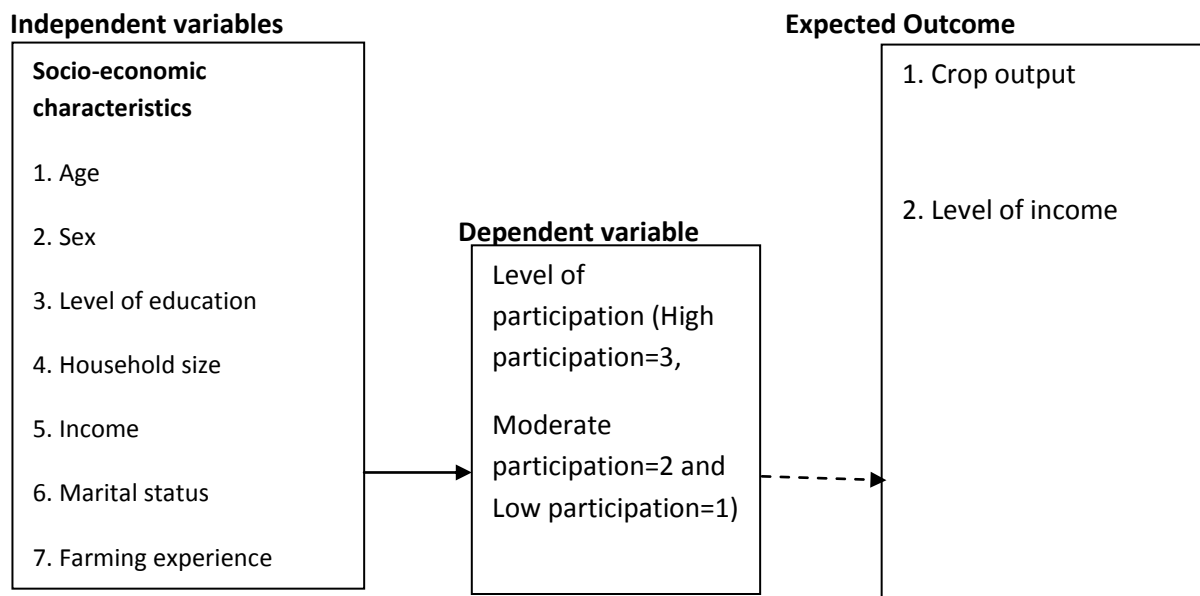


Figure I: A model of impact of NAERLS Adopted Village Project on beneficiaries’ livelihood (output and income) in the study area.

CHAPTER THREE

3.0 METHODOLOGY

3.1 The Study Area

The study was carried out in NAERLS adopted villages located at AmojiLodu-Imenyi in Bende Local Government of Abia State (South-east) and Dagilegbo-Okolo in Ibarapa East Local Government of Oyo State (South-west).

Abia State was carved out of old Imo State on August 27, 1991 with Umuahia as its capital. It is one of the five states in the Southeast agro-ecological zone of Nigeria. Abia State is situated between latitudes 04° 45'N and 06° 07' E and longitudes 07° 00' N and 08° 101'E. Imo, Anambra and Rivers border it in the west, northwest and southwest respectively. It covers a landmass of 6,320 sq. km. The State is located within the forest belt of Nigeria with a temperature range of between 20°C - 36°C lying within the tropics. It has the dry and rainy seasons (October - March and April September) respectively (National Population Commission, 2006).

Abia State has a total population of 2,833,999 with a projected population of 3.51 million as at 2013 using 3% growth rate (NPC, 2006). The State is made up of seventeen local government areas. Bende Local Government Area is located between Latitude 5° 34' N and 7° 38' E and longitude 5° 567' N and 7° 633' E and has a total population of 192,621 (NPC, 2006) with a projected population of 198,400 as at 2013 using 3% growth rate. Over 80% of the population is involved in agriculture as an occupation. This is supported by the rich soil in most parts of the State. The major food crops grown

in the area includes, cassava, yam, maize, cocoa, Oil Palm, Rubber, Cashew, Kolanuts and Coconut. The people also engage in livestock and fish farming. Apart from agriculture, commerce is another occupation of the people (NPC, 2006).

Oyo state is an inland state in southwest Nigeria with its capital at Ibadan. It was created in 1976 from the former western state. The State is mainly inhabited by Yoruba ethnic groups. The climate in the state favours the cultivation of crops like maize, yam, cassava, millet, rice, plantain, cocoa tree, palm tree and cashew. The State is situated between latitudes 8° 00'N and 4° 00'E and longitudes 8° 000' N and 4° 000'E and has a projected population of 5,591,589 with a land area of about 27,249 square kilometers. It borders Ogun State in the South, Kwara State in the North and Osun State to the East. The dry season runs from November-early March, while the rain season is from March-October. Between December and January is the harmattan. Dagilebgo-Okolo village is in Ibarapa East Local Government Area of Oyo state and has a projected population of 118,288 with a land area of 705.78 square kilometers (NPC, 2006).

Agriculture forms the major means of livelihood of over 70% of the population in both Abia and Oyo States and farming is the predominant occupation in both villages. Dagilebgo-okolo practice both Christianity and Islam with Yoruba as their predominant language while Christianity is the religion practiced in Amoji Lodu-Imenyi in Abia State and the predominant language spoken is Igbo. There is also the presence of other ethnic groups in both villages (NPC, 2006).

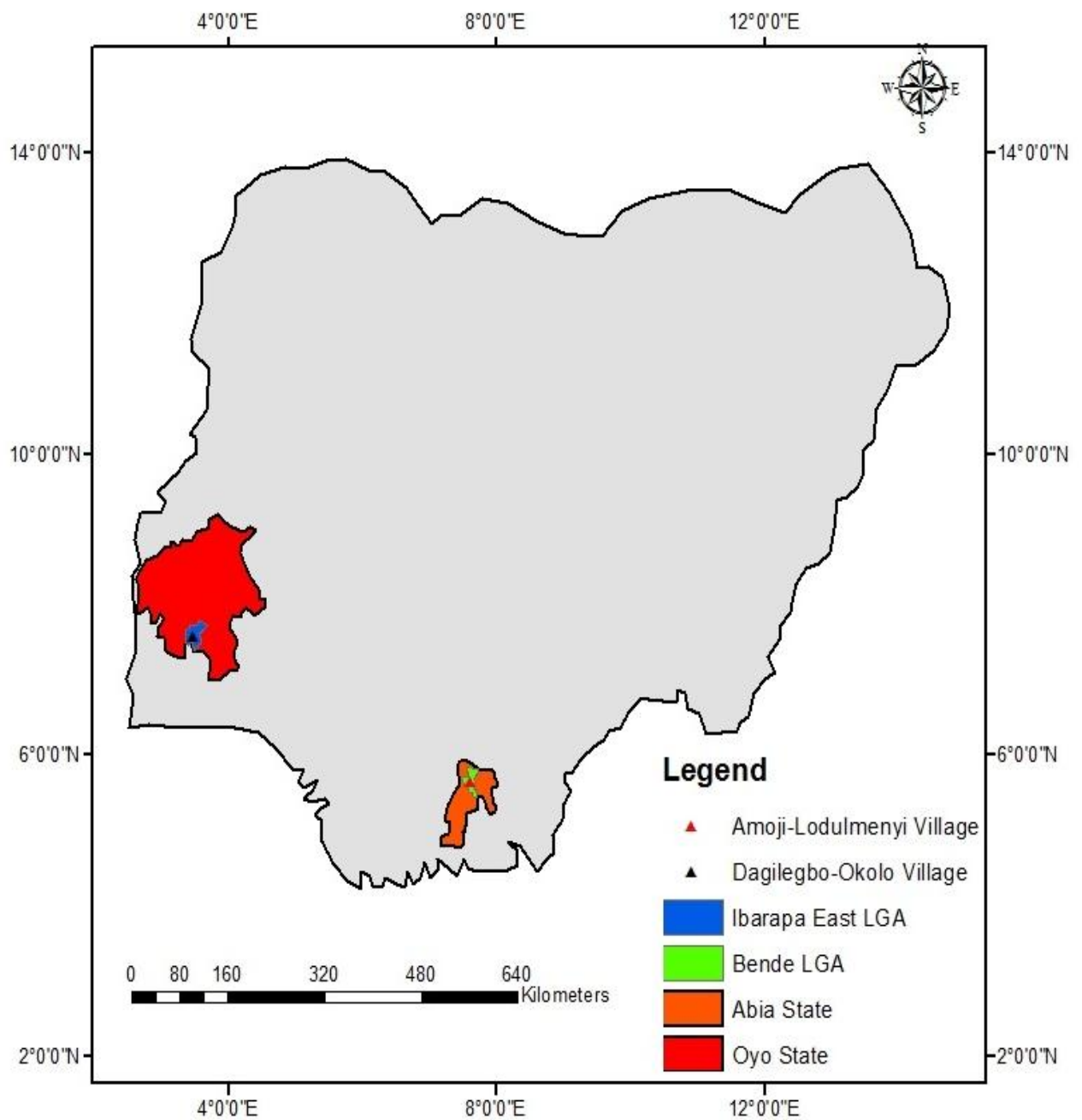


Figure II: Map of Nigeria showing the location of the study areas (Amoji-Lodulmenyi

