

**ROLE OF FADAMA III PROJECT IN EMPOWERING FADAMA WOMEN  
FARMERS TOWARD ATTAINING FOOD SECURITY IN  
BENUE STATE, NIGERIA.**

**By**

**Ibitoye Chris BOLUWAJI**

**DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL  
SOCIOLOGY,  
FACULTY OF AGRICULTURE, AHMADU BELLO UNIVERSITY, ZARIA**

**DECEMBER, 2014**

**ROLE OF FADAMA III PROJECT IN EMPOWERING FADAMA WOMEN  
FARMERS TOWARD ATTAINING FOOD SECURITY IN  
BENUE STATE, NIGERIA**

**BY**

**Ibitoye Chris BOLUWAJI  
(M.Sc./Agric/11239/2010-2011)**

**A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES,  
AHMADU BELLO UNIVERSITY, ZARIA, IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF  
SCIENCE (M.Sc) IN AGRICULTURAL EXTENSION AND RURAL SOCIOLOGY**

**DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY,  
FACULTY OF AGRICULTURE,  
AHMADU BELLO UNIVERSITY, ZARIA**

**DECEMBER, 2014**

## DECLARATION

I hereby declare that this thesis titled “**Role of Fadama III Project in Empowering Fadama Women Farmers toward Attaining Food Security in Benue State, Nigeria.**” was written by me and it is the record of my research work. No part of this work has been presented in any previous application for another degree at any institution. All references cited were duly acknowledged.

---

**Ibitoye Chris BOLUWAJI**

(Student)

---

**Date**

## CERTIFICATION

This thesis titled “**Role of Fadama III Project in Empowering Fadama Women Farmers toward Attaining Food Security in Benue State, Nigeria.**” by **Ibitoye Chris BOLUWAJI** meets the regulations governing the award of the degree of Master of Science (M.Sc) in Agricultural Extension and Rural Sociology of the Ahmadu Bello University, Zaria. It is adequate in scope and is approved for its contribution to knowledge and literacy.

---

**Prof. S.J. Auta**  
Chairman, Supervisory Committee

---

**Date**

---

**Dr. M.W. Musa**  
Member, Supervisory Committee

---

**Date**

---

**Prof. Z. Abdulsalam**  
Head, Department of Agricultural  
Economics & Rural Sociology

---

**Date**

---

**Prof. A.Z. Hassan**  
Dean, School of Postgraduate Studies  
Ahmadu Bello University, Zaria

---

**Date**

## **DEDICATION**

This thesis is dedicated to those millions of people experiencing food insecurity in the midst of abundance, human beings with a conscience and a heart.

## ACKNOWLEDGEMENTS

My greatest appreciation goes to God Almighty who is worthy and to Him alone be the glory.

Special thanks to my supervisors: Prof. S.J. Auta and Dr. M.W. Musa for their constructive comments, guidance and encouragement towards the success of this work and the privilege to tap from their wealth of experiences and I will be forever an example of dedicated tutoring and attention.

My deepest appreciation to my parent and families who have brought me up to this stage of life: the Boluwaji, Ilebani, Owa, and the Akingbemila family. To my brothers and sisters, I thank you all for your love, your prayers and financial support. I will not forget the families of Pastor and Mrs. Solatiti Olukoya, for their tireless support and for believing in me. Your kind is rare to find. God bless you and may you live to enjoy the fruit of your labour. Amen.

I sincerely appreciate the Head of Department, Prof. Z. Abdulsalam and all my lecturers in the Department for being part of the instrument in the process of my making and for their contribution to the success of this research work.

Finally, I wish to express my appreciation to all my colleagues and friends during my M.Sc. program and to everyone who has contributed toward the success of this research work. Am grateful to S.O Oyewole for your advice, support and encouragement, Joel W., Oyinbo, Austine S. Ilori Oluwatoyin, Bisi Ilebani, Osebeyo Toyin., Jide, Saheed, James, Demola, Solomon, Philip, Seyi, Grace, Tofunmi, Tosin, Kemisola and Faith for your support and scholarly advice.

## TABLE OF CONTENTS

Contents	Pages
Title page.....	i
Declaration.....	ii
Certification.....	iii
Dedication.....	iv
Acknowledgements.....	v
Table of Contents.....	vi
List of Tables.....	ix
List of Figures .....	x
Abstract.....	xi
<b>CHAPTER ONE: INTRODUCTION</b>	
1.1 Background to the Study.....	1
1.2 Problem Statement.....	4
1.3 Objectives to the Study.....	6
1.4 Justification to the Study.....	7
1.5 Hypothesis.....	8
<b>CHAPTER TWO: LITERATURE REVIEW</b>	
2.1 Women Farmers in Agriculture and Development.....	9
2.2. Women’s Programs.....	11
2.3 Constraints Facing Rural Women Farmers .....	12
2.4 Rural Women Farmers and House-Hold Food Security.....	15
2.4.1Food Security.....	15

2.4.2 Determinants of Household Food Security among Rural Women Farming Household.....	19
2.5 The Fadama Project.....	20
2.5.1 Fadama III Project Strategy.....	24
2.6 Overview of Agricultural Participatory Extension Approach.....	26
2.6.1 Shift in Extension Paradigm.....	29
2.7 Women Empowerment.....	32
2.8 Theoretical Framework.....	35
2.8.1 Theory of Social Change.....	35
<b>CHAPTER THREE: METHODOLOGY</b>	
3.1 Study Area.....	40
3.2 Sampling Procedure and Sample Size.....	42
3.3 Method of Data Collection .....	44
3.4. Analytical Techniques .....	45
3.4.1 The Descriptive Statistics.....	45
3.4.2 Inferential Statistics.....	46
3.5. Multiple regression analysis.....	46
3.6 Definition and Measurement of Variables.....	46
3.6.1Independent Variables.....	47
3.6.2 Dependent Variable.....	49
3.8 Hypothesis Testing.....	49
<b>CHAPTER FOUR: RESULTS AND DISCUSSION</b>	
4.1 Socio-Economic characteristics of Fadama Women Farmers.....	50
4.1.1 Distribution of Fadama Women Farmers by their Age.....	51
4.1.2 Distribution of Fadama Women Farmers According to Marital Status.....	51



4.1.3 Distribution of Fadama Women Farmers by their Household Size.....	51
4.1.4 Educational Level of Fadama Women Farmers.....	52
4.1.5 Mode of Land Ownership of Fadama Women Farmers .....	53
4.1.6 Distribution of Fadama Women Farmers by their Farming Experience.....	53
4.1.7 Distribution of Fadama Women Farmers by Farm Size Owned and Cultivated.....	54
4.1.8 Years of Membership of Association of the Fadama Women Farmers .....	55
4.1.9 Number of Facilitation / Extension Visits of the Fadama Women Farmers .....	56
4.1.10 Number of times Fadama Women Farmers Received Trainings.....	56
4.1.11 Credits Obtained by Fadama Women Farmers .....	57
4.2 Food Security Status of the Fadama Women Farmers .....	60
4.3 Regression Analysis of Factors Influencing the Fadama Women Farmers Food Security Status.....	62
4.4 Perception of Fadama Women Farmers to the Fadama III Project.....	65
4.5 Benefits of the Fadama III Project towards attaining Food Security.....	67
4.6 Constraints of Fadama Women Farmers towards attaining Food Security.....	68
<b>CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS</b>	
5.1 Summary.....	70
5.2 Conclusion.....	72
5.3 Contributions to knowledge.....	72
5.4 Recommendations.....	73
<b>REFERENC ES</b> .....	75
<b>APPENDIX 1</b> .....	88

## LISTS OF TABLES

Tables	Pages
Table 3.1: Representation of the Sampling Procedure and the Sample Size of the Study Area.....	44
Table 4.1: Socio-Economic characteristics of Fadama Women Farmers in Benue State.....	59
Table 4.2 Distribution of the Fadama Women Farmers Based on Food Security Status.	62
Table 4.3 factors influencing the Food Security Status of the Fadama Women Farmers.....	65
Table 4.4: perception of the Fadama Women Farmers to the Fadama III Project in the study area.....	67
Table 4.5: Distribution of Fadama Women Farmers Based on Benefits Derived from Fadama III Project.....	68
Table 4.6 Constraints of Fadama Women Farmers towards attaining Food Security .....	69

## **LIST OF FIGURES AND APPENDIX**

Figure 1: Map of Benue State showing the Study Area.....	42
Figure 2: Chat Showing the Food Security Status of the Women Farmers.....	62
Appendix: Farmers research questionnaire.....	88

## Abstract

The study assessed the role of Fadama III Project toward women empowerment for household food security in Benue state, Nigeria. The specific objectives were to describe the socio-economic characteristics of the Fadama Women Farmers; determine the food security status of the Fadama Women Farmers; determine the factors influencing the Food Security Status of the Fadama Women Farmers; assess the perception of the Fadama Women Farmers to the Fadama III Project; assess the benefits of the Fadama III project to the Fadama Women Farmers toward attaining food security and examine the constraints of Fadama Women Farmers toward attaining food security in the study area. A multi-stage sampling procedure was used to select 173 farmers randomly for the study. Primary data and secondary sources of information were used and results were collected with the aid of structured questionnaire administered to the Fadama Women Farmers. Descriptive statistics and inferential statistic such as multiple regressions were used to analyze data including food security score tool. The results revealed that 78% of the women farmers were within 31-50 years. Only 4% were below 30 years of age. The mean age of the farmers was 43years. Only 5% of the Fadama Women Farmers were single while 65% of the women farmers were married. A total of 64% of the farmers had 4-6 members in their household and the average household size is 6 members. The result also showed that 79% had between 11-30 years of farming experience while only 2% had farming experience greater than 50 years. Only 25% do not have any form of formal education. All the Fadama Women Farmers had one form of Extension contact during the cropping season. It was found that only 8% had no access to credit. The socio-economic characteristics of the Fadama Women Farmers found to be significantly related to the food security in the study area were: farm size significant at 0.1 or 10%, extension contact, access to credit and membership of association were significant at 0.01 or 1% respectively. The findings revealed that Fadama III project has been highly beneficial in the area of empowering the women farmers through access to credit, service disbursement, capacity building through training, access to farm input and access to market. The study also found out that 25% of the Fadama Women Farmers were highly food secured, 53% were marginally food secured, 19% were low food secured and 3% were relatively low food secured. These results showed the positive impact of the Fadama III project to the women farmers. Major problems encountered by the women farmers in the study area were labour shortage (93%), pest and disease infestation (92%) and poor access to market (32%). The study recommended that Community Driven Development Approach (CDD) of the Fadama III project should be encouraged amongst women farmers as it helps in empowering and building the capacity of the women farmers towards attaining food security.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1: Background to the Study**

Nigeria is an agrarian society with about 70% of her over 140 million people engaged in agricultural production (CBN, 2006). Agriculture is the most assured means of economic growth and development and a reliable key to industrialization; as it makes available the raw materials used in the industries and it is the main source of livelihood for the majority of the rural dwellers. Agriculture provides food for the teeming population and contributes about 33% to the Gross Domestic Product (GDP) of the nation (Bureau of African Affairs, 2010). The agricultural sector employs about one-third of the labour force and provides livelihood for the bulk of the populace (FMARD, 2006).

In its determined effort to overcome the problem of food shortages and domestic food prices, successive Nigerian Governments have launched and executed many agricultural programs. According to Jibowo (2003), such agricultural programs include: National Accelerated Food Production Program (1972-1976), River Basin Development Authority (1975), Operation Feed the Nation (1976-1979), Green Revolution (1980-1984), Agricultural Development Programs (1985), National Directorate of Employment (1986-1993), however, some of the agricultural programs with elements of participatory extension approach include the National Special Program for Food Security (2003-date) and the three phases of the National Fadama Development Project, NFDP Phase I (1993-1999), NFDP Phase II (2000-2007), NFDP Phase III (2009-2013).