Dagilegbo-Okolo Villages in Abia and Oyo State)

Source: Adapted from the Administrative Map of Nigeria

3.2 Sampling Procedure and Sample Size

A multi-stage sampling technique were used for this study. The first stage involved purposive selection of 2 States (Abia and Oyo) out of the 4 States (Abia, Rivers, Imo and Oyo) in the South where the NAERLS Adopted villages are sited. Abia and Oyo states were selected based on the fact that activities of the NAERLS adopted village project have longed been established since 2009 while others have just recently started. In the second stage, the only two NAERLS adopted villages from the 2 states were considered for the study. The villages are AmojiLodu-Imenyi village in Abia State (south-east) and Dagilegbo-Okolo village in Oyo State (south-west). In the third stage, the entire thirty-two (32) direct beneficiaries in AmojiLodu-Imenyi and all the thirty-eight (38) direct beneficiaries in Dagilegbo-okolo were selected, giving a total of 70 respondents. Also, a corresponding number (70) non-beneficiaries (32 non-beneficiaries in AmojiLodu-Imenyi and 38 non-beneficiaries in Dagilegbo-okolo) were randomly selected from same villages giving a total sample size of one hundred and forty (140) respondents.

Table 1. Sample distribution of respondents

Name of States/LGA	Adopted Villages	Sampling frame of Beneficiaries	Sample Size of Beneficiaries	Corresponding Sample Size of Non-beneficiaries
Abia/ Bende	AmojiLodu-Imenyi	32	32	32
Oyo/ Ibarapa-East	Dagilegbo-Okolo	38	38	38
Total		70	70	70 n=140

3.3 Methods of Data Collection

This study made use of primary source of information. The primary data were collected from the beneficiary and non-beneficiary farmers in the study area using a well-structured questionnaire. The information collected include socio-economic characteristics, living condition of beneficiaries and non-beneficiaries, the performance of NAERLS adopted village project on the level of income and output of some selected crops (cassava and maize) grown by the beneficiaries and non-beneficiaries as well as the constraints faced by beneficiaries in the adopted village project.

3.4 Analytical Techniques

Descriptive statistics, such as frequencies, percentages, mean were used to: describe the socio-economic characteristics of beneficiaries and non-beneficiaries; identify the extension intervention activities introduced to beneficiaries of the project and to identify the constraints faced by the beneficiaries participating in the NAERLS Adopted village project (objectives i, ii and v).

Z-statistic was used to achieve objective (iii) to compare the means of the output (kg) and income between beneficiaries and non-beneficiaries of the project and to test hypotheses i. which states that NAERLS adopted village Project has no significant impact on crop output and level of income of beneficiaries.

The Z-test model is represented as follows:

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \dots\dots\dots (i)$$

Where:

Z = the calculated Z-test

\bar{X}_1 = mean annual income and mean annual output (kg) of beneficiaries of the project

\bar{X}_2 = mean annual income and mean annual output (kg) of non-beneficiaries

S_1 = Standard deviation of beneficiaries of the project

S_2 = Standard deviation of non-beneficiaries of the project

n_1 = sample size of the beneficiaries of the project

n_2 = sample size of non-beneficiaries of the project

Multiple regression analysis was also used to determine the factors influencing farmers participation in the project (objective iv) and to test hypothesis (ii) which states that Socio-economic characteristics and Institutional factors have no significant influence on farmers' participation in the adopted village project. A job satisfaction scale that was developed and used by Banmeke and Ajayi (2005) was used to estimate the level of participation of beneficiaries in the Adopted Village Project. The beneficiaries were asked to rate five (5) activities of the project they participated in the Adopted Village Project on a 3 point rating scale of high participation=3, moderate participation=2 and low participation=1. The mean

participation score of all the items was calculated. 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 mean participation score of beneficiaries was used as proxy for the level of participation in the Adopted Village Project.

The multiple regression model is specified in the form below:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + \dots + b_{11}X_{11} + U \dots \dots \dots \quad (ii)$$

Where: Y = Level of participation (Mean participation score of beneficiaries)

X₁ = Age (years of respondents)

X₂ = Level of formal education (years of schooling)

X₃ = Household size (number of persons)

X₄ = Sex (male=1; female=2)

X₅ = Marital status (1=married and 2=unmarried)

X₆ = Income (in naira/year)

X₇ = Farming experience (years)

X₈ = Contact with NAERLS Staff

X_9 = Access to inputs

X_{10} = Membership of associations

X_{11} = Access to credit

a= Constant

b_1 - b_{11} = Regression coefficient

U= Error term

3.5 Operational Definitions and Measurement of Variables

3.5.1 Independent variables

- i. **Age:** age is a factor that affects participation in a project, productivity of an individual declines with age. Therefore age determines the level of interest, perception and conduct of an individual. This was measured by the actual number of years of the respondent at the time of data collection.
- ii. **Level of formal education:** This refers to the number of years spent in acquiring education through regular or formal attendance of schools. The number of years respondents spent will determine the level of his/her education. Therefore, the respondent level of education was measured in years.
- iii. **Family size:** This refers to the total number of individual in the household. This was measured by the number of dependents given by a household head during the study.

- iv. **Sex:** This refers to the status of the respondent in terms of male or female. This was measured as either male or female and was scored 1 for male and 0 for female.

- v. **Marital status:** This refers to the state of being married or unmarried, it was scored married = 1, unmarried = 2.

- vi. **Income:** This refers to the amount of money generated by the beneficiaries from the sales of produce in the previous year (2013/2014) it was measured in naira.

- vii. **Contact with NAERLS staff:** This refers to the convergence of the farmers with the NAERLS staffs. It was measured as the number of times the NAERLS staffs visited the farmers in the previous years (2013/2014).

- viii. **Farming experience:** This refers to the number of years the farmers have put into active farming, this was measured in years.

- ix. **Membership of association:** This refers to the social associations a farmer belongs and that can make him/her more credible. It was measured as either yes or no, yes = 1, no = 2.

- x. **Access to credit:** This refers to whether the farmer obtained loan from formal or non-formal lending institutions or not. Farmers that have access to credit were scored 1 and those that do not have access to credit were scored 2.

- xi. **Access to inputs:** This refers to the availability of inputs within the reach of farmers. Farmers that have access to inputs were scored 1 and those without access to input were scored 2.

3.5.2 Dependent variables

Y = Level of Participation in the Project. The beneficiaries were asked to rate five (5) activities of the project they participated in the Adopted Village Project on a 3 point rating scale of high participation=3, moderate participation=2 and low participation=1. The mean participation score of beneficiaries was used as proxy for the level of participation in the Project.

3.5.3 Expected outcomes measurement

The indicators of livelihood for this study was output (kg) of some selected crops (Maize and Cassava) and income of the smallholder farmers.

- i. **Output:** This was measured as the total weight in kilogram of maize and cassava harvested in the previous year (2013/2014)

- ii. **Income:** This refers to the amount of money generated by the beneficiaries from the sales of maize/cassava in the previous year (2013/2014) it was measured in naira.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Socio-Economic Characteristics of Respondents

In this section, selected socio-economic characteristics of beneficiaries and non-beneficiaries of NAERLS adopted village project in the study areas is provided. These include age, sex,

educational level, household size, farming experience, marital status and extension contact as shown in Table 2.

4.1.1 Age distribution

The result in Table 2 revealed that majority (64% and 81%) of the beneficiaries and non-beneficiaries were between the ages of 24-47 years. The minimum and maximum age limits among the beneficiaries were 24 and 60 years, while among the non-beneficiaries were 26 and 60 years with the mean ages of 43 and 41 years among the beneficiaries and non-beneficiaries. The implication of these findings is that majority of the respondents belong to the active young and middle age. This simply explains the full involvement of the active age group in the adopted village project. Therefore, since the participants mostly fall within this category, it is expected to have positive influence on their effective utilization of the packages and thus better output as well as increase their income. This findings agrees with the assertion that young people tend to withstand stress, put more time in various agricultural operations and participate in programmes/projects which can result to increased output (Adeola, 2010). Rahman *et al.* (2002) also reported that farmer's age may influence adoption of innovation or technology (participation) in several ways.

4.1.2 Sex of respondent

Based on the result in table 2, it was found that 70% and 80% of the respondents among the beneficiaries and non-beneficiaries were male, while 30% and 20% were female, indicating

most of the households were headed by men. Patriarchy system and male dominance in decision making for many African societies have resulted into most of households being led by men (Duze and Mohammed, 2006) According to Adewale *et al.* (2003) gender is no barrier to active involvement in cassava production activities. However, Oladeji *et al.* (2003) observed that it is generally believed that males are often more energetic and could readily be available for energy demanding jobs like cassava farming. The low percentage of the female youth participating in adopted village project could be attributed to the fact that females in the study area usually involved in several other activities outside farming like food vendors, hair dressing, tailoring and petty trading.

4.1.3 Educational level

It was also found from table 2 that 40% of the beneficiaries and 43% of the non-beneficiaries had secondary education, approximately 11% of the beneficiaries and 7% of the non-beneficiaries had primary education, and also 41% of the beneficiaries and 39% of the non-beneficiaries had tertiary educational qualification. Only about 8% and 11% of the respondents among beneficiaries and non- beneficiaries had no formal education. It implies that majority (92%) of the beneficiaries and 89% the non-beneficiaries had some form of formal educational qualification. Therefore, the finding revealed that the beneficiaries were more educated and thus had the potentials to easily accept and utilize the NAERLS adopted village packages properly better than the non-beneficiaries in the study area. This is in line with Arnon (1987) who stipulated that education is an important socio-economic variable and a form of human capital for agricultural development. Similarly, Ogunbameru (2001) noted that education will likely enhance the adoption of modern farm technologies by youth and thereby sustaining a

virile farming population. Ojukaiye (2001) posited that education is an important socio-economic factor that influences a farmer's decision because of its influence on the farmer's awareness, perception, reception and the adoption of innovation that can bring about increase in production. Since a high percentage of the respondent were educated, their education is expected to enhance adoption of recommended agricultural production practices in the study area.

4.1.4 Household size

Household size is an important factor in traditional agriculture and immediate source of labour for the farm operations and as such reduces demand on hired labour which subsequently reduces the cost of production. From table 2, it was discovered that majority 88% of the respondents among the beneficiaries and 75% of non-beneficiaries in the study areas had between 5-12 household sizes. The minimum and maximum household size of the respondents among the beneficiaries and non-beneficiaries were 2 and 12 with the mean household size of 8 and 7 respectively. This indicates large household size by the respondents. Large household sizes have been noted to have correlation with food security and poverty reduction by providing costless labour for farm activities (Okoedo-Okojie and Onemolease, 2009).

4.1.5 Farming experience

It was found from the result in table 2 that about 81% of the respondents among the beneficiaries and 87% of non-beneficiaries had between 8-22 years of farming experience. The minimum and maximum years of experience of the respondents among the beneficiaries were 3 and 27 years, while among the non-beneficiaries were 5 and 19 years with the mean farming experience of 15 and 12 years, respectively. This shows that there is no much difference in the years of experience among the two categories of the respondents in both States. This reveals why the respondents readily participated in the project of the Adopted Village. This agrees with Nkonya *et al.* (2008) "The more the experience in farming, the more farmers are less likely to oppose participation in agricultural programme, as farmer's performance could have great influence on their participation". Furthermore, Nkonya *et al.* (2008) stated that experienced farmer will know the biophysical and socio-economic environment well and thus be able to make informed decisions on land management.

4.1.6 Marital status

The result in Table 2 also revealed that majority 83% of the respondents among the beneficiaries and 86% of the non-beneficiaries were married, while 17% and 14% were still single. This may contribute to the labour requirements on the farms as most of the farm operations are labour intensive (Ismailla, 2010). Thus, wives and children can serve as cheap source of labour which may lead to increase in their farm size, adoption of innovations and the overall level of farm productivity. This can translate into higher level of incomes to the farmers hence adoption of project.

4.1.7 Contact with NAERLS staff

Based on the result in table 2, it was found that all (100%) of the respondents among the beneficiaries had contact with NAERLS staff while 100% of the non-beneficiaries had no contact with NAERLS staff. About 32% of the beneficiaries had 1-3 times contact with NAERLS staff, 51% had 4-6 times contact with NAERLS staff. While none of the non-beneficiaries had contact with NAERLS staff. The maximum contact the respondents among the beneficiaries had with NAERLS staff was 8 times. Finally, only 17% of the respondents among the beneficiaries had 7-9 times contact with the mean contact of 2.4 times. The facts that majority (100%) of the respondents among the non-beneficiaries do not have any contact with the NAERLS staff could possibly be some of the reasons they did not benefit from the project. Majority (100%) of the respondents among the beneficiaries had contact with NAERLS staff. This might be due to the fact that NAERLS Staff were well equipped as a result of adequate training and funding. This finding is at variance with the finding of Adesoji (2009) that there was low level of extension contact among fish farmers in Osun State.

Table 2: Distribution of beneficiaries and non-beneficiaries by socio-economic characteristics (n=140)

Variables	Beneficiaries		Non-beneficiaries		
	Frequency	Percentage	Frequency	Percentage	
Age					
24-31	12	17	12	17	
32-39	9	13	21	30	
40-47	24	34	24	34	
48-55	13	19	8	11	
56-63	12	17	5	7	
Min=24	Max=60	Mean=43	Min=26	Max=60	Mean=41
Sex					
Male	49	70	56	80	
Female	21	30	14	20	
Education level					
Non-formal	5	8	8	11	
Primary	8	11	5	7	
Secondary	28	40	30	43	
Tertiary	29	41	27	39	

Household size

1-4	8	12	18	25	
5-8	33	47	27	39	
9-12	29	41	25	36	
Min=2	Max=12	Mean=8	Min=2	Max=12	Mean=7

Farming experience

3-7	4	6	9	13	
8-12	20	29	26	37	
13-17	23	33	26	37	
18-22	13	19	9	13	
23-27	10	13	0	0	
Min=3	Max=27	Mean=15	Min=5	Max=19	Mean=12

Marital status

Married	58	83	60	86
Single	12	17	10	14

Contacts with NAERLS Staff

No contact	0	0	70	70	
1-3	22	31	0	0	
4-6	36	51	0	0	
7-9	12	17	0	0	
Min = 0	Max = 8	Mean = 2.4	Min = 0	Max = 0	Mean = 0

4.2 Extension Intervention Activities Introduced to Beneficiaries of the Project in the Study Area

In this section the distribution of beneficiaries of the adopted village project according to the extension interventions introduced are presented. The result in Table 3 show the distribution of extension interventions activities such as input support, capacity building, farm techniques and innovations and facilitation support to the beneficiaries in the study area.

In the area of input support activities, majority of the respondents among beneficiaries in Abia and Oyo States, admitted that they were provided with fertilizers, insecticides and herbicides as this was ranked the foremost in both States. This was followed by the provision of improved seed, maize seed and cassava cuttings which was ranked 2nd and 3rd in Abia and Oyo State respectively. The result imply that beneficiaries' participating in the adopted villages project were adequately provided with farm inputs needed to increase their output as well as income which will in-turn improve their livelihood. The direct impact on crop output and income by this input supply will enhance the overall performance of the adopted village project. This is in line with the findings of Adeola *et al.* (2008) who reported that beneficiaries of the Federal Government Special Rice Programme on Rice Yield in Oyo State had an increased rice output as a result of improved rice seeds provided to the rice farmers.

In the area of capacity building, table 3 revealed that, respondents among the beneficiaries in Abia and Oyo State, were taught how to make soap, this was ranked 1st , while trainings on Vaseline making was ranked 2nd by the beneficiaries of the project in Abia and Oyo States. Vaseline and soap making were the major income generation intervention programmes as attested by the respondents in the adopted village project and so, majority of the beneficiaries were involved in them. According to Borode (2011) pomade (body cream) and soap making are major source of income for most women empowerment groups in Nigeria. Other capacity building interventions introduced to the beneficiaries includes; training on tie and die, making of spices, farm record keeping, groundnut extraction, training on how to own and assess a bank account. The result imply that, aside from farm activities, most of the beneficiaries were introduced to income generating activities which would serve as an additional source of income during the off farming seasons.