Oredipe (2005) noted that these past efforts all contributed to the growth in the agricultural sector. In spite of these achievements, low agricultural production persists in many areas. Such areas remain largely undeveloped and unintegrated into the mainstream of national development. The strategy for the transformation program recognizes that income generating and welfare-enhancing activities must be tackled in tandem with agriculture in a multi-faceted but well-coordinated manner through integrated agricultural and rural development.

It is against this background that the National Fadama Development Project, a joint project of the African Development Bank (ADB) as well as the World Bank in collaboration with the Federal Government of Nigeria (FGN) was conceptualized. The Fadama Project is a community Driven Development (CDD) approach employing a bottom-up approach whereby communities and other lower government entities are empowered to develop participatory and social inclusive Local Development Plans (LDPs). This project has been implemented in all the states of the Federation including the FCT. The Benue State Fadama Project has a record of four thousand and eleven (4,011) women farmers, one hundred and sixty five (165) Women Fadama User Groups and a total of twenty (20) participating Local Government Areas (NFCO, 2011).

The sustainable production of food is the first pillar of food security in a nation. Food security is said to exist when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life Nyam, (2005). It is now widely demonstrated that rural women, as well as men, throughout the world are engaged in a range of productive activities essential

to household welfare, agricultural productivity, and economic growth. Yet, women's substantial contribution continues to be systematically marginalized and undervalued in conventional agricultural and economic analyses and policies, while men's contribution remains central, often the sole focus of attention.

Women constituted an important part of agricultural farming distributed all over Nigeria. It is estimated that about 44% of farm labour in southern states, 45% in the eastern states, 13% in the middle belt states and 51% in the Northern states are women Olaleye (1998). Women in Nigeria engage in various farming activities such as planting, weeding, harvesting and processing of the agricultural products as well as the storage and marketing of the farm produce. Study from Olayiwoye (1984), have shown that even though women are heavily involved in agricultural production, they have not benefitted much from development interventions.

Participatory extension approach is an extension service which involves a shift from public sector extension delivery to a negotiated system through which farmers and rural community members determine their needs and have some control over extension services which are delivered by public, private, NGO or Farmer Groups. It generally involves changing the distribution of power and responsibilities among three sets of actors: clients, service providers and government (Rivera and Alex, 2004). Neuchael Group (1999) described the main principles as: services shall be driven by user demands, service providers shall be accountable to the users and users have a free choice of service providers.

## **1.2 Problem Statement**

In Nigeria and other developing countries, attempt has been made to change to participatory extension approach (Ajayi and Okafor, 2006) this is mainly due to the criticism of previous agricultural extension approaches. Participatory extension approach which is the process of getting the active involvement of the intended beneficiaries in analyzing their own situation, identifying problems/constraints, prioritizing these, searching for their own solutions using their situation-specific indigenous knowledge (which they can combine/blend with outsiders' knowledge) and capacities, implementing the solutions as well as monitoring and evaluating their own development. (Blackburn and Holland 1998). Development experts are of the view that participation is an essential ingredient to development. However, many efforts by the Governments, International Development Agencies, Local Organizations and Non-governmental Organizations did not achieve desired results in terms of positive result and sustainability (Mohammed, 2003).

In Nigeria, women represent about 49% of the population with their productive and reproductive functions cutting across such activities as performing household chores, income earning activities, community participation and community management roles (Aina, 2003). Over the years, different international fora have long recognized the role of women in agriculture and sustainable livelihood. Despite government participation in such fora, the full potentials of women have not been exploited in ensuring household food security in Nigeria.

With reference to women Fadama farmers, it was observed that they are equal producers and not merely mothers and housewives. Based on this realization, it became clear to many



developing countries that to neglect women farmers in a situation where agricultural production forms the crucial development strategy for increase food may place a bottleneck to achieving food security.

The concept of food security ensures that households are able to obtain adequate food either through home production or through purchase. Therefore to reduce the rate of household food insecurity will entail increasing access to productive resources such as land, labour, inputs and credits as well as increased income of farm activities. The major constraints to the effective recognition of women's actual roles and responsibilities in ensuring household food security had posed a problem in food production. The prevalence of food insecurity has been generally reported to be higher in rural areas of Nigeria despite the fact that bulk of agricultural activities takes place in these areas (NPC, 2001).

It is obvious that Nigeria is endowed with both physical and human resources, and fertile land to produce enough food for their entire population and even marketable surplus for exports, but nevertheless, food has been imported to support the insufficient domestic production. If the women farmers are provided with enough farm inputs like fertilizer, land, credit facilities and other incentives to boost their agricultural productivity including both crops and animals in profitable and sustainable way through the Fadama III participatory extension approach, this will lead to women empowerment and thus, reduction in the overall food insecurity.

Thus, the need to have a critical look at women farmer's empowerment through the Fadama III Project toward attaining food security becomes paramount and this had formed the basis for this work. This study had provided answers to the following questions:

- i. what are the socio-economic characteristics of the Fadama Women Farmers?
- ii. what is the food security status of the Fadama Women Farmers?
- iii. What are the factors influencing the Food Security Status of the Fadama Women Farmers?
- iv. what is the perception of the Fadama Women Farmers to the Fadama III Project?
- v. what are the benefits of the Fadama III Project toward attaining food security?
- vi. what are the constraints of women farmers toward attaining food security?

### **1.3 Objectives to the Study**

The broad objective of this study assessed the role of Fadama III Project toward women empowerment for household food security in Benue state, Nigeria. The specific objectives were to:

- i. describe the socio-economic characteristics of the Fadama Women Farmers in the study area;
- ii. determine the food security status of the Fadama Women Farmers in the study area;
- iii. determine the factors influencing the Food Security Status of the Fadama Women Farmers in the study area;
- iv. assess the perception of the Fadama Women Farmers to the Fadama III Project;
- v. assess the benefits of the Fadama III project of the Fadama Women Farmers toward attaining food security;
- vi. examine the constraints of Fadama Women Farmers toward attaining food security;

#### **1.4 Justification to the Study**

Community Driven Development approach (participatory) has been designed to solve or reduce the problems of food productivity towards ensuring household food security in the country. However, rural women farmers have not benefitted much from such approaches when compared with their male counterpart. Benue State which is popularly called the food basket of the nation because of her agricultural practices having men, women, and youths participating in agriculture is a boost to agricultural production. Millions of women work as farmers, farm workers and natural resource managers (Onyemobi, 2000). In Nigeria, the involvement of women in agriculture has attracted greater attention in recent years. The need to develop a suitable extension service that is tailored to women farmers cannot be overemphasized. Thus, this study revealed the contribution of women to household food production and food security in Benue State.

It is worthy to explore the Community Driven Development approach of the Fadama III Project in empowering Fadama Women Farmers toward attaining food security because the result could be used by extension policy makers and other development agencies targeting women farmers and also give insight when establishing development programs. The study could also help to provide insight into possible establishments that could support other agencies to empower women farmers in Benue State and other States of the country and also as a baseline to formulate strategic policies and framework for implementing the behavioral interventions necessary for women development. In addition, this study could help to add to the wealth of knowledge in the area of gender and development. All these would invariably help in reducing poverty and ensuring food availability and security within the rural household.

This work would help to add valuable knowledge to fill the gap and lapses that would benefit agencies and development policies concerning the women.

It is also hoped that this study would give room for further researchers to help identify gaps that can lead to further research towards women empowerment.

### **1.5 Hypothesis to the Study**

Ho<sub>1</sub>: there is no significant relationship between the socio-economic characteristics of the Fadama Women Farmers and their food security status.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1: Women Farmers in Agriculture and Development**

Women are responsible for half of the world's food production and between 60%-80% of the food in most developing countries including Nigeria (CIDA, 2003). Not only are women the mainstay of the agricultural food sector, labour force and food systems, they are also largely responsible for post-harvest activities. As the world tries to comprehend and meet the challenges of feeding millions of hungry people, there is growing recognition of the important role played by rural women in agricultural production (FAO, 2003).

The rural woman plays a pivotal role and she is crucial to the overall success of efforts directed at agricultural development in rural areas. The role that women play and their position in meeting the challenges of agricultural production and development are quite dominant and prominent, and their relevance and significance, therefore cannot be overemphasized (Rahman, 2008). Also, even in these rural societies Nigeria inclusive, women are breaking barriers and contributing more meaningfully to the socio-economic development of such societies, nowhere is more conservative in any part of this country than rural communities.

There has been growing awareness among agricultural researchers, development practitioners and farmers that the use of agricultural innovations such as pesticides, inorganic fertilizer, animal feed-stuff and tractors and other machinery in farming activities enhances high yield and productivity (Akello and Sarr, 1999). Ogbonna and Ndifon (2003)

noted that knowledge of the technologies and consequent access to them are the keys to their acceptance and adoption.

Women's role in agricultural development has been noted and documented even before colonialism (Baumann and Meek, 1982; Olayiwole, 1984). Studies have shown that women have played an important role, either as main producers of food crops or even where they do not actually cultivate crops, they are almost universally the main processor and cooks. However, (Arokoyo *et.al.*,1994) have shown that inspite of the women farmers' contribution in agricultural development, development policies and reforms in terms of social programs have failed to benefit them. They have little or no control over the resources and sources of production which they need to increase their productivity and improve their well-being.

Ohuegbu (1989) observed that in Imo State, women contribute more to food production and family labour than men. It is estimated that over 95% of the rural women are small scale farmers who produce most of the food and bear the burden of day to day family subsistence. Farm operations such as bush clearing, burning, ridge / mould making, planting, fertilizer, weeding, harvesting, storage, processing and marketing are carried out by women. Women also have sole responsibility for cultivating compound farms (gardens) where continuous cropping is done with household refuse. It was against this background of active participation in food production in Imo State that the ADP decided to give full support and adequate technical and financial support to women farmers. Women farmers have not been fully exposed to modern technologies and consequently are ill-informed about agricultural innovations.

## **2.2 Women's Programs**

Evaluation studies to ascertain the benefits women derived from program established for them have been concluded in many parts of Africa. Women in Agriculture (WIA) help in recognition that women play very significant roles in Nigeria agricultural production, processing and utilization (Nnadozie and Ibe, 2000). The impact of the WIA program on the lives of women in Imo State of Nigeria was studied with the view of strengthening their subsistence agricultural production (Odurukwe *et. al.*, 2006).

Positive impacts of women adoption WIA packages were almost on the women than the men and the children. It ensured family food security and enhanced children's education and women financial and socio-economic status. Primary occupation, annual income, household size and membership of women's group showed a positive and very significant relationship with the adoption of the WIA technologies by the women. However, women were constrained under the Unified Extension System by socio-cultural barriers and also by the current approach that rely almost exclusively on a network of contact farmers that are over 95% male farmers, little research on products- fruits, vegetables, small livestock which are mainly the responsibility of women farmers. The integration of women in extension is essential for the achievement of some goals such as increased food production, self-sufficiency and sustained reduction of poverty and malnutrition.

In Nigeria, the Agricultural Development Projects (ADPs) of the different States of the Federation had made important advances in incorporating gender in agricultural extension, by modifying the ADP system mainstream to provide not only for men but for women farmers through the creation of Women –in-Agriculture (WIA) program in the Department

of Extension Services of the State ADPs with a gender focus (Oyebanji, 1998 and Onyibe, 2001).

### **2.3 Constraints Facing Rural Women Farmers**

Women farmers generally have more difficulty than men operating effectively in factor market that is a place where inputs or resources especially labour and capital, are bought and sold, if they can get access at all. The explanations underlying these barriers to access relate to child bearing, time, mobility, education and an array of socio-cultural characteristics. It is essential to understand the nature of the special constraints women face and the implications of these constraints for extension. Although, most countries have equal access in law to education for boys and girls, in practice, girls fair badly (FME, 1989). Fewer women continued to have fewer chances to learn about agriculture, cooperatives or animal husbandry. Yet, Papaek, (1983) noted that education is among the most important determinant of women's participation in development

The constraints affecting rural women's ability to improve yield, profit, as well as household food security include women's legal and cultural status, this affects the degree of control women have over productive resources, inputs such as credit, and the benefits which flow from them (Olawoye, 1989). One of the factors of production in agriculture is land, but the prevailing land tenure system does not allow women to own, control or inherit land. This is so because land titles are placed in men's name even where women are clearly heading the household (Disarre, 1981; FAO, 1983). For this reason, land rights present a complex problem for women in places where rights of women to occupy land and farm



may be determined by chives or village authorities or by males of households. Women are usually not favoured. As a result, women can only obtain farm land by borrowing, renting or outright purchasing (Arokoyo *et. al.*, 1994).