In the area of farm techniques and innovations, training on maize and cassava rapid multiplication and training on the use of pesticides were ranked 1st in Abia and Oyo States. This was followed by training on recommended spacing and method of planting which ranked 2nd in Abia State. Similarly training on use of tractor and other farm implement ranked 2nd in Oyo State. The introduction of these farm techniques and innovation could possibly be connected to the increase in crop output of the beneficiaries which was significantly higher than those of the non-beneficiaries of the project as seen in Table 4. Other farm techniques and innovations interventions introduced to the beneficiaries includes; maize, cassava and fish processing and utilization as well as sheep and goat entrepreneurship training.

In the area of facilitation support, linkage with produce market and linkage with input agencies were ranked 1st as part of the support provided by the project to the beneficiaries in Abia and Oyo States. Linkage with credit institution was ranked 3rd among beneficiaries in Oyo State. Similarly beneficiaries in Abia state participated in joint field days (ranked 3rd), farmers exchange visit (ranked 4th) and were linked with Bank of Agriculture (ranked 5th). This imply that Linkage with credit institution and input agencies is connected to farmers access to credit and inputs at cheaper rates and invariably reducing their cost of production. Similarly, the participation in joint field days and farmers exchange visits by the beneficiaries allows for interactions with other farmers and thus provide opportunities for improving knowledge and information sharing.

Table 3: Distribution of extension interventions activities introduced to the beneficiaries of the adopted villages project (n=140)

Extension Intervention Activities	Abia State		Oyo State	
	Freq*	Rank	Freq*	Rank
Input support				
Provision of fertilizers	32	1 st	23	2 nd
Provision of improved seed/breeds	24	2 nd	20	4 th
Provision of maize seed and cassava cuttings	21	3 rd	21	3 rd
Provision of insecticides and herbicides	20	4 th	27	1 st
Provision of livestock drugs	8	5 th	15	5 th
Capacity building				
Trainings on soap making	28	1 st	29	1 st
Trainings on Vaseline making	25	2 nd	19	2 nd

Trainings on tie and die techniques	18	3 rd	9	6 th
Groundnut extraction	14	4 th	12	4 th
Trainings on spices making	13	5 th	15	3 rd
Trainings on farm record keeping	11	6 th	9	6 th
Training on how to own and assess a bank account	8	7 th	10	5 th

Farm techniques and innovations

Recommended spacing and method of planting	32	1 st	16	4 th
Trainings on maize and cassava rapid multiplication	30	2 nd	19	3 rd
Trainings on maize, cassava and fish processing and utilization	25	3 rd	19	3 rd
Trainings on use of pesticides	22	4 th	27	1 st
Sheep and goat entrepreneurship training	19	5 th	12	5 th
Trainings on use of tractors and other farm implements	16	6 th	20	2 nd

Facilitation support

Linking with produce market	32	1 st	24	2 nd
Participation in joint field days	28	2 nd	16	6 th
Linkage with input agencies	26	3 rd	28	1 st
Participation in farmer exchange visit	23	4 th	19	4 th
Linkage with bank of agriculture (NACRBD)	20	5 th	8	7 th
Linkage with credit institution	18	6 th	20	3 rd
Participation in REFILS workshop	16	7 th	17	5 th

Multiple Response Allowed*

4.3 Impact of the Project on Output of the Respondents and Test of Hypotheses i.

The results of the impact of project on the crop output of the respondents are presented in Table 4. The mean crop output of the respondents among the beneficiaries and non-beneficiaries in study areas were subjected to z-test statistic. It was found that the mean crop output of the respondents among the beneficiaries and non-beneficiaries was 10827.86 kg and 9910.71kg. The difference between mean crop output value of beneficiaries and non-beneficiaries is 917.15kg. It indicates that the mean difference estimates of the crop output of beneficiaries and non-beneficiaries of the project had a positive value. The implication is that project had positive impact on the crop output of beneficiaries. A positive mean difference in crop output value indicates positive impact of project on beneficiaries' crop output (Nkonya *et al.*, 2008). Also, it was found that crop output of the beneficiaries was significantly different from the crop output of the non-beneficiaries counterparts at 1% level of significance at two-tail ($z=2.931; P<0.01$). The z-calculated (2.931) was greater than the z-critical (1.96) at two tail, therefore the null hypothesis was rejected and the alternate hypothesis accepted.

Table 4: Result of Z-Test statistic of the impact of project on the crop output of respondents (n=140)

Variable	Beneficiaries	Non-beneficiaries
	Output (kg)	Output (kg)

Mean	10827.86	9910.71
Standard deviation	757950	6096369
Observations	70	70
Hypothesized Mean Difference	0	
Z-stat	2.931***	
P(Z<=z) one-tail	0.00169	
Z-critical one-tail	1.644854	
P(Z<=z) two-tail	0.00338	
Z-critical two-tail	1.96	

*** P<0.01

4.3.1 Impact of the Project on income of the respondents and test of hypotheses i

The result of the impact of project on income of the respondents are presented in Table 5. The mean income of the respondents among the beneficiaries and non-beneficiaries in the study areas were subjected to z-Test statistics. It was found that the mean income of the respondents among the beneficiaries and non-beneficiaries was ₦634112.80 and ₦498,955.70. The difference between mean value of beneficiaries and non-beneficiaries is ₦135,157.10. It indicates that the mean difference estimates of the income of beneficiaries and non-beneficiaries of the project had a positive value. The implication is that project had positive impact on the income of beneficiaries. A positive mean difference in income value indicates positive impact of project on beneficiaries' income (Nkonya *et al.*, 2008). Also, it was found that income of the beneficiaries was significantly different from the income of the non-beneficiaries counterparts at 5% level of significance at two-tail ($z=2.281; P<0.05$). The z-

calculated (2.281) was greater than the z-critical (1.96) at two tail. Therefore the null hypothesis was rejected and the alternate hypothesis accepted.

Table 5: Result of Z-test statistic of the impact of project on income of respondents

Variable	Beneficiaries	Non-beneficiaries
	Income (₦)	Income (₦)
Mean	634112.8	498955.7
Standard deviation	1.95E+11	5.07E+10
Observations	70	70
Hypothesized Mean Difference	0	
Z-stat	2.281**	
P(Z<=z) one-tail	0.011265	
Z-Critical one-tail	1.644854	
P(Z<=z) two-tail	0.02253	
Z-Critical two-tail	1.96	

**P<0.05

4.4 Socio-economic and Institutional Factors Influencing the level of Participation of farmers in the Project and Test of Hypothesis ii

The result of multiple regression analysis as shown in Table 6 indicated that the coefficient of determination (R^2) was 0.609 which signified that about 60.9% of total variation observed in the dependent variable was explained by the explanatory variables (X_1 - X_{11}) included in the model. The fitness of the model was further confirmed by the low value of the standard error

of the estimate (Standard Error = 0.140). Again, the overall significance of the model was depicted by the F-statistics which was significant at 1% level of significance. The significance of F-ratio (5.133) shows that the regression result was statistically reliable.

Age (X_1) with the coefficient (0.03346) was found to be positive and statistically significant at 1% level of significance. This indicates that age positively influence the level of participation of farmers in the project. This in line with findings of Wynn *et al.* (2001) and Yusuf (2012) who found that younger farmers participate in agricultural programmes more readily than older farmers. The increased chance of participation in the project by younger farmers could be attributed to the fact that the project is a relatively new activity and younger farmers are more willing to take risks and are therefore more open to changes. Older farmers are assumed to have gained knowledge and experience over time and are better able to evaluate development projects than younger farmers (Mignouna *et al.*, 2011; Kariyasa and Dewi, 2011). This finding is at variance with the findings of Mauceri *et al.* (2005) and Adesina and Zinnah (1993) that as farmers grow older, there is an increase in risk aversion and a decreased interest in long term investment in the farm.