Thus, it is suggested that women farmers should be given more liberty to acquire land and control its usage. They should be considered as a separate entity from their husbands, considering the fact they are responsible for the production of substantial food consumed by the family. Women have complained that the general lack of land ownership and control have been found to depress their farm output as well as their channels of securing institutional credit facilities, therefore, where land rights are tied to credit or lending issues, rural women are usually not the beneficiaries (Arokoyo *et. al.*, 1994). Furthermore, women are not usually considered by formal credit institutions for a number of reasons which include: Women lack collateral, Women needs a male as a co-signer and also, Women have lower level of literacy and general education amongst others.

The relationship among ecological factors such as the seasonality of rainfall and availability of fuel-wood, economic factors such as product market failures, and gender-determined responsibilities such as feeding the family, which trade off basic household self-provisioning goals and care of the family against production for the market and the way that agricultural services are staffed, managed and designed (Saito, 1996 and FAO, 1993). It is also observed that in spite of women's contribution to agricultural production, improved technologies hardly reach them (Kaul, 1993). Improved technologies do not only comprise agricultural machineries, they include high yielding seeds, chemical fertilizers, insecticides, techniques of modern agricultural practices (such as correct spacing, planting

time) and the use of labour saving devices. For instance, the use of animal traction has been shown to reduce the demand for women's labour during weeding where the task of weeding crops can be done six times faster with animal traction (Saito, 1996). Therefore, the cost of acquiring animal traction is beyond the reach of women farmers coupled with cultural inhibition of women with animals.

Furthermore, studies have shown that rural women are hardly reached by extension agents with extension messages that are fully in increasing their productivity and household food security. Several reasons are always advance for this which includes the following: First, most of the extension agents in most African Countries are males and according to African tradition, cultures and religion, males may not talk with women who are not kins (Lamning, 1983 and Olayiwole, 1984). It has been observed that even though women may account for up to 80% of food production in some developing countries, they receive only 2-10% of extension contact.

Secondly, the male extension workers may assume that a 'farmers' is a man and therefore may not consider women farmers whom he should visit and give advice to. For example, in a study of farmers growing hybrid maize in Kenya, it was reported that 31% of the women who managed farms were not visited by extension agents as compared to only 3% of those managed by husbands and wives (FAO, 1983). Thirdly, women are less mobile than men and this limits their access to information. In some countries, socio-cultural, and religious factors restricts their mobility which limit their ability to attend training courses outside their villages. Similarly, because majority of them are poor, they may not have the money

to pay for transportation to attend extension meetings and training organized far away from their homes.

## **2.4 Rural Women Farmers and House-Hold Food Security**

### **2.4.1 Food Security**

Over a billion people worldwide are undernourished (FAO, 2006) despite the fact that sufficient food is produced worldwide to feed everyone. Poverty, not food availability, is the major driver of food insecurity. This is in spite of the country's vast resources. According to Omonona (2009), 'Poverty is pervasive although the country is rich in human and material resources that should translate into better living standards'. Poverty is not only a state of existence but also a process with many dimensions and complexities (Khan, 2000).

According to the most recent survey, (National Living Standard Survey, 2004) presented by the National Bureau of Statistics, NBS (2007), about 69 million people were living in poverty, which represents 54.4% of the Nigerian Population. Since the 1980s, the Nigerian poverty situation has been deteriorating. The rate of poverty during those years translated to 17.7 million poor people in 1980, 34.7 million in 1985, and not minding the drop between 1985 and 1992 (due to the implementation of the Structural Adjustment Program), about 39 million were poor in 1992. In 1996, however, about 67 million people were poor despite the drop in incidence between 1996 and 2004, about 69 million were poor in 2004 (Omonona, 2009).

Food security is centrally concerned with questions of accessibility, availability, quantity and distribution, and so program focusing on improving agricultural productivity are not sufficient to relieve hunger and poverty (Brown *et. al.*, 2008). For example, India is home to the world's largest number of hungry people, the nation ranks 66 of 88 nations on the Global Hunger Index which is compiled between three organizations (FAO, 2006). Food security is said to exist when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (Nyam, 2005).

In Nigeria, food security which goes with food self-sufficiency and sustainability is still elusive (Nwogu, 2006). This is because the agricultural sector has not been able to address sufficiently with the problem of food security for the Nigerian people who viewed from the stand points of the nutritional status of Nigerians, household food security and food prices. Food security and market development can be contradictory impulses in farming household and in farming communities more generally.

Idachaba (1993) defines food security tailored along the definition of the World Food Summit held in Rome in 1974 to mean the right of everyone to have access to safe and nutritious food, consistent with the right of everyone to be free from hunger. Odey (2002) articulates food security system definition as the availability and accessibility of foodstuff in desired quality to all consumers throughout the year. Food insecurity and hunger are related to nutritional, health, human and economic development problems. They connote deprivation of basic necessities of life. As such, food security has been considered as a universal indicator of households' and individuals' personal well-being, the consequences

of hunger and malnutrition are adversely affecting the livelihood and well - being of a massive number of people and inhibiting the development of many poor countries (Gebremedhin, 2000).

In recent times, the global focus has been on food security and poverty alleviation. This is in response to the increasing threats of food insecurity and poverty in the world. To achieve the Millennium Development Goals of halving the proportion of hungry people by 2015, it was projected that 22 million people must achieve food security every year (IFPRI, 2005). Household food security relies heavily on rural food production and this contributes substantially to poverty alleviation. Consequently, the first pillar of food security is sustainable production of food (Odurukwe, *et. al.*, 2006).

According to Snyder (1990) household food security is year-round access to an adequate supply of nutritious and safe food to meet the nutritional needs of all household members (men and women, boys and girls). Gender responsibilities are under-going rapid change, typically, with rural women becoming more responsible for household food security and children's welfare. One powerful indicator of these changes is the incidence of female-headed rural households, which is on the increase in most developing countries. In sub-Saharan Africa, women head an estimated 45% of rural households in Kenya, 35% in Malawi, 30-40% in Zambia, and 15% in Nigeria (World Bank, 1992, FAO, 1993 and ECA, 1973). Heyzer (1992) attest that female-headed households are among the poorest, with the lowest level of food security, but in areas where female headship is the norm, as in the Caribbean, female headship can be a poor predictor of agricultural output, household welfare, or income status (Jiggins, 1994). Today the world has enough food to feed

everyone, yet an estimated 854 million people worldwide are still undernourished (FAO, 2006).

Food security is a primary goal of sustainable agricultural development and a cornerstone for economic and social development, Agriculture and food security are inextricably linked. The agricultural sector in each country is dependent on the available natural resources as well as on national and international policy and the institutional environment that governs those resources. These factors influence women and men in their choice of crops and levels of potential productivity. Agriculture, whether domestic or international, is the only source of food both for direct consumption and as raw material for refined foods.

Food security is essentially built on three pillars: food availability, food accessibility, and food utilization. An individual must have access to sufficient food of the right dietary mix (quality) at all times to be food secure. Those who never have sufficient quality food are chronically food insecure. Those whose access to an adequate diet is conditioned by seasonality are food insecure and are generally called seasonally food insecure.

The definition of food security is often applied at varying levels of aggregation, despite its articulation at the individual level. When food security is analyzed at the national level, an understanding not only of national production is important but also of the country's access to food from the global market, its foreign exchange earnings, and its citizen's consumer choices. Food security analyzed at the household level is conditioned by a household's own food production and household member's ability to purchase food of the right quality and

diversity in the market place. However, it is only at the individual level that the analysis can be truly accurate because only through understanding who consumes what can we appreciate the impact of socio-cultural and gender inequalities on people's ability to meet their nutritional needs.

The third pillar which is food utilization essentially translates the food available to a household into nutritional security for its members. Hidden hunger commonly results from poor food utilization: that is, a person's diet lacks the appropriate balance of macro (calories) and micronutrients (vitamins and minerals). A study of rural households in Mozambique has shown that an adult death due to illness which is likely to be AIDS related reduces the amount of staple foods produced by these households by 20-30%, contributing to household food insecurity (Donovan and Massingue, 2007). Policy responses differ according to the underlying determinants of food insecurity. These responses range from legal reforms to economic incentives to infrastructure investment to the provision of insurance instruments. If sustainable agricultural development is to be translated into food and nutrition security, then, the active engagement of women is absolutely necessary. Their involvement will require that development agents go beyond traditional approaches to sustainable agricultural development.

#### **2.4.2 Determinants of Household Food Security among Rural Women Farming Household**

Sanusi *et. al.*, (2006) and Kidane *et. al.*, (2005) noted that the socio-economic characteristics and resources of individual households have been identified as basic factors influencing the food security status of households identified household size, education, farmland size and land quality as determinants of food security status of a household.

Educational attainment by household head could lead to awareness of the possible advantages of modernizing agriculture by means of technological inputs, engage them in diversification of household incomes which in turn, would enhance household's food supply.

Amaze *et. al.*, (2006) noted that the major determinants of food insecurity are: household size, gender, educational level, farm size, and types of household farm enterprise. They concluded that policy measures towards the provision of better family planning should be given adequate attention and priority by the government in addition to improving access to education, credit facilities and agricultural extension services for rural households. Household income, household size, educational status of the household head and quantity of food obtained from own production determined the food security status of farming households in North Central Nigeria. They concluded that socio economic variables of the households are important determinants of their food security or insecurity status (Babatunde *et. al.*, 2007).

## **2.5 The Fadama Project**

One of the major goals of any country is to provide adequate food for its citizens. Underlying the trend of poor performance in the agricultural sector, is the problem that the farming system are upland subsistence agriculture that depend mainly on vagaries of weather while the potentials for irrigation using underground and surface water remain underdeveloped. With the growing awareness to maximize welfare through economic development, there is a need to reduce unemployment, the rapid population growth rate, and poverty among rural dwellers.



The lingering poverty incidence among other things has led to low agricultural production and low productivity among farmers; this has ultimately limited their traditional role in economic development. In an attempt to break this vicious cycle of poverty and improve the performance of the sector, the Nigerian Government over the years introduced and implemented several policies and programs aimed at remedying the situation (Ajibefori and Aderinola, 2004). Various programs and policies have been instituted in the past, and were meant to improve sustainable productivity and farmers' income, consequently, the quality of lives of the rural households. Lately, one of such efforts towards boosting agricultural production is the introduction of the Third National Fadama Development Project which precedes the first and the second phase of the Fadama Projects. The Fadama system of agriculture is not new in Nigeria as it has been a major pre-occupation of the peasant farmers in the Northern part of Nigeria who grew mainly vegetable, sugarcane, and fruits during the dry seasons through irrigation.

'Fadama' is a Hausa name for 'wetlands' and means 'Akuro' or 'Abata' in the Yoruba language. These are low-lying flood plains with easily accessible shallow ground water. The water obtained from the tube wells is used for the development of small-scale irrigation schemes to boost dry season crops production (Journal of Agricultural Development Project in Nigeria, 2006). Given the need for all year round cultivation to exploit the potentials of the dry seasons for farm income generation and the campaign for food security and poverty alleviation, the Nigerian Government, in collaboration with the World Bank and the Agricultural Development Bank (ADB), initiated the small-scale farmer managed irrigation schemes to develop the Fadama lands nationwide. According to

the project Coordinating Unit- National Fadama Development Office (PCU / NFDO, 2005), Fadama (Hausa derivative) refers to irrigable land, flood plains and low lying areas underlined by shallow aquifers found along Nigeria water system. The widespread adoption of the technology enables farmers to increase production by more than 300% in some areas (FMARD, 2001).

The Fadama Development Project is one of the Nigeria's agricultural policies designed to increase food production for her teeming and growing population. The first phase of the project, named Fadama I, began in 1990 through the collaboration of the Federal Government of Nigeria and the World Bank. This is in realization of the fact that Fadama potentials had a high capacity of reducing the negative effect of rudimentary and small holder rain fed agriculture on the teeming population in rural Nigeria (Agwu and Abah, 2009). At the completion of the project phase, the Nigerian government adopted new rural development strategies to address most of the discovered flaws and constraints to implementation. The new strategy, which was in line with the African Development Bank's strategic plan, had as its focus, a number of approaches to development.

The plan stressed the need for consistency, sustainability, and greater equity in the access to benefits of the land resources in Fadama areas of the country. Consequently, the bank found it necessary to agree to the Nigerian Government's request for funding phase II of the project, not only as a follow up to phase I but also to expand it in scope and size (NFDP Appraisal Report, 2003). The design of phase II of the project therefore, incorporated a community-driven development (CDD) approach in which various Fadama Users (Crop farmers, hunters, pastoralists, women, youths, vulnerable and the marginalized), operating

through their respective Fadama User Groups (FUGs) and Fadama Community Association (FCAs), could reach consensus on how to use the common resources to their mutual advantages. Through this, process communities decided on which advisory services and infrastructures they needed to attain developmental goals based on their efforts (NFDP Appraisal Report, 2003).

Moreover, the National Fadama Development Project (NFDP II) is a follow-up to the successful implementation phase I project, to achieve the objective of sustainable increase in the income of farmers in Fadama areas through the expansion of farm and non-farm activities that could result in high value-added outputs. The NFDP II covers twelve states in Nigeria, including the Federal Capital Territory. The states include Adamawa, Bauchi, Gombe, Imo, Kaduna, Kebbi, Lagos, Niger, Ogun, Oyo, and Taraba States.

According to the World Bank (2000), the major objective of Fadama II Project include; supporting the provision of marketing infrastructure, improving mechanism of conflict resolution, establishment of rural non-farm enterprises, sustainable increase in income of beneficiaries by at least 20% and encouraging beneficiaries participation. The cornerstone of community-based initiative is the active participation of the community in the project design and implementation. The introduction of Fadama III was however built on the success of Fadama II.

The Fadama III project was implemented using the Community Demand Driven (CDD) approach which strongly emphasizes stakeholders' participation at the community level to develop participatory and socially inclusive Local Development Plans (LDPs) which provide the basis for support and funding under the project (PCU/NFDO, 2005). This

paradigm shift from the traditional public sector dominated/supply led development approaches of the past to a private sector-led, demand-driven strategy ensures full guidance of participating farmers through several institutional structures.

Naturally dry season farming renders itself to the production efforts of small scale producers in Nigeria, since millions are willing to be carried along, in harnessing efforts for increased productivity (Idachaba, 2004). Fadama are flood plains and shallow aquifers found along Nigeria's major river systems; the first Fadama project focused on these systems but Fadama II & Fadama III, move beyond flood plain systems to cover a diverse range of agro-ecosystems, productive activities, and land uses and the development objective of the Fadama III project is to increase the incomes of users of rural land and water resources on a sustainable basis (NFDP, 2008).

The Fadama III supports the government's strategic objective to enhance growth in sectors other than oil in order to achieve increased food security, reduce poverty, create employment and improve opportunities in rural areas among men and women farmers. More specifically, the project will contribute to achieving Nigeria's stated rural development and environmental objectives and the president's 7-point agenda (NFDP, 2008). This is a welcome development in Nigerian Agriculture for the desired food security as observed by (Adewumi, 1997).

### **2.5.1 Fadama III Project Strategy**

The basic strategy of the Fadama III project is that of a Community Driven Development (CDD) approach with strong emphasis on stake holder participation, especially at the

community level. Facilitators support under the project help in organizing the Fadama Community Association (FCAs) and guide them through an intensive process of group decision-making using a range of participating techniques resulting in LDPs. In this manner, the project ensures that every activity funded by the project was conceived after informed discussion by the whole community which resulted from consensus building and social inclusiveness (Ingawa *et. al.*, 2004). The popularity of the CDD approach has become a major strategy used by both government and development assistance programs (Gillepsie, 2004; Mansuri & Platteau, 2004). The popularity of the CDD approach has been propelled by its potential to develop projects and programs that are sustainable and responsive to local priorities, empower local communities to manage and govern their own development programs and more effectively target poor and vulnerable groups (Dongier *et. al.*, 2001; Gillespie, 2004). Among the interesting questions capturing the attention of scholars are the sustainability of donor-supported CDD and its effectiveness in targeting the poor and vulnerable. Khwaja (2001) observed that projects managed by communities were more sustainable than those managed by local governments because of both poor and vulnerable. Khwaja (2001) observed that projects managed by communities were more sustainable than those managed by local governments because of better maintenance.

The Fadama III project is a community-driven development (CDD) approach with a strong emphasis on stakeholder participation, especially at the community level. As part of its targeting strategy, Fadama III gives special preference to groups of youth, female household heads (especially widows), physically challenged persons, the elderly, Fadama Women Farmers and people with HIV/AIDS. Targeted groups can belong to any of the productive or service sectors supported by the project. Because Fadama III uses the CDD

approach, beneficiaries are given the chance to choose the kind of activities they want to pursue under the project (NFDP, 2008).

## **2.6 Overview of Agricultural Participatory Extension Approach**

Over the years, Nigeria has experienced a number of extension approaches and agricultural programs with strong extension components. Notable among these extension approaches are: the conventional Ministry Operated Extension System, project based extension, sectorial / commodity extension, university-based extension, integrated rural development approach and farmers-focused extension (Ilevboaje, 2004).

However, extension workers are often concerned about what constitutes the most appropriate methods among the arrays of approaches. There is however, no single rule-of-thumb that is applicable in all conditions. The nature of the subject matter and the circumstances of the farmers such as their level of education will help to determine the type of method to be used. Obibuaku (1978) studied the effects of radio, demonstrations, personal contact with extension staff, films, lectures, newsletters, pamphlets on farm practices adoption in the former East Central State of Nigeria. The results showed that the radio and agricultural demonstrations were the means most used in reaching the farmers. This could be related to the fact that the majority of the farmers were illiterate and therefore responded more to those methods which emphasized hearing and seeing in contrast to those which emphasized reading.

Extension teaching usually requires that several methods of presentation to be employed for the most effectiveness because women farmers are influenced to make changes in their

farms and homes in relation to the number of different times they are exposed to information through personal visits meetings and demonstration methods of field staff are able to communicate with and motivate the farmers to learn and help them solve their everyday problems (Benor & Harrison, 1984). The various methods used by the village extension agents in the extension system in Nigeria incorporate the basic principles of teaching-learning-process. They include personal instruction through home visits, correspondence and lectures, group methods such as video, workshops, group discussion, demonstration field or farm visits and mass media such as radio, television and printed publications such as posters, instructions leaflets, calendar and hand bill (Adams, 1982).

Demonstration method of agricultural extension approach shows a group or class how something is done step-by-step for the purpose of teaching new techniques and practices to extension clientele. Demonstration approach could show how to use a tool, a new planting technique to prevent erosion, or how to cook a newly introduced vegetable. Ideally, each individual attending the demonstration would have an opportunity to practice the new skill during the lesson or session. The effectiveness of the demonstration depends to a great extent on the amount of preparation and planning because the results of demonstration can be observed and practiced (Evans, 1999).

The participatory approach of agricultural extension is a Demand-Driven-Extension service which involves a shift from public sector delivery to a negotiated system through which farmers and rural community members determine their needs and have some control over extension services which are delivered by public, private, NGO or farmer organization providers. Government and non-governmental institutions are increasingly recognizing the

need to move away from instructions and blueprint solutions, towards more participatory approaches which support communities in their capacity to set and fulfill their own development goals. At the heart of this change is the recognition that rural people themselves are the owners and shapers of their own development. These changes bring with them major challenges, not only for the communities themselves, but also for the institutions which advice and support them (Hagmann *et. al.*, 1999).

The new paradigm in extension often referred to as ‘demand driven’ extension. ‘Demand’ is defined by Nuchael Group (1999) as what people ask for, need and value so much that they are willing to invest their resources such as time and money in order to receive the services. It generally involves changing the distribution of power and responsibilities among three sets of actors: clients, service providers and government (Rivera & Alex, 2004). Neuchael Group (1999) described the main principles as; services shall be driven by user demands, service providers shall be accountable to the users and users shall have a free choice of service providers.

The participatory approach is a bottom-up approach which involves carrying along the farmers from the planning stage to the execution stage and then to the top. This participatory approach involves all the stake holders and they are considered, this approach helps in adding value that is value chain from production to the final stage. Participatory approach can only be possible only when women farmers have access to information, when they are expressing their views, when their views are listened to and discussed, when they can influence decision making, when decision making integrates their concerns, when



decisions addressing women's concerns are implemented. Participatory approaches call for a shift from the status quo. The salient feature of the new approach is the reversal learning, where research and extension are learning from farmers. Under the participatory approach, there is the Farmers-Groups-Approach. The age-old practice of extension-farmers contact on a one-to-one basis, though very effective, is expensive and unsuitable as the sole means of reaching farmers with agricultural technology. New methods emphasize the passing on of agricultural technology to farmers in organized groups (farmer groups).

A farmer group is a collection of farmers interacting with one another towards achieving a common goal. Usually, the interaction between the members of the group is more than with those outside the group. Membership of a group varies, and it is advantageous to have a small number of people forming it. A group size of between 20 and 30 is ideal and manageable in order to provide a face-to-face interaction, better communication and the free flow of information. The farmer-group approach plays valuable role in policy advocacy and in realizing economies of scale. One major benefit of the group is that farmers support each other to learn and adopt. Thus, farmer-to-farmer extension is amplified. Rather than simply be agents for technologies imposed from outside, the extension agents are expected to become catalysts, mobilizing farmers to experiment on an identified need / solution, recognizing local innovations and helping to assess and encourage them (Madukwe, 2006).

### **2.6.1 Shift in Extension Paradigm**

The Community-Driven-Development (CDD) approach has become increasingly popular because of its potential to develop projects that are sustainable, responsive to local

priorities, empower communities, and more effectively target poor and vulnerable groups. Community Driven Development is all about participation, empowerment of the poor, ownership, social capital, social inclusion, effectiveness, efficiency as well as sustainability. Moreover, social inclusiveness is one of the key features of CDD programs, for the purpose of fostering involvement of the poor and vulnerable in such interventions. To ensure community participation in decision making, CDD programs are demand driven and support groups or communities rather than individuals (Dongier *et. al.*, 2001).

Empirical evidence of the effectiveness of CDD in achieving these objectives is mixed (Mansuri & Rao, 2004). However, targeting the poor has been found to be one of the challenges of the CDD approach (Farrington & Slater, 2006). One argument in favour of CDD projects is that it makes better use of local knowledge to define and identify the targeted groups (Mansuri & Rao, 2004). Tools of the Community Driven Development include Focus Group Discussion, Participatory Rural Appraisal amongst others. The CDD approach has become a key strategy that is used by both governments and organizations that sponsor development assistance programs (Gillespie, 2004; Mansuri and Plateau, 2004). The appeal of CDD arose from recent efforts, which are to:

1. Empower local communities to participate in decision making and implementation of development programs.
2. Promote democracy and decentralization (Manor 1999; Dongier *et al.*, 2001; Kohl 2003).

Among the interesting questions that have captured the attention of scholars are the sustainability of donor supported and or government-managed CDD and its effectiveness in

targeting the poor and vulnerable. Khwaja, (2001) observed that projects managed by communities were more sustainable than those managed by Local Governments because of better maintenance. This study sets to analyze the participatory extension approach of the Fadama III project as related to the Fadama Women Farmers. Fadama III aims to reduce poverty by supporting communities to acquire infrastructure and productive assets, providing demand driven advisory services, increasing the capacity of communities to manage economic activities, and reducing conflicts among resource users.