The coefficient (0.1088) of household size (X_3) was found to be positive and statistically significant at 1% level which signified a direct relationship with participation of farmers in the project. This is because households with larger size tend to attach greater importance to food security than those that are small in size. Similarly, participation in project involved greater seed production techniques and agronomic activities requiring increase in labour force. The relatively large household size may have provided the family labour needed on the farms,

hence supporting favourably, productive capacities of the farmers to increase their crop output. Muhammad et al., (2011) observed that household size is a significant factor ($p < 0.05$) influencing participation in Fadama II project. It suggests that individuals with large household size were likely to participate in the project as they appeared to have more family burden to contain with, in terms of social and economic services, and therefore need support to meet their family daily needs.

Income (X_6) with the coefficient (2.3) was found to be positive and statistically significant at 1% level of significance. This implies that an increase in income of the respondents will stir up increased amount invested in farming. This means that income highly enhances the participation of farmers in the project in terms of increased income. This is supported by Bonabana-Wabbi (2002) who reported that income of a farmer was key in choosing technologies to adopt. Equally with additional income, it is expected that more capital will be available for farmers to invest in their farm business.

Contact with NAERLS Staff (X_8) with the coefficient (0.1094) was found to be positive and statistically significant at 1% level of significance. This implies that participation of farmers in the project increases in direct proportion to frequent contacts with NAERLS Staff. The implication for this finding was that the greater the frequency of contact of NAERLS Staff with the farmers, the higher the chance to participate in the project. Frequent contact is likely to minimize doubts among farmers and ensure timely procurement of inputs to the farmers which would most probably encourage farmers participating in the project. This is confirmed

by Akinola *et al.* (2013) which revealed that increase in extension contact increases accessibility to information on improved technologies which in turn would increase beneficiaries' adoption of technologies introduced.

Access to inputs (X_9) with the coefficient (0.083) was found to be positive and statistically significant at 10% level of significance. This means that increased access to inputs highly enhances the participation of farmers in the project in terms of effective input supply. The positive coefficient may be connected to the earlier attestation by the beneficiaries, who confirmed that the project provided them with input support such as such as fertilizers, insecticides, pesticides, improved maize seed and cassava cuttings as seen in Table 3.

The coefficient (0.08145) of cooperative association (X_{10}) was found to be positive and statistically significant at 1% level of significance. Acquisition of information about a new technology demystifies and makes it more available to farmers. Information may change individual's assessment of policy objections to objectives over time (Caswell *et al.*, 2001). Exposures to information about new technology significantly affect farmer's choice about it. However, promotion of the farmers' organizations and reinforcing capacities of the producers will enhance access to improved services. This has implication for extension organizations to encourage farmers to form groups to enable them gain access to resources and improved farm inputs (Issa *et al.*, 2013; Iheke, 2010).

Amount of credit (X_{11}) with the coefficient (2.14E-06) was found to be positive and statistically significant at 1% level of significance. This means that amount of credit highly enhances the participation of farmers in the project in terms of effective linkage with credit institution. This result is at variance with the findings of Guirkerger (2006), and Gockel *et al.* (2002) who have shown that access to credit by SMEs is a constraining limit from financial institutions as a result of lending policies which determine the access problem. Easy access to loans encourages resource allocation which improves enhances participation in agricultural project. Coupled with this, large long term loans lower interest rates, sufficient grace period and credit period plus simple requirements for credit worthiness work jointly with credit accessibility to predict a vibrant participation in project for profitability and productivity.

The null hypothesis (H_0) which stated that socio-economic and institutional factors have no significant influence on the participation of farmers in the adopted village project in the study area was tested using the result of regression analysis presented in Table 6. Based on the result the null hypothesis is rejected because of the eleven variables included in the model, only six variables (age, household size, income, contact with NAERLS Staff, access to inputs, cooperative association and amount of credit) significantly influence beneficiaries participation in the adopted village project.

Table 6: Result of socio-economic and institutional factors influencing the participation of farmers in the project

Variable	Coefficients	Standard error	T -stat
Constant	1.024967	0.138971	7.375405

Age	0.03346***	0.003042	10.99998
Education	0.003155	0.004666	0.676072
Household size	0.108845***	0.012082	9.0089
Sex	0.008354	0.043335	0.192768
Marital status	-0.04922	0.077096	-0.63839
Income	2.30E-07***	3.46E-08	6.64E+00
Experience	0.003286	0.004201	0.782023
Contact with NAERLS Staff	0.10936***	0.008816	12.40531
Access to inputs	0.08334*	0.04424	1.883811
Cooperative association	0.08145***	0.007531	10.8154
Amount of credit	2.14E-06***	4.96E-07	4.31E+00
R Square	0.679		
Adjusted R Square	0.609		
F-ratio	5.133***		
Standard error	0.140		

*** P<0.01 and * P<0.1

4.5 Constraints Faced by the Beneficiaries Participating in the Adopted Village Project

The constraints faced by the beneficiaries participating in the adopted village project in the study areas are presented in Table 7. It was found that beneficiaries in Abia State and Oyo States ranked limited land as the foremost constraint faced. This finding agrees with that of Egbuna (2008) who identified some of the constraints to the development of urban agriculture in Nigeria to include poor access to land, lack of support services (credit, extension and inputs supply), theft of crops on the farm and high cost of labour among others. Storage facilities and high cost of production ranked second by the beneficiaries in Abia and Oyo States. Also, inadequate processing facilities and poor market ranked as third constraints faced by the beneficiaries, respectively. This problem causes the price of farm produce to fluctuate with season. Farmers are either forced to sell their produce at harvest at a very low price. This implies that there will be greater percentage of post-harvest loses of crop which may discourage farmers from increasing their production (Usman and Bakari (2013); Oyekanmi (2010). Poor storage and processing facilities, high cost of production and poor marketing of

produce. This is in line with the report of Afolami (2002) noted high inputs cost among tomato farmers in Ogun State. This implies that beneficiaries in the study areas would have had increased output as well as income but were hindered due to the constraint highlighted.

Table 7: Constraints faced by the beneficiaries participating in the adopted village project

Constraints	Beneficiaries in Abia State		Beneficiaries in Oyo State	
	Frequency	Rank	Frequency	Rank
Limited of land	32	1 st	35	1 st
Poor storage facilities	27	2 nd	11	5 th
Poor processing facilities	24	3 rd	9	6 th
High cost of production	21	4 th	30	2 nd
Poor Market	18	5 th	24	3 rd
Fertilizer shortage	13	6 th	21	4 th
Total	135*		130*	

Multiple Response Allowed*

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION, RECOMMENDATIONS AND CONTRIBUTION TO KNOWLEDGE

5.1 Summary

This study was designed to analyze Impact of NAERLS Adopted Village Project on Smallholder Beneficiaries' Livelihood in Abia and Oyo States. To achieve this, the study came up with five specific objectives. These were to: describe the socio-economic characteristics of beneficiaries and non-beneficiaries in the study area; identify the extension intervention activities introduced to beneficiaries of the project in the study area; assess the impact of the project on the livelihood (particular focus on the level of income and output of some selected crops) of the beneficiaries; determine the socio-economic and institutional factors that influence participation of the project in the study area and identify the constraints faced by the beneficiaries participating in the Adopted village project.

A multi-stage sampling technique were used for this study. First stage, two (2) States (Abia and Oyo) out of the 4 States (Abia, Rivers, Imo and Oyo) in the South where the NAERLS adopted villages are sited were purposively selected. Second stage, the only two (2) villages from the two States were selected for the study in the third stage, the entire thirty-two (32) direct beneficiaries in AmojiLodu-Imenyi and all the thirty-eight (38) direct beneficiaries in Dagilegbo-okolo were considered, giving a total of 70 respondents. On the other hand, 70 non-beneficiaries of the project was randomly selected from same villages to serve as control. The data for analysis was based on 2013/2014 cropping season and were collected through the use

of a structured questionnaires and analyzed using descriptive statistics such as frequency distribution, percentage and mean, Z-test statistics and multiple regression model.

The socio-economic characteristics of the respondents revealed that the mean ages of beneficiaries and non-beneficiaries were 43 and 41 years respectively. Majority (92%) and approximately (89%) of beneficiaries and non-beneficiaries did have formal educational qualification especially primary, secondary education and tertiary education. All (100%) the respondents among the beneficiaries had contact with NAERLS Staff, while all (100%) the respondents among the non-beneficiaries had no contact with NAERLS Staff.

In term of interventions introduced to beneficiaries by the project, beneficiaries were provided with fertilizers, insecticides and herbicides, improved seed/breeds and maize seed and cassava cuttings. The beneficiaries were taught how to make soap, Vaseline, tie and die, and spices. Other includes farm record keeping, groundnut extraction, training on how to own and access a bank account. The beneficiaries were also trained on the recommended spacing and method of planting, the use of pesticides, maize and cassava rapid multiplication, the use of tractors and other farm implements and maize, cassava and fish processing and utilization. Others includes sheep and goat entrepreneurship training. The beneficiaries were linked with produce markets, input agencies, credit institution, National Agricultural Cooperative and Rural Development Bank (NACRDB) and participation in joint field days.

It was also found that the mean annual income of the beneficiaries of the project was significantly higher than the mean annual income of the non-beneficiaries by ₦135,157.10 and z-value of 2.281 at 5% level of probability, likewise, the mean annual crop output of the beneficiaries of the project was significantly higher than the mean annual crop output of the non-beneficiaries by 917.15kg and Z-value of 2.931 at 1% level of probability. Based on this result the null hypothesis was rejected. It was found that age, household size, income, contact with NAERLS staff, access to inputs, cooperative association and amount of credit were the significant factors that influence participation of the project. These variables specified collectively accounted for 61% variation in the performance of the project by the beneficiaries.

Limited land was ranked as the foremost constraints of beneficiaries participating in the adopted village project. The result of the analysis further revealed that the respondents among the beneficiaries in Abia State mentioned poor storage and processing facilities more than the respondents in Oyo State, while the respondents among the beneficiaries in Oyo State mentioned high cost of production and poor market more than the respondents in Abia State.

5.2 Conclusion

Based on the findings of this study, it was concluded that the NAERLS Adopted Villages Project had significant impact on the livelihood of its beneficiaries as indicated by a positive mean difference in crop output value as well as income between the beneficiaries and non-beneficiaries of the project.

It was also established that beneficiaries' participation in the NAERLS Adopted Village Project was significantly influenced by beneficiaries' socio-economic characteristics such as age, household size, income as well as institutional factors such as contact with NAERLS staff, access to inputs, cooperative association and amount of credit. These variables specified collectively accounted for 61% variation in the performance of the project by the beneficiaries. However, variables like education, sex, marital status, and farming experience were not found to significantly influence the performance of the project.

5.3 Recommendations

Based on the findings, the following recommendations are made:

- i. It was found that the interventions had positive impact on the mean annual income and crop output of beneficiaries. It is recommended that farmers should be linked to source more loans through cooperative association and make it available to members, so that farmers could expand production and embark on large scale crop farming and also mechanized farming; this would further improve their living standard and participation in the Adopted Village Project in the study area.
- ii. From the result of regression analysis, contact with the NAERLS staff was found to influence the level of participation of beneficiaries in the adopted village project at 1% level of significance. It is recommended that Adopted Village Project should be scaled up and out, that is, the NAERLS should intensify its efforts in the already adopted villages and replicate the project in other neighboring villages.

- iii. Most of the respondents complained of limited land as foremost constraints in participating in Adopted Village Project. To address this, government can acquire large expanse of land and lease out to the farmers at reduced rate. This approach would enhance access to land and reduces the land rental value. The abandoned lands of the defunct River Basin Development Authorities lying idle in most States of the federation can serve this purpose. The Land Use Act of 1990 in Nigeria should be reviewed to facilitate access to land by landless peasantry who produce bulk of the agricultural produce.

- iv. Poor market as part of the constraints faced by beneficiaries of the project in the study area. Farmers should form a production clusters to improve their market intelligence. This could be achieved through their cooperatives association. In each group there should be an advisory committee trained in various aspects of marketing which will be able to have access to up-dated pricing information and make it available to farmers on time.

5.4 Contribution to Knowledge

- 1. The mean annual income and crop output of the beneficiaries of the project was significantly higher than the mean annual income and crop output of the non-

beneficiaries by ₦135,157.10 and 917.15kg at 5 and 1% levels of probability, respectively.

2. Beneficiaries in Abia and Oyo State were provided with fertilizers, insecticides and herbicides which were ranked 1st, improved seed/breeds ranked 2nd, while maize seed and cassava cuttings ranked 3rd.
3. Age, household size, income, contact with NAERLS staff, access to inputs, cooperative association and amount of credit significantly influenced participation (61%) of the NAERLS adopted village Project.

REFERENCES

- Adeola, S. S. (2010). *Economic of Insecticide Usage among Cowpea Farmers in Kaduna State, Nigeria*. Unpublished M.Sc. Thesis, Department of Agricultural Economics and Rural sociology, Ahmadu Bello University, Zaria. 48-49
- Adeolu, B.; Anyanwale, O. and Alimi, T. (2004). "Micro Financing as a Poverty Alleviation Measure": A gender Analysis. *Nigerian Journal of Social Science*, 9(2):111-117
- Adesehinwa, A. (2002). Production Strategies for Coping with Demand and Supply of Pork in Some Peri Urban Areas of Southern Nigeria. *Livestock Research for Rural Development*. Ibadan, Nigeria. No. 15 (10): 10 – 19
- Adesina, A., and Zinnah, M. (1993). Technology Characteristics, Farmers' Perceptions and Adoption Decisions: a Tobit model analysis in Sierra Leone. *Agricultural Economics*, 1-7
- Adesoji, S. A. (2009) Assessment of Fish Farming Management Practices in Osun State Nigeria Unpublished Ph.D Thesis Obafemi Awolowo University. Ile-Ife Nigeria. 4-10
- Adewale, J. G.; Oladejo J. A. and Ogunniyi, L. T. (2003). Economic Contribution of Farm Children to Agricultural Production in Nigeria. *Journal of Social Science*, 10(2): 149 – 152.

- Afolami, C. A. and Ayinde, I. A. (2002). Economics of Tomato Production in Yewa North Local Government Area of Ogun State, Nigeria. *Agro-Science Journal of Tropical Agriculture, Food, Environment and Extension*. 1 (1&2):17 - 23.
- Agbelemoge, A.; Adedoyin, S. F. and Oladoyin, S. D. (2001). "Farmers" Related Factors and Adoption of Cocoa Rehabilitation Technology in Oluyole Local Government Area of Oyo state Nigeria. *Moor Journal of Agricultural Research, IAR&T, Moor Plantation, Ibadan*.
- Agricultural Research Council of Nigeria - ARCN (2011). Implementation of the Adopted Villages and Agricultural Research Outreach Centres (AROCs) by the National Agricultural Research Institutes (NARIs) and Federal Colleges of Agriculture (FCAs). *A Draft Document*. July, 2011. 256-340
- Akinola, M.O.; Odu, M.E and Baiyegunhi, L.J.S. (2013). The Adopted Village Project and Farm Income of Beneficiary Households in Kaduna State, Nigeria. *Journal of Stud tribes Tribal*. 11(2):121-126.
- Amos, T.T. (2007). An Analysis of Productivity and Technical Efficiency of Small Holder Cocoa Farmers in Nigeria. *Journal of Social Sciences*, 15(2): 127-133.
- Arnon, I. (1987). Modernization of Agriculture in Developing Countries. *A wiley interscience Publication. Israel*. Pp. 199.
- Asika, N. (2001). Research Methodology in Behavioural Sciences. Longman Plc, Lagos State, Nigeria. 54-60
- Atala, T.K. and Hassan, M.B (2012). Adopted Village Concept and Vision 2020. A paper Presented at the North West Zonal Refils Workshop, held at the Institute for Agricultural Research, Ahmadu Bello University Zaria. 23-24.

Babaleye, T. (2000). Disseminating Information on new Crops in Africa, Agbati

Village, Alakia, P. O. Box 6869, Agodi, Ibadan Nigeria.15-21

Banmeke, T. O. A. and Ajayi, M.T. (2005). Job Satisfaction of Extension Workers in Edo State Agricultural Development Programme (EDADP) Nigeria. *International journal of Agricultural and Rural Development*. 6:202-207.

Biradar, B.J. (2008). A Study on Impact of Income Generating Activities on Sustainable Rural Livelihoods of Kawad Project Beneficiaries. Unpublished M.Sc. Thesis, University of Agricultural Sciences, Dharwad, India. 34-38

Bonabana-Wabbi, J. (2002). Assessing Factors Affecting Adoption of Agricultural Technologies: The Case of Integrated Pest Management (IPM) in Kumi District, Eastern Uganda. Master's Thesis Submitted to the Virginia Polytechnic Institute and State University, Blacksburg Virginia, USA. 47-50

Borode, M. (2011). Empowering Women through Credit Facilities for Sustainable Development in the Developing Countries. *International Journal of Vocational and Technical Education*. 3(4): 49-52.