Consistent with the CDD approach, project activities are centered on Fadama User Groups (FUGs) and Fadama Community Association (FCAs). An FUG comprises Fadama Users with a common economic interest and is therefore a type of economic group (EIG). The FUGs also include groups that are not related to Fadama resources. For example, beneficiaries formed groups around common non-farm activities such as the manufacture of women's apparel and shoe cobbling. FCAs are the associations of FUGs operating in a given area. Each FCA designs and oversees the implementation of a local development plan which becomes the blue-print of Fadama III and the development project in that FCA. The major productive sectors that Fadama III supports include crops, livestock, agro-forestry, fishing and fish farming. Addressing one of the weaknesses of Fadama I, Fadama II also support post-production activities that re closely linked to the project's productive activities. These include agro-processing enterprises and rural marketing service providers.

The beneficiaries of the Fadama III project are organized into economic interest groups, named Fadama User Groups (FUGs), each having on average 20 individual members (plus benefits accruing to roughly 15 additional household members for each FUG member). In

addition, they will be facilitated to establish Fadama Community Association (FCAs), which are apex organizations of 15 FUGs on average at the community level. Members of Fadama User Groups (FUGs) are the primary beneficiaries of the project. The Fadama lands are used for a range of purposes by different Economic User Groups. The FUGs were organized via the following economic activities which include: Fadama User Association, Pastoralist (Sedentary or Nomad), Hunters, Fishermen, Gatherers of edible and non-edible plants, Crop production, Food and crop processing, marketing and distribution, Other interest groups (i.e. land management, agro-forestry and charcoal production

There are a total number of 165 Women Fadama User Groups (165 FUGs) in Benue State engaged in different farm and off-farm activities and sub-projects (NFDP). Fadama III is a tripartite funded intervention by World Bank (1996), the Federal Government of Nigeria and participating States with objectives targeted towards poverty reduction. Fadama III is designed to improve the capacities of beneficiary groups: the Fadama User Groups (FUGs) which are aggregated into Fadama Community Association (FCAs) in the states. Specifically, this study tends to analyze the participatory extension approach in empowering Fadama Women Farmers towards household food security in Benue State through the Fadama III Project.

## **2.7 Women Empowerment**

In Nigeria today, women have contributed immensely to the socio-economic development of the society. The woman played roles such as being mothers, producers of goods and

service, community organizers, and social, culture and political activities (United Nation, 1996).

Empowerment is a call to action and it involves a process of fundamental change in quality of life of any material being. It is the ability to effect change and make meaningful choices. Empowerment is investing legally or formally with power, authorizing, licensing, enabling, permitting, giving people more control over their own lives. Obanya (2004) sees empowerment as a continuous and life-long process which should be in the form of a systematic set of continuous, continued, sustained, never-ending (but ever improving) goal-directed efforts. While Duyilemi (2007) defines empowerment as a process, through which people or communities increase their power and control over their own lives, which may be economic, political or educational.

According to Kabeer (1999), empowerment is about the ability to make strategic life choices, and constitutes three dimensions: resources (defined broadly to include not only access, but also future claims to material, human and social resources); agency (including processes of decision-making and less-measurable manifestations of agency such as negotiation, deception and manipulation); and achievements (well-being outcomes). In the context of this study, Ighodalo (1990), view women empowerment as a process of enabling women to develop the capacity to actualize their potentials. Ighodalo, further adds that women should be looked at as individuals that possess some hidden potentials for greatness and so should be encouraged to develop such to the fullest. The process of empowerment must necessarily also include the expansion of women's access to educational opportunities, facilities for skills acquisition and positions of authority. Thus, women

empowerment in particular entails fundamental alteration in power relations between genders in the distribution of societal resources and is also related to the process of internal change (Mayoux, 1998) and to the capacity and right to make decisions (Kabeer, 2001). It consists of *change*, *choice* and *power*. Empowering the woman is empowering all of humanity. This is because the woman is the pivot of the family.

Empowerment is a drive towards realization of the innate potentials found in an individual. Thus, the potentials found in the woman can be enhanced if empowered. One of the three basic measures of empowerment is the ability to have access to the resources needed for a decent standard of living. Another is the ability to live a long and healthy life while the last is the ability to be knowledgeable.

In addition, in the feminist paradigm, empowerment goes beyond economic betterment and well-being to strategic gender interests (Bali-Swain 2006). Empowerment can exist at an individual level, where it is about having an agency, increased autonomy, choice, self-confidence and self-esteem. Ojimba, (2000) in his analysis, has shown that women in Africa make up more than one third of the work force. There are high prospects in women empowerment. First the potentials of women will increase resulting in building a virile nation, producing better women, better home makers, better future leaders and a better society. The contributions of females in top management positions revealed that females are up to the task. Women in leadership positions, especially in developing countries, have the responsibility and the potential to influence their society through leadership, particularly when they are enabled. Enabled women are empowered to aspire, attain and

perform well in leadership positions while still carrying out the home front roles. Women are enabled when they are educated, exposed and economically emancipated.

The empowerment of rural women cannot be over emphasized because research has discovered an array of benefits from empowering women, not only to themselves, but to their communities and to the larger society. For instance, The Hunger Project (2011) firmly believes that empowering women to be change agents is an essential element to achieving the end of hunger and poverty. The aim is to support women and build their capacity. The empowerment of rural women helps to enhance the quality of life through increased knowledge and skills.

## **2.9 Theoretical Framework**

### **2.8.1 Theory of Social Change**

Rogers (1995) posited that social change is the process through which significant alteration occurs in structure and function of the society. Social change may assume either of the following:

- a. Modification in human attitudes and behavior pattern as a result of education. Example, when a farmer comes to develop a more favourable attitude towards specific innovation as a result of extension activities; their active participation in the knowledge transfer process and therefore decide to change their farming system by incorporating the new innovation
- b. Alteration in social conditions as a result of changes in policies of a social organization e.g. if the government decides to institute free and compulsory primary education, this new policy will bring changes in each family and in the entire society, such changes may range

from loss of part of the family's labour supplied by the children, to changes in values with respect to the worth of the western education in the society as a whole.

- c. Effecting reforms in major legal and functional systems of a society e.g. whenever laws are passed, they call for changes in the way of life of people and this calls for adjustments.

Social change pervades all aspects of social life and may manifest as:

1. Economic Change: this is the change which occurs in the mode of production, economic relations and status of people in the society e.g. industrialization, production of crops for the market rather than home consumption or the finding of an important mineral in commercial quantities may bring about increased incomes, employment opportunities, and a general change in attitude in status and social relations as a result of unequal access to surplus values within the society.
2. Political Change: this deals with the change in distribution and operating mechanisms of social and political power within the social system
3. Technological Change: technology entails ways of applying scientific and other organized knowledge to practical task. Technological change therefore is a continuous process of change within technical, material and physical practices in a culture.
4. Cultural Change: this refers changes in the non-material aspects of culture. The change from the traditional way of worship which entailed the recognition of several gods (polytheism) to Christianity and Islam which emphasize on God (Monotheism).



5. Behavioural Change: behavioral change is regarded as part of cultural change but it specifically embraces changes arising from the influence of education on the attitude and overt reactions of people.

Social change may be planned or unplanned (accidental). Planned change entails the direct human intervention in the shaping and direction of change towards some predefined goals. Planned change entails the direct human intervention in the shaping and direction of change towards a defined goal (Salawu, 2007). In case of Fadama, it is more of a planned change because there are mission statements to be accomplished; this hereby served as a guide to the government of Nigeria and its partners in designing the project cycle. That might be reason why the project adopted the use of a participatory approach in delivering its services to the farmers. Unplanned change on the other hand is usually very costly as it carries with it no desirable attributes. Change may be total or segmental in its coverage. Social change impinges on the society as well as on the individual. Social change has been defined by Ekong (2005) as 'the process by which alteration occurs in the structure and function of a social system'. Social change on the other hand could mean large number of persons engaging in group activities, interactions and relationships when viewed within the context of a social system.

Social change theorists believe that for change to take place, societies have to move from the traditional to modern level. It is assumed that embedded in traditional societies are barriers that prevent them from development. Thus, for societies to develop, it has to undergo changes. The assumption is that economic development would not be achieved unless these barriers are removed. To enhance development of the individual and society,

services have to be created, hence the creation of social programs. For example, most of the innovations introduced to these Fadama farmers are just the improvements of their social methods, hence, the quick adoption by most of the Fadama Women Farmers. Changes are considered as social changes only when their widespread use affect societal pattern of daily living and the structure of the institution. Thus, the theory of social change will be used to examine the relationship between women farmers socio economic, perception and cultural attributes which is necessary in explaining the role of Fadama III project in empowering Fadama Women Farmers toward attaining food security in Benue State.

Within the social change theory are the modernization and diffusion perspective. The modernization perspective in actual fact emphasizes industrialization and the use of innate power sources on a very large scale (Burnstein, 1971). However, this appears to be some differences of emphasis among writers of modernization theory particularly with regards to the concept of 'modernization' itself. In agriculture, the assumption is that developing nations are using traditional techniques and technologies; that farming is at the subsistence level which prevent production of goods at commercial level. Thus, modernization connotes that developing societies would evolve from subsistence farming towards commercial production. There would be need for the production of goods and finally the urbanization of the villages. This therefore emphasized the reason for Fadama. The greatest aim of the Fadama III project is to attain a level of food security in Nigeria; and above all, a part of the project is focused on women who are more or less the home makers. This will give them a sense of responsibilities which will encourage the women Fadama farmers in the study area to be eager to adopt an innovation with the hope of increasing their productivity and ensuring food security in their different households.

In terms of transforming agricultural program in Nigeria, there has been the express concern to modernize the agricultural sector by using improved technologies as well as modernized approaches of disseminating the innovations to boost production. One of the strategies is the use of improved technologies with the view that these technologies would improve the levels of productivity of the farmers. The modernization perspective is suitable for this study because women farmers in the study area need to move from the use of traditional skills and techniques to using improved technologies in their production as a result of the new agricultural extension approaches in order to improve productivity as well as ensure household food security.

## CHAPTER THREE

### METHODOLOGY

#### 3.1: The Study Area

This study was conducted in Benue State of Nigeria. The State derives its name from the River Benue, which is the second largest River in Nigeria. Benue State was created on 3<sup>rd</sup> February, 1976 by the then regime of General Murtala Mohammed, out of the old Benue-Plateau State with its capital Makurdi. The present day Benue State (after a portion was carved out to create Kogi State in August 1991), has twenty three local governments areas which are Ado, Agatu, Apa, Buruku, Gboko, Guma, Gwer East, Gwer West, Katsina-Ala, Konshisha, Kwande, Logo, Makurdi, Obi, Ogbadibo, Oju, Okpokwu, Ohimini, Otukpo, Tarka, Ukum, Ushongo, Vandeikya.

Benue State is located in the North-Central geo-political zone. The State lies between latitudes  $6^{\circ} 30^{11}$  North to  $8^{\circ} 10^{11}$  North of the equator and longitudes  $6^{\circ} 3^{11}$  East to 100 East of the Greenwich Meridian. The State shares boundaries with five states, namely, Nasarawa to the North, Taraba to the East, Cross River to the South-East, Enugu to the South-West, and Kogi to the West. The Southern part of the state also shares boundary with the Republic of Cameroon.

Benue State has an estimated population of about 4,353,228 people, using a population growth rate of 3.2% based on the 2006 population census (NPC, 2006). The State occupies a land mass of  $33,955\text{km}^2$ . About 75% of the population lives in the rural areas and their

main occupation is farming. The average farmer in Benue State has a farm holding of between 1.5 to 2.0 hectares (BNARDA, 1999).

Benue State is referred to as the “food basket” of Nigeria because of the abundance of its agricultural resources. The State has a tropical climate, with two distinct seasons, namely, the rainy season from April to October and the dry season from November to March. Average annual rainfall varies from 1750mm in the Southern part of the state to 1250mm in the Northern part. The hot season comes in mid-April with temperatures between 32<sup>0</sup>C and 38<sup>0</sup>C. The State is a major producer of food crops like yam, sesame, rice, sorghum, cassava, sweet potatoes, millet, beans, and a wide range of other crops like vegetables, groundnut, ginger and sugarcane. Tree crops like oil palm, cashew, mango, coconut, bananas and citrus also grow very well in the state. Irrigation farming along the banks of River Benue is becoming a common feature in the State.