Caswell, M.; Fuglie, K.; Ingram, C.; Jans, S. and Kascak, C. (2001). Adoption of Agricultural Production Practices: Lessons Learned from the US Department of Agriculture Area Studies Project, Washington DC. US Department of Agriculture, Resource Economics Report No. 792. January 2001. 41-43

Centre for Technical Agriculture (1996). In:Nwosu, I.E (2013). Theories of Rural Development in: Nwachukwu, I. (2013): Agricultural Extension and Rural Development. Lamb House Publishers, Umuahia. 218-224.

Dekker, M. (2002). "Resettlement and Livelihood; Support Network and Crises Situation". Paper Presented at Albany Summer School, U.S.A. June, 2002.

Department for International Development DFID (1999). Sustainable Livelihoods Guidance Sheets. Department for International Development, London, GB. 987-991

Duze, M. and Mohamed, Z.I. (2006). Male Knowledge, Attitudes, and Family Planning Practices in Northern Nigeria. *African Journal of Reproductive Health*, 10 (3): 53-65.

Edi, D.; Paola, G.; Ford, R. and Samuel, T. (2007). "Factors Affecting Farmers Participation in Agric-environmental Measures: A Northern Italian Perspectives". *Journal of Agricultural Economics*. Prince-Ville Publishers, Rome. 59(1) 114-131.

Egbuna, N. E. (2008). Urban Agriculture: A Strategy for Poverty Reduction in Nigeria. CBN Abuja, Nigeria. 184-192

Egwemi, V. and Odo, L.U. (2013). Rural Development and Poverty Eradication in Nigeria in: *JORIND*, 11(1):101-108

Ekong, E.E. (2010). An Introduction to Rural Sociology, Dove Educational Publishers, Uyo, Nigeria. 234-242

Emeka, O.M. (2007). Improving the Agricultural Sector toward Economic Development and Poverty Reduction in Nigeria. *CBN Bullion*, 4: 23-56.

Farinde, A. J.; Ogunsumi, L.O.; Omoyajowo, A. O. and Oyegbami, A. (2005). Farmers'

Involvements in the Transfer of Improved Cassava Technologies in Delta State, Nigeria. *International Journal of Applied Agricultural Research*. 1:13 – 24.

Frankenberger, T.R. and McCaston, M.K. (1988). Household Livelihood Security: CARE, USA, 11.

Gockel, A. G. and S. K. Akoena, (2002). Finance international for the poor: Credit demand by micro, small and medium scale enterprises in Ghana. A further Assignment for Financial Sector Policy? *IFLIP Research Paper 02-6*, International Labour Organisation. 18(3), 150-159.

Guirking, C. and Boucher, S. (2006). Credit Constraints and Productivity in Peruvian Agriculture. *Agriculture and Resource Economics*: University of California: Davis. 234-244

Iheke, S. O. (2010). Market Access, Income Diversification and Welfare Status of Rural Farm Households in Abia State, Nigeria. *The Nigeria Agricultural Journal*, 41(2):13-17.

Ijioma, J.C. (2013). Social Change in Rural Areas in: Nwachukwu, I. (2013). *Agricultural Extension and Rural Development*. Lamb House Publishers, Umuahia. 218-224

Ikotun, A. (2002). Strategies for Promoting Integrated Rural Development in Nigeria: Theory and Practice. Badagry: Matram. 189-212

Institute for Agricultural Research and Technology (2011). *Institute for Agricultural Research and Technology Adopted Villages Report 2012*. 22-23.

International Agricultural Extension General (IAEG) (1999). Metrological Review and Synthesis of Existing Ex- Post Impact Assessments, Reports 1,2 and 3

Ismaila, U.; Gana, A.S.; Tswana, N.M. and Dogara, D. (2010). Cereals Production in Nigeria: Constraints and Opportunities for Betterment. *African Journal of Agricultural Research*, 5(12):1341-1350. Retrieved September 1st, 2012 from <<http://www.academicjournals.org/AJAR>>

Issa, F. O.; Akolade, G. O. and Auta, S. J. (2013). Cooperative Policies and Administration in the Attainment of MDGs: Challenges and Opportunities for Extension Service Delivery. *Journal of Agricultural Economics and Extension Research Studies*, 2(1): 34-48.

Izuchukwu, O. (2011). Analysis of the Contribution of Agricultural Sector on the Nigerian Economic Development. *World Review of Business Research*, 1(1):191-200

Kariyasa, K. and Dewi, A. (2011). Analysis of Factors Affecting Adoption of Integrated Crop Management Farmer Field School (Icm-Ffs) in Swampy Areas. *International Journal of Food and Agricultural Economics*, 1(2): 29-38

Kolawole, A. (1990). Constraints to Farmers' Participation in Large Scale Irrigation Project in Nigeria: Proceedings of National Workshop on Farmers' Participation in Irrigation Development and Management. Institute of Agricultural Research (IAR), Zaria, May, 7th-8th. 17-21

Lawal-Adebowale, O. A. and Oyegbami, A. (2004). Determinants of Seasonal Arable Crop Production Among Selected Farmers in Ogun State. *Moor Journal of Agricultural Research*. 5: 49 – 58.

Lawal, B. O.; Saka, J. O.; Oyegbami, A. and Akintayo, I. O. (2004). Adoption and

Performance Assessment of Improved Maize Varieties Among Small holder Farmers in Southwest Nigeria. *Journal of agriculture and food information*. 6:35 – 47.

Mauceri, M.; Alwang, J.; Norton, G. and Barrera, V. (2005). Adoption of Integrated Pest Management Technologies: A Case Study of Potato Farmers in Carchi, Ecuador; Selected Paper prepared for Presentation at the American Agricultural Economics Association Annual Meeting, Providence, Rhode Island, July 24th -27th. 32-38

Mayong, V.M.; Ikpi, A.; Olayemi, J.K.; Yusuf, S.A. and Omonona, B.T. (2005). Agriculture in Nigeria: Identifying Opportunities for Increased Commercialization and Investment. *USAID/IITA/UI Project Report*. Ibadan, Nigeria. 57- 74

McCaston, M.K. (1998). The household livelihood security concept. *Food, Nutrition and Agriculture*. 22:30-35.

Mignouna, B.; Manyong, M.; Rusike, J.; Mutabazi, S. and Senkondo, M. (2011). Determinants of Adopting Imazapyr-Resistant Maize Technology and its Impact on Household Income in Western Kenya: *AgBioforum*, 14(3), 158-163.

Meinzen-Dick, R. (2001). "Assessing the Impact of Agriculture Research on Poverty Using the Sustainable Livelihood frame work". International Food Policy Research Institute Ithaca, USA. 18-20.

Muhammad, H.U.; Umar, B.F.; Abubakar, B.Z. and Abdullahi, A.S. (2011). Assessment of Factors Influencing Beneficiary Participation in Fadama II Project in Niger State, Nigeria. *Nigerian Journal of Basic and Applied Science*, 19 (2): 248-252.

Mustapha, S. B.; Gwary, M. M.; Nuhu, H. S. and Samaila, P. A. (2012) Assessment of the Effectiveness of Lake Chad Research Institute "Adopted Village Scheme" in the Dissemination of Improved Farm Technologies in Borno. *International Journal of Science and Technology*, 2(12):837-842

National Agricultural Extension and Research Liaison Services (2014). A Report on Adopted Village Concept for Agricultural Technology Transfer: NAERLS Experience (1)32-40

National Population Commission (2006). Census Figure.

Nkom, S.A. (1995). The Modernization approach to Rural Development: Theoretical Synthesis and Critique in Nwanunobi, C.O; Ukaegbu, C.C. and Igbo, E. (1995):

Innovative Approaches to Rural Development in Nigeria. Auto Century Publishers, Enugu, Nigeria. 89-96

Nkonya, E.; Pender, J. and Kato, E. (2008). Who knows who cares? The Determinants of Enactment, Awareness and Compliance with Community Natural Resource Management Regulations in Uganda. *Environment and Development Economics*, 13(1), 79–109.

Nwosu, I.E. (2013). Theories of Rural Development in: Nwachukwu, I. (2013). Agricultural Extension and Rural Development. Lamb House Publishers, Umuahia. 218-224

Ocheni, S. and Nwankwo, B.C. (2012) Analysis and Critical Review of Rural Development Effort in Nigeria, 1960-2010 in: *Studies in Sociology of Science*, 3(3): 48-45

Ogunbameru, B. O. (2001). Practical Agricultural Communication, Ibadan, Daily Graphic Publications. Ibadan. 104-106.