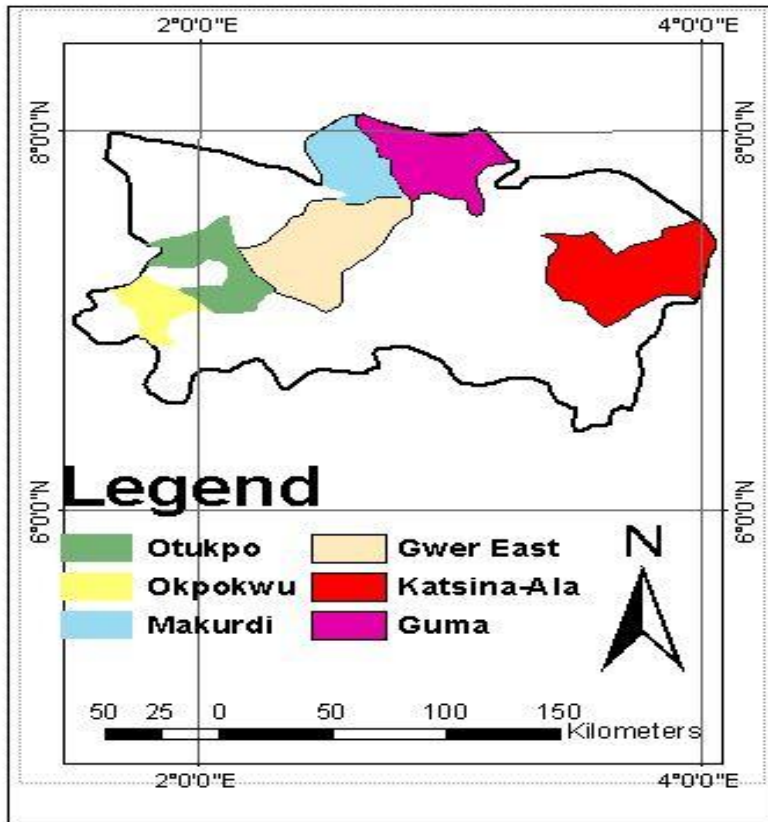


Fig 1: Map of Benue State showing the Study Area

### 3.2 Sampling Procedure and Sample Size

The respondents for this study were Fadama Women Farmers in Benue State, Nigeria. Multi-stage sampling procedure was used. According to Benue State Fadama Coordination Office (2012), there are twenty (20) Local Government Areas participating under Fadama III Programme out of the twenty three (23) LGAs in the State. Therefore, at the first stage, all the 20 Local Governments involved in the State were stratified into three using the existing senatorial districts: Benue North East, Benue North West, Benue South. Benue South Senatorial District is made up of Otukpo, Apa, Agatu, Ogbadibo, Oju and Okpokwu Local Government Areas. Benue North West Senatorial District is made up of Makurdi, Konshisha, Gwer West, Gwer East, Gboko, Tarka and Guma Local Government Areas

while Benue North East Senatorial District include the following Buruku, Ushongo, Logo, Katsina-Ala, Kwande, and Vandeikya. Therefore, two LGAs were randomly selected from each of the senatorial districts: that is, Okpokwu and Otukpo LGAs from Benue South, Guma and Katsina-Ala LGAs from Benue North East and Makurdi and Gwer East from Benue North West.

Two Fadama Community Associations (FCAs) were randomly selected from each of the Local Governments using the record available in Benue State Fadama Coordination Office (2012) thereby making a total number of 12 (FCAs) for the study. The Benue State Fadama project has a record of four thousand and eleven (4,011) Fadama Women Farmers (NFCO, 2011). Therefore, Fadama Women Farmers were randomly selected from each of the FCAs using the updated list of the Fadama User Groups (FUGs) compiled by Benue State Fadama Coordination Office. Finally, 60% of the registered female members were randomly selected from each of the FUGs. A total sample size of 173 Fadama Women Farmers was selected as illustrated in Table 3.1.

**Table 3.1: Representation of the Sampling Procedure and the Sample Size of the Study Area**

Senatorial Districts	Selected Government Areas	Local	Selected FCAs	No in a FUG	Selected Women Farmers (60%)
Benue West	North	Makurdi	Tyu-mu	25	15
			North bank	25	15
		Gwer East	Mbagba	25	15
			Mbayoo	25	15
Benue North East	Guma		Raav	24	14
			Abinsin	25	15
		Katsina-Ala	Michihe I	25	15
			Michihe II	20	12
Benue South	Otukpo		Okpaflo	25	15
			Upu	20	12
		Okpokwu	Ojapo	25	15
			Ugbokolo	25	15
Total	6		12	12	173

### 3.3 Method of Data Collection

The method used for collecting the primary data was through structured questionnaire which was administered to the women farmers. The questionnaire contained questions on the respondent's socio-economic characteristics such as age, gender, educational level, farm size, farm income, non-farm income, extension contact, benefits and constraints of the



Fadama III project, household size, the women's farmers' food security status, and their perception of the Fadama III project influencing the acceptance of innovations.

### **3.4 Analytical Techniques**

Based on the literature review, certain variables have been identified which are assumed to have influence on the perception of the Fadama Women Farmers on the Fadama III Project approach towards enhancing household food security. These include age, education, household size, marital status, farm size, land ownership, trainings, counterpart funds, access to credit and income.

#### **3.4.1 Descriptive Statistics**

Descriptive statistics such as frequency distribution, percentages, mean as well as mean weight were used to present the data in tables, charts. This was used to describe the socio-economic characteristics of the Fadama Women Farmers, assess the perception of the women farmers to the Fadama III Project, the benefits obtained from the Fadama III Project by the Fadama Women Farmers as well as examine the constraints of women farmers towards food security in the state which are objectives i, iv, v and vi respectively, while food security score line will be used to determine the food security status of the Fadama Women Farmers which is objective ii.

### 3.4.2 Inferential Statistics

Multiple Regressions was used to analyze and achieve objective (iii).

### 3.5 Multiple regression analysis

Multiple regression analysis was employed to achieve objective iii of the study. The regression model was specified explicitly as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_8 X_8 + u$$

$Y$  = food security status (very low food security =1, Low food security =2, marginal food security = 3 and high food security = 4)

$X_2$  = Age of women (years)

$X_2$  = farm size (hectares)

$X_3$  = extension contacts (number of contacts with extension agents)

$X_4$  = farming experience (years)

$X_5$  = credit (naira)

$X_6$  = education (education qualification)

$X_7$  = household size

$X_8$  = membership of association (years of membership of association)

$\beta_0$  = intercept

$u$  = error term

### 3.6 Definition and measurement of variables

The variables investigated were measured and divided into two parts as shown: Dependent and Independent Variables.

### 3.6.1 Independent Variables

- i. **Age:** Generally, this is defined as the length of time (in years) a person has lived or existed. The age of the Fadama Women Farmers was measured in years as given by the respondents.
- ii. **Education:** Education refers to the acquisition of knowledge, abilities, skills and instructions through trainings obtained from school or at home, formal or informal system. This was measured as numbers of years spent in the formal educational system by the Fadama Women Farmers.
- iii. **Household Size:** This is defined as the total number of people living in a given household as at a particular point in time. Household size was measured by the total number of people the Fadama Women Farmers is feeding and taking care of. These include the husband, children and any other dependent living with her.
- iv. **Marital Status:** This is a condition or a state of being married or unmarried as indicated by the Fadama Women Farmers. The marital status of the Fadama Women Farmers was measured as being single, married, divorced and widowed.
- v. **Farm Size:** The Fadama Women Farmers farm size was measured in hectares of land cultivated during the cropping season as given by the respondents.
- vi. **Land Ownership:** The variable was represented by the ownership status of the farm land used by the women farmers may be the farm land was borrowed, hired, inherited out-rightly purchased.

- vii. Income:** Income, in this context, refers to the amount farmer obtained per annum. This was determined by the amount generated/received from the sales of their farm produce, animals and other farm related activities.
- viii. Access to Credit:** This is the access to formal sources of credit by farmers for the purpose of farming. This was determined by knowing how much of the credit gets to the farmers and this will measured in Naira amount.
- ix. Training:** This dealt with the number of times the women farmers received training annually. This was also based on a 3- point liker scale interval range of never, rarely and frequently.
- x. Membership of Association:** This answered the question in years. That is the number of years the women farmers have being in the group.
- xi. Food Security:** Food security is centrally concerned with questions of accessibility, availability, affordability, quantity and distribution and was measured based on food security score as follows:
- i. High Food Security:** Households had no problems, or anxiety about, consistently accessing adequate food.
- ii. Marginal Food Security:** Household had problems at times, or anxiety about, accessing adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced.

- iii Low Food Security:** Households reduced the quality, variety, and desirability of their diets, but the quantity of food intake and normal eating patterns were not substantially disrupted.
- iv Very Low Food Security:** At times during the year, eating patterns of one or more household members were disrupted and food intake reduced because the household lacked money and other resources for food.

### **3.6.2 The Dependent Variable**

Odey (2002) articulates food security system definition as the availability and accessibility of foodstuff in desired quality to all consumers throughout the year. Food security was measured based on the households responses to questions on food availability and accessibility to the Fadama Women Farmers to achieve objective (ii) which determines the food security status of the women farmers. The total score of the women's responses was aggregated to determine their food security status of the household using the food security score line; very low food security =1, Low food security =2, marginal food security =3 and high food security =4. This was determined based on varying percentages of 0-25% (very low food security), 26-50% (low food security), 51-75% (marginal food security) and 76-100% (high food security).

### **3.7 Hypothesis Testing**

Ho<sub>1</sub>: Multiple Regressions was used to test the significant relationship between the socio-economic characteristics of the Fadama Women Farmers and their food security status.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.1: Socio-Economic Characteristics of the Fadama Women Farmers

This section described the socio-economic characteristics of the Fadama Women Farmers in the study area. These characteristics include Age, Marital Status, Household Size, Educational level, land ownership, farming experience, farm size owned, farm size cultivated, membership of association, extension contacts / visits, and trainings received.

##### 4.1.1 Distribution of Fadama Women Farmers by their age.

The ages of the Fadama Women Farmers ranged from 21-60 years. The farmers were grouped into four classes as seen in Table 4.1. The result showed that 4% of the women farmers were in the age group 21-30 years; this indicates that youth that is the young women in the area are not actively involved in farming activities which could be as a result of persistent rural-urban migration. However, Ogungbile *et. al.*, (2002) and Oloruntoba, (2000) asserted that farmers in this age range are always active and this can lead to positive effect on agricultural activities if they are available to participate in the farm chores. The mean age of the Fadama Women Farmers was 43years implying their high contribution as well as resourcefulness to the farming activities in the State. This finding corroborated with Aniedu *et. al.*, (2007) who asserted that most small scale farmers are mainly 40 years and above. Adubi (1992) argued that age, in correlation with farming experience, has a significant influence on the decision making process of farmers with respect to risk aversion, adoption of improved agricultural technologies, and other production-related decisions. Age has also been reported by Amaza *et. al.*, (2009) in their work on changes in household food security and poverty status in Southern part of Borno State to determine

how active and productive the farmer would be. It has also been found to affect the rate of household adoption of innovations, which in turn, affects household productivity and livelihood improvement strategies (Dercon and Krishnan 1996).

#### **4.1.2 Distribution of Fadama Women Farmers According to Marital Status**

From the findings in Table 4.1, 65% of the women farmers were married (married women are responsible and saddle with responsibilities) while 26% of them are widowed. The percentages of the Fadama Women Farmers that were single and divorced were 5% and 4% respectively. The significance of the marital status on agricultural production towards household food security can be explained in terms of the supply of agricultural family labour. It is expected that family labour would be more available where the household heads are married (Amaza *et. al.*, 2006). Farmers need a large family to reduce the cost of farm labour and maintain a relatively stable life style in the rural area.

#### **4.1.3 Distribution of Fadama Women Farmers by their Household Size**

The distribution of the Fadama Women Farmers by household size is shown in Table 4.1, household size with 4-6 members had 64%. Those with 7-9 members constituted 25% household size between 1-3 members had 9% only 2% had household size range between 10-12 members. The average household size of the Fadama Women Farmers was 6 members. From the distribution, the Fadama Women Farmers' household sizes were large and this is in line with Solomon (2008), Banmeke (2003), Olaniyan and Jibowo (1997) which indicated that large household size assist more on farm and other household activities. Ogungbile *et. al.*, (2002) reported that the adoption index may be either

positively or negatively related to the household size depending on the nature of the age structure and the amount of labour contributed among members. Banmeke (2003) further asserted that household size is an important index in any rural development intervention which can affect the outcome of such intervention.

The significance of household size in agriculture hinges on the fact that the availability of labour for farm production, the total area cultivated to different crop enterprises, the amount of farm produce retained for domestic consumption, and the marketable surplus are all determined by the size of the farm household Amaza *et. al.*, (2006). Size of the household may enhance labour availability that can be used for different activities. However, the implication of Household size for food security is that small-sized households are less prone to food insecurity than large-sized households because large household sizes have low per capita incomes which make them more prone to food insecurity than small-sized households (Mwabu, 2002; Oluwatayo, 2009). Ahmed (2011) argued that large household size is associated with increased household consumption expenditure which reduces the money that could be used for production purposes. The result obtained in this study is similar to the result obtained by Babatunde *et. al.*, (2007).

#### **4.1.4 Educational Level of Fadama Women Farmers**

The result in Table 4.1 showed that 75% of Fadama Women Farmers had one form of formal education or the other. The percentage of the women farmers that had primary education were (54%), while 19% had secondary education. Only about 2% of the women farmers had post-secondary education and 1% had adult education. This implies that majority of the Fadama Women Farmers were not highly literate. This coupled with the



fact that most of them are adults implies that the adult learning process will be useful to the women farmers and the project would need to simplify its instructional materials and spend more time with the women so as to cater for the 25% that had no formal education as the project is basically participatory extension project employing a bottom up approach.

However, Njoku, (1991) observed that formal education has a positive influence on adoption of innovation. Omoregbee, (1996) had similar observation. More so, Najafi (2003) noted that educational attainment is very important because it could lead to awareness of the possible advantages of modern farming techniques and diversification of households' incomes which in turn would enhance household food security.

#### **4.1.5 Mode of Land Ownership of the Fadama Women Farmers.**

Mode of land ownership in Nigeria is more of communal, individual and public ownership. The Fadama Women Farmers had four means of obtaining farm land which include borrowed, gift, rent or inherited. The result from Table 4.1 shows that 71% of the women farmers in Benue State inherited their farm lands while 27% rent land for farm use and 1% do borrow and receive land as gift for farming activities. Mode of land acquisition determines farmer accessibility to farm land and limited access to farm land may encourage farmers to diversify into non-farm activities. Access to land may determine the scale of food production thereby enhance the food security status of the farmers.

#### **4.1.6 Distribution of Fadama Women Farmers by their Farming Experience**

The results of the findings as seen in Table 4.1 showed that the women had a lot of experience in farming. Only about 4% women farmers had farming experiences less than

11 years, 42% had between 11-20years of farming experience, 37% (21-30years), 15% had farming experience between 31-40 years and 2% had 41-50 years of farming experience. This simply implied that a total of 96% of the Fadama Women Farmers have farming experience from 11-50 years. Average farming experience was 22 years. Ogungbile, *et. al.*, (2002) indicated that length of time of farming business can be linked to the age of farmers, access to capital and experience in farming may explain the tendency to adopt innovations and new technology.

Farming experience is an important factor determining both the productivity and the production level in farming activities. But the effect of farming experience on productivity and production may be positive or negative. Generally, it would appear that up to a certain number of years, farming experience would have a positive effect; after that, the effect may become negative. The negative effect may be derived from aging or reluctance to change from old and familiar farm practices and techniques to those that are modern and improved (Amaza *et. al.*, 2006).

#### **4.1.7 Distribution of Fadama Women Farmers by Farm Size Owned and Cultivated.**

Farm size refers to the total land area (Hectares) that the farmers cultivated. Farm size in the study area was rather small, women Fadama farmers having farm sizes of between 0 – 5 hectares as shown in Table 4.1, a total percentage of 7% of the Fadama Women Farmers had 1.1-2.0 hectares, 67% had between 2.1-3.0 hectares, 17% had 3.1-4.0 hectares and 7% of the Fadama Women Farmers had 4.1-5.0 hectares of land, average cultivated farm size was 2 hectares. From the results, majority of the farmers in the study area had small farm

sizes and could be classified as subsistence farmers. Small farm size may affect the size of food production which in turn will affect the food security status of the farmers.

According to Alamu *et. al.*, (2002) farmers with more resources including land are more likely to take advantage of a new technology. Also, Okunlola and Adekunle (2000), asserted that 53% of Nigerian farmers have less than 4 hectares of land. According to Najafi (2003), food production can be increased extensively through expansion of area under cultivation. Therefore under subsistence agriculture, farm size is expected to play a significant role in influencing a farm household's food security because size of the land under cultivation will determine the quantity of food production. Also, limited farm size may encourage the farmers to diversify into non-farm activities.

#### **4.1.8 Years of Membership of Association of the Fadama Women Farmers.**

Table 4.1 shows that, 74% of the women farmers have been members of the association for 5 years while 26% of them have been member for 4 years, average year of membership of the women farmers was 4years and 7months. Results further showed that all the interviewed Fadama Women Farmers were 100% active members of the project and having one access or the other in the project as a result of their continued membership to the association hence, giving them accessibility to credit facilities provided by the Fadama III project and thus improving their livelihood and household food security. Omoregbe and Ighoro, (2012) further opined that membership in agricultural cooperatives could serve as a means for improving farmers income and socio-economic well-being.

#### **4.1.9 Number of Facilitation / Extension Visits of the Fadama Women Farmers.**

The result in table 4.1 showed that 42% of the Fadama Women Farmers received 1-10 visits from the facilitators, while 41% received 11-20 visits from Fadama extension agents and 17% get extension contacts between 21-30 times. The extension visit is based on the number of extension contact per annum. The result in Table 4.1 reflects the number of times in which the women farmers receive extension contacts from the agents which was high. This is as a result of the support from their husbands which allow them to receive information from male extension agents. Those who gave negative answers said their husbands did not like their wives mixing or mingling with male folks. Contact with the extension can lead to improvement in food production as a result of information on improved agricultural technologies which will enhance food security status of the farmers.

#### **4.1.10 Number of times Fadama Women Farmers Receive Trainings.**

Table 4.1, showed that 57% of the Fadama Women Farmers received trainings from extension agents between 1-10 times in a cropping season, 26% of the women farmers receive training between 11-20 times while 17% receive extension training between 21-30 times. The average number of times the women farmers received training was 11 times in a year. From the result, it can be concluded that the Fadama III project offers high level of training to her Farmers which is necessary to boost food security.

Both men and women farmers benefited from training in agriculture, as well as business management and marketing skills. For example, Danida (2004) in an impact study following a donor-supported extension program in four Indian states showed that training

benefited women both economically and socially, thus, findings from the study supports that regular training from the Fadama III project is needed for women empowerment as well as attaining household food security in the study area.

#### **4.1.11 Credits Obtained by Fadama Women Farmers.**

Table 4.1 showed that only 8% had no access to credit for their farming activities while a total of 93% of the women farmers have access to credit either in cash or kind which include affordable fertilizer, improved seedlings, farm implements and so on. It further shows that 57% received between ₦1-~~₦~~200,000 worth of credit to boost their farming activities, while 34% of the Fadama Women Farmers received between ₦200,000-~~₦~~400,000 and only 9% of the Fadama Women Farmers received the amount between ₦400,000-~~₦~~600,000. Average credit obtained by the Fadama Women Farmers was ₦159,537. It is believed that expansion of credit programs will have beneficial effects on agricultural production of smallholders and rural incomes because credit could facilitate the purchase of costly inputs and the adoption of alternative crops (Zeller *et. al.*, 1998). It is also a key to poverty alleviation, livelihood diversification, and increasing the business skills of small farmers.

Women farmers need production capital to improve their production. The provision of credit can encourage the women farmers to use modern technologies, and procure inputs for farm use, thus bringing them to a higher level of productivity and increasing their incomes (Llanto, 1987). As such, increases in household incomes are much needed for improving food security and eventually will come from the gains in agricultural productivity through better technology and more productive crops. Therefore, farm

households' access to financial markets is important in influencing farm production and income (Zeller *et. al.*, 1998).

Thus, from the findings, it is believed that the Women Fadama Farmers are highly beneficiaries of the credit provided by the project due to high availability and accessibility of these variables which include seeds, seedlings, fertilizers and farm implements to promote farm production leading to high food security and women empowerment in the study area.

**Table 4.1: Socio-Economic characteristics of Fadama Women Farmers in Benue State**

<b>Socio-Economic Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age (Years)</b>		
21-30	7	4
31-40	65	38
41-50	69	40
51-60	31	19
Mean Age =43		
<b>Marital Status</b>		
single	8	5
married	113	65
Widowed	38	26
Divorced	14	4
<b>Household Size (No)</b>		
1-3	15	9
4-6	110	64
7-9	44	25
10-12	4	2
Mean =6		
<b>Educational Level</b>		
No Formal Education	44	25
Adult Education	1	1
Primary Education	93	54
Secondary Education	32	19
Post Secondary Education	3	2
<b>Form of land ownership</b>		
Borrowed	2	1
Gift	2	1
Rent	46	27
Inherited	123	71
<b>Farming Experience (Years)</b>		
1-10	7	4
11-20	73	42
21-30	64	37
31-40	26	15
41-50	3	2
Mean= 22		
<b>Farm Sized Owned &amp; Cultivated (Ha)</b>		
0.1-1.0	-	-
1.1-2.0	12	7
2.1-3.0	121	70
3.1-4.0	29	17
4.1-5.0	11	6
Mean = 2		

**Table 4.1: Socio-Economic Characteristics of Fadama Women Farmers in Benue State (cont'd).**

<b>Extension contacts</b>		
1-5	44	25
6-10	28	16
11-15	30	17
16-20	41	24
21-25	30	17
Mean = 13		
<b>Year of Membership of association (Years)</b>		
4	45	26
5	128	74
Mean = 4.7		
<b>No of time extension agents visits the farmers</b>		
1-5	44	25
6-10	28	16
11-15	30	17
16-20	41	24
21-25	30	17
Mean = 24		
<b>No of times Fadama Women Farmers received trainings</b>		
1-10	98	57
11-20	45	26
21-30	30	17
Mean = 11		
<b>Amount of Credit obtained (₦)</b>		
₦0,001-₦200,000	99	57
₦200,001-₦400,000	59	34
₦400,001 -₦600,000	15	9
Mean = ₦ 159,537		

**Source: Field Survey 2014.**

#### **4.2 Food Security Status of the Fadama Women Farmers.**

The results of the food security status of Fadama Women Farmers showed that a greater percentage representing 53% of the women have marginal food security. Results from Table 4.2 and Fig.2 shows that the households of these women had problems at times about accessing adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced. The results further showed that 25% of the Fadama Women Farmers



have attained high food security status, meaning that they had no problem about consistently accessing adequate food. Also, 19% of the Fadama Women Farmers have low food security status which means these households reduced the quality, variety, and desirability of their diets, but the quantity of food intake and normal eating patterns were not substantially disrupted. The remaining 3% have very low food security status which means that eating patterns of one or more household members were disrupted and food intake reduced, because the household lack money and other resources for food.