Ojuekaiye, E. O. (2001). Economic Analysis of Cassava Production in Three Local Government Areas of Kogi State. Unpublished M.Sc Thesis, Department of Agricultural economics and Rural Sociology, ABU, Zaria. 34-38

Okoedo-Okojie, D.U. and Onemolease, E.A. (2009). Factors Affecting the Adoption of Yam Storage Technologies in the Northern Ecological zone of Edo State, Nigeria. *Journal of Human Ecology*, 27(2): 155-160.

Oladeji, J. O.; Oyedokun, A. O. and Bankole, M. B. (2001). Youth Activities and Constraints to Community Development in Akoko – North, Ondo State, Nigeria. *Journal of Agricultural Extension*, 13(1).147-159

Olajide, O.T.; Akinlabi, B.H. and Tijani, A.A. (2012). Agriculture Resource and Economic Growth in Nigeria. *European Scientific Journal*, 8(22): 103-115.

Oni, C. and Yusuf, H. (1999). Improved Genetic Stock for Nigeria. Longman Publishers, London.54-56

Onyebinama, I.C. and Onyebinama, U.A.U. (2010). Extension Education and Entrepreneurship Development in Nigerian Agriculture. *Agricultural Journal*. Scientific Research Publishing Company. 5(2): 63-69

Oyekanmi, M.O. (2010). Determinants of post-harvest losses in tomato production. *Journal of Life and Physical Science*. ACTA SATCH 3(2): 1418.

Oruche, E.N.; Atala, T.K.; Akpoko, J.G. and Chikaire, J. (2012). Impact of the National Special Programme for Food Security on Livestock Farmers in Ideato South Local Government Area of Imo State, Nigeria. *Greener Journal of Agricultural Sciences*. 2(6):251-258.

- Oyegbami, A.; Lawal, B.O. and Salahu, B.F. (2007). Attitude of women towards participation in community development projects in Ido Local Government Area of Oyo State. In Ladele, A.A (ed): *Proceedings of the 16th Annual National Congress of the Nigerian Rural Sociological Association*. 115-121.
- Peter, O. (1991). Project with the People: The Practice of Participation in Rural Development. International Labour Organization, Geneva. 342-356
- Pretty, J.N. (1995). Participatory Learning for Sustainable Agriculture. *World Development* 23: 1247-1263.
- Rahaman, S. A.; Ogungbile, A. O. and Tabo, R. (2002). Factors Affecting Adoption of ICSV III and ICSV 400 Sorghum Varieties in Guinea and Sudan Savannah of Nigeria. *Journal of Agroforestry and Environment*, 1(1), 21-32.
- Rogers, E.M. (1995). Diffusion of Innovations 4th Edition: Free Press New York. 48-52
- Sinkaye, T. and Ajayi, A.O. (2012) Participatory Rural Appraisal and Planning Methodologies for sustainable Development. Society for Initiatives in gender and Development Publishers. Kwara, Nigeria. 4-6
- Thornton, P.K.; Kristjanson, P.M. and Thorne, P.J. (2003). Measuring the potential impacts of improved food-feed crops: methods for ex ante assessment. *Field Crops Research* 84 (2003) 199-212.
- Usman, J. and Bakari, U.M. (2013). Profitability of Small Scale Dry Season Tomato (*Lycopersicon esculentum* Mill.) Production in Adamawa State, Nigeria. *ARPN Journal of Science and Technology*.3 (6):604-612.
- Wilbert, M. (2003). In: an Introduction to Rural Sociology. Second Edition. Dove Educational Publishers, Uyo, Nigeria. Pp. 259

World Bank (2007). Rural Development. Washington DC: World Bank. 1231-1323

APPENDICE: FARMER QUESTIONNAIRE

Project Beneficiaries [] Non-project Beneficiaries []

Instructions: This questionnaire is for research purpose only, kindly tick or fill the appropriate spaces provided.

Section A: Background Information of Respondents

- i. Name of respondents _____
- ii. Village _____
- iii. LGA _____

Section B: Socio Economic Characteristics of respondents

1. Age: _____
2. Sex: a. Male [] b. Female []
3. Marital status: a. Single [] b. Married []
4. Highest educational attainment of respondents
 - a. Non formal education []
 - b. Primary education [] _____ year
 - c. Secondary education [] _____ year
 - d. Tertiary education [] _____ year
5. Household size _____ people
 - a. No wives _____
 - b. No of children M _____ F _____
6. How long have you been farming? _____
7. Which non-farm activities do you engage in?
 - a. Trading []
 - b. Tailoring []
 - c. Craft work []
 - d. Blacksmithing []
 - e. Repair services []
 - f. Government work []

- g. Others (specify): _____
8. Estimate how much you earn annually from these other sources of income?

9. Give estimate of your total farm size _____ ha
10. Do you have any contact with NAERLS staff?
a. Yes [] b. No []
11. If yes, how often do you have such contacts
a. Weekly [] e. Seasonally []
b. Bi-weekly [] f. Yearly []
c. Monthly [] g. Occasionally []
d. Bi-monthly []
12. Are you satisfied with the frequency of the contact
a. Yes [] b. No []
13. Have you obtained any cash credit?
a. Yes [] b. No []
14. If yes, what were your sources of such cash credit?
a. Commercial banks [] d. Agricultural banks []
b. Cooperative societies [] e. Money lender []
c. Friend and relatives [] f. Others (specify) _____
15. Do you belong to any cooperative association or social organization?
a. Yes [] b. No []
16. If yes, how long have you been member of the cooperative association?

Section C: Project activities involved by the beneficiaries.

(For NAERLS adopted village project beneficiaries only)

17. How long have you been a participant in the NAERLS village adopted programmes?
_____ years.

18. Which of the following NAERLS adopted villages project activities have you benefited/participated from? (tick)

Activities	Tick
Input Support	
Provision of insecticides and herbicides	
Provision of fertilizers	
Provision of improved seed/breeds	
Provision of livestock drugs	
Provision of yam and cassava cuttings	
Others, specify	
Capacity Building	
Training on farm record keeping	
Training on soap making	
Training on vaseline making	
Training on spices making	
Groundnut oil extraction	
Training on tie and die techniques	
Training on how to own and assess a bank account	
Others, Specify	
Farm techniques and innovations	Tick

Trainings on use of pesticides	
Trainings on use of Tractors and other farm implements	
Trainings on, yam, cocoa, cassava rapid multiplication	
Recommended spacing and method of planting	
Trainings on maize, cassava, fish processing and utilization	
Sheep and Goat entrepreneurship training	
Others specify	
Facilitation support	
Linkage with credit institution	
Linkage with produce market	
Linkage with input agencies	
Linkages with Bank of Agriculture (NACRDB)	
Participation in joint field days	
Participation in farmer exchange visit	
Participation in REFILS workshop	
Others specify	

D. Impact of the NAERLS adopted village project

19. What were your outputs for the crops cultivated during the last cropping season (2014) in kg?

Crop	Land area cropped(ha)	Total output(kg)
Maize		
Cassava		
Others specify		

20. Please indicate your total farm income (N) _____

21. Is NAERLS adopted village project beneficial to you?

a. Yes [] b. No []

22. If yes, in what way(s)? Please tick more than 1 if applicable.

a. I was able to access and use improved technology []

b. I was able to obtain loan []

c. I was able to increase my farm size []

d. I was able to increase my farm output []

e. Able to increase farm income []

f. Others (specify) _____

23. If question 21 is no, indicate your reason for your answer _____

24. Farmers' indicators for their level of participation in the Adopted Village Project.

What are your level of participation in the NAERLS Adopted Village Project activities?

Please Tick

S/No	Participation indicators	High =3	Moderate=2	Low=1
1	Training on soap and Vaseline making			
2	Training on maize and cassava multiplication.			
3	linkage with credit institution			

4	Farm Input access			
5	Participation in joint field days and farmers exchange visit			

E. Constraints of the respondents with respect to participation in the NAERLS Adopted Village Project

25. Have you encountered any problems as a result of participating in the NAERLS Adopted Village Projects? Yes [] b. No []

b. If yes, (specify)

25. Was any of your farming practices, activities, culture or religion altered as a result of the NAERLS adopted village activities in your village?

a. Yes [] b. No []

26. What general suggestion can you give to solve the problems specified above and improve the NAERLS Adopted Village Project?

Thank you for your cooperation