The implication of this is that a greater percentage of the Fadama Women Farmers have benefitted immensely from their membership in the Fadama III project and are actually moving towards high food security status. Although, households of these women had problems at times about accessing adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced. Nigeria, like many other African countries, has a comparative advantage in food crops production and the attainment of an acceptable growth rate per capita food production will not only coincide with the attainment of national food security but also greater self-sufficiency in food supply as small-scale women farmers represent the majority of rural poor populations in developing countries (Abalu, 1990). For greatest impact, agricultural development strategies must target this population. It therefore means that the farmers have been able to properly put the training they got through Fadama Project using the credit they obtained coupled with the input supply (fertilizer, seed and seedlings) to get better yield in quality and quantity, which has invariably boosted their food security status. So there is no doubt that women are important in achieving food security

**Table 4.2: Distribution of the Fadama Women Farmers Based on Food Security Status**

Food Security Status	Frequency	Percentage
High Food Security	44	25.40
Marginal Food Security	91	52.60
Low Food Security	33	19.10
Very Low Food Security	5	2.90
Total	173	100.00

Source: Field Survey, 2013



**Fig. 2: Chart Showing the Food Security Status of the Women Farmers**

### 4.3. Regression Analysis of Factors Influencing the Fadama Women Farmers Food Security Status

The result of the Regression Analysis of factors influencing the Fadama Women Farmers' food security status as presented in Table 4.3. The t-test and F-statistics were used to test the significance of each and all the explanatory variables respectively. From the regression analysis, the value of coefficient of multiple determinations ( $R^2$ ) was 0.623, which

indicated that 62.30% of the relationship between socio-economic characteristics and food security status of the Fadama Women Farmers were explained by the explanatory variables included in the model. Other factors not included in the model may be responsible for the remaining 37.70%. The F-statistic value (33.903), which tells the overall fitness of the model, i.e. the joint relationship of all the independent variables on the dependent variable, was significant at 0.01 level of probability.

Out of the eight socio-economic characteristics that were regressed on food security status farm size, extension contact, access to credit and membership of association were statistically significant. Farm size was statistically significant at 0.10 level of probability, while all others were statistically significant 0.01 level of probability. Farm size had a regression coefficient of 0.090 at 10% level of significant. This means that as farm size increases, households' food security status increases/improves; a unit increment in farm size will increase households' food security status by 0.090. This is not surprising as increase in farm size will bring about increase in farm output or produce.

Thus, household will have more farm produce to consume all year round and sell the excesses to buy other farm produce that they don't produce or other food necessity, which will boost their food security status. This is in line with Kidane *et. al.*, (2005) and Amaza *et. al.*, (2006) who in their research noted that farmland size is one of the determinants of food security. Extension contact was significant at 0.010 level of probability, with a regression coefficient of 0.018. This implies that as extension contact increases, the food security status of Fadama Women Farmers increase. A unit increment in extension contact will increase the respondent food security status by 0.018. This is because as the Fadama

Women Farmers' have more extension contact, they will have increased access to latest farm practice(s), credit sources, farm inputs and market information and these will lead to increase in farm output from the same size of land i.e. more efficient use of their farm lands, increase in farm size and it will enable them to take the best marketing decision as regards to selling their excesses, which will in-turn bring about increased yield/better quality and more money from their marketing activities. All these will undoubtedly improve their food security status.

Access to credit was significant at 0.01 level of probability with a regression coefficient of 0.660. The implication is that the more the Fadama Women Farmers have access to credit the better their food security status and a unit increment in access to credits will increase food security status of the respondents by 0.660. This is because access to credit will aid adoption of new agricultural practices (innovation), purchasing of farm inputs such as agrochemicals, fertilizers, seed and seedlings, employment of farm labour and all these will enhance the production of farm produce. This will invariably boost food security status of the Fadama Women Farmers' households.

Years of membership of association had a regression coefficient of 0.256 at 0.01 level of probability. This means that as years of membership of association increases, household food security status increases. A unit increment in years of membership of association will increase the respondents' food security status by 0.256. Based on the findings, the hypothesis which states that there is no significant relationship between the socio-economic characteristics of the Fadama Women Farmers and their food security status was therefore rejected.

**Table 4.3: Factors Influencing the Fadama Women Farmers Food Security Status**

Variable Name	Regression Coefficient	Standard Error	T-value	Significance
Constant	1.917		6.675	0.000
Age	0.003	0.069	0.747	0.456
Farm size	0.090	0.103	1.828*	0.069
Extension Contact	0.018	0.381	6.809***	0.000
Farming Experience	0.005	0.097	-1.252	0.212
Access to Credit	0.666	0.484	9.222***	0.000
Education	-0.030	0.089	-1.588	0.114
Household Size	-0.018	0.082	-1.061	0.290
Association	0.256	0.309	5.118***	0.000

$$R^2 = 0.623$$

$$R^2 = 0.605$$

$$F - \text{Statistics} = 33.903***$$

\*\*\* = significant at 0.01 level of probability

\* = significant at 0.10 level of probability

#### 4.4 Perception of Fadama Women Farmers of the Fadama III Project

Results in Table 4.4 showed that the Fadama Women Farmers perceived input supply, funding, and planning as good having mean weights of 2.17, 2.16 and 2.42 respectively. The women farmers also perceived monitoring of the project, contribution by group members and meeting attendance as excellent with mean weights of 2.51, 2.58 and 2.66 respectively. However, training was perceived to be poor with a mean weight of 1.91. The result agreed with the fact that the Fadama III Project has become increasingly popular and beneficial among her participants because of its potential to develop projects that are sustainable, responsive to local priorities, empower communities, and more effectively target poor and vulnerable groups. Fadama III project is all about participation, empowerment of the poor, ownership, social capital, social inclusion, effectiveness,

efficiency as well as sustainability (Dongier *et. al.*, 2001; Binswanger & Aiyar, 2003). The result showed that the Fadama Women Farmers perceived the Fadama project as a better extension approach employing a Community Driven Development approach. The Fadama Women Farmers rated the Fadama III Project high as they strongly agreed with all the statements that community driven development has all the features of Participatory.

**Table 4.4: Perception of Fadama Women Farmers to Fadama III Project**

<b>Variable</b>	<b>Scores</b>			<b>Total Weight</b>	<b>Mean Weight</b>
	<b>Poor(1)</b>	<b>Good(2)</b>	<b>Excellent(3)</b>		
<b>Input Supply</b>	-	143	30	376	2.17
<b>Funding by Agency</b>	-	146	27	373	2.16
<b>Training</b>	15	158	-	331	1.91
<b>Planning</b>	-	101	72	418	2.42
<b>Monitoring</b>	-	84	89	435	2.51
<b>Contribution by Group Members</b>	13	45	115	448	2.58
<b>Meeting Attendance</b>	-	59	114	460	2.66

**Note: poor =1, Good = 2, Excellent = 3. Source: Field Survey, 2013.**

#### **4.5 Benefits of the Fadama III Project toward attaining Food Security**

The results of the analysis in Table 4.5 showed that 100% of the women farmers fully benefitted in the training got farm input and also had access to the market through their involvement in the Fadama III Project while 93% got credit. The benefit of the Fadama III Project toward food security was positive. Conroy, (2003), noted that the benefits of being members of farmers group include: making agricultural extension services more client-driven and efficient; strengthening farmers' bargaining power with traders; funding by agency, training, reducing transaction costs for input supplies and output buyers as it has been proven by the Fadama III project.

**Table 4.5: Distribution of Fadama Women Farmers Based on Benefits Derived from the Fadama III Project**

<b>Benefits</b>	<b>Frequency</b>	<b>Percentage</b>
Credits	160	93.00
Training	173	100.00
Farm Input	173	100.00
Market Access	173	100.00

Source: Field Survey, 2013, Number greater than N=173 due to multiple responses.

#### **4.6 Constraints of Fadama Women Farmers toward attaining Food Security**

Table 4.6 shows the constraints faced by Fadama Women Farmers toward attaining food security. Major constraints facing the Fadama Women Farmers are labour shortage (93%) which ranked first while pest and disease (92%) ranked second. Others include, poor access to market (32%), lack of improved processing and storage facilities (24%), poor access to financial services (16%), inefficient extension delivery system (13%), and lack of access to improved planting materials (8%) This is not surprising as sustainable agricultural practices include crop rotation that mitigate diseases insect problems, and management systems to improve the crops abilities to resist pests and diseases as well as compost to improve soil fertility.

According to Quisumbing (1994), unequal rights and obligations within households and societies impose restrictions on women’s time use and availability, which can undermine their efficiency and productivity due to multiple responsibilities and time conflicts as well as fewer long-term human capital investments, such as education. Women have lower levels of education in all developing regions, a factor found to be significant in adopting new technology and assuming risk. All these are constraints that women need to overcome.



**Table 4.6: Constraints of Fadama Women Farmers toward attaining Food Security**

<b>Constraints</b>	<b>Frequency*</b>	<b>Percentage</b>	<b>Rank</b>
Labour Shortage	160	93	1
Pest and Disease	159	92	2
Poor Access to Market	56	32	3
Lack of Improved Processing and Storage Facilities	41	24	4
Poor Access to Financial Services	27	16	5
Inefficient Extension Delivery System	23	13	6
Lack of Access to Improved Planting Materials	13	8	7

Source: Field Survey, 2013, NB: total responses was more than 173 due to multiple responses.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1: Summary

The broad objective to this study assessed the role of Fadama III Project toward women empowerment for household food security in Benue state, Nigeria. The specific objectives were to describe the socio-economic characteristics of the Fadama Women Farmers; determine the food security status of the Fadama Women Farmers; determine the factors influencing the Food Security Status of the Fadama Women Farmers; assess the perception of the Fadama Women Farmers to the Fadama III Project; assess the benefits of the Fadama III project to the Fadama Women Farmers toward attaining food security and examine the constraints of Fadama Women Farmers toward attaining food security in the study area. Primary data were used for this study and these were collected with the aid of structured questionnaire. Multi-stage sampling procedure was used.

At the first stage, all the twenty Local Governments involved in the State were stratified into three using the existing senatorial districts. Thereafter, 2 LGAs were randomly selected from each of the three senatorial districts making a total of 6 LGAs. At the third stage, 2 Fadama Community Associations were randomly selected from each of the six Local Governments using the record available in Benue State Fadama Coordination Office (2012) thereby making a total number of 12 Fadama Community Associations. Finally, 60% of the registered female members were randomly selected from each of the Women Fadama User Group given a total sample size of 173 Fadama Women Farmers. Descriptive statistics and inferential statistics were used to analyze data including food security score tools. Food

Security was measured based on the Availability and Accessibility at the individual household.

The age of the farmers revealed that 78% of the women farmers were within 31-50 years. Only 4% were below 30 years of age. The mean age of the farmers was 43years. Only 5% of the Fadama Women Farmers were single while 65% of the women farmers were married. A total of 64% of the Fadama Women Farmers had 4-6 members in their household and the average household size is 6 members. The result also showed that 79% had between 11-30 years of farming experience while only 2% had farming experience greater than 50 years. Average farming experience was 22years. Only 25% do not have any form of formal education. A total of 70% had farm size between 2.1-3.0 hectares with average farm size estimated to be 2 hectares. All the Women Fadama Farmers had one form of Extension contact during the cropping season. It was found that only 8% had no access to credit. In addition, all the women farmers have undergone one form of training or the other.

Based on the level of availability and accessibility of the women farmers to food, it was found out that 25% of the Fadama Women Farmers were highly food secured, marginally food secured were 53% of the women farmers, 19% had low food security and 3% had very low food security. The socio-economic characteristics of the Fadama Women Farmers found to be significantly related to the determinants of food security in the study area were farm size, extension contact, access to credit and membership of association.

## **5.2 Conclusion**

Empirically, the household food security statuses of the women farmers were high as a result of their involvement in the Fadama III Project, only 3% of the Fadama Women Farmers had very low food security status, meaning that the Fadama III Project had played a positive role in empowering the Fadama Women Farmers toward attaining household food security in Benue State.

## **5.3 Contributions to knowledge**

1. This work established that about half (53%) of the Fadama Women Farmers are marginally food secured. Thus, implying that a greater percentage of the Fadama Women Farmers are moving towards high food security status, although, households of these women had problems at times accessing adequate food but the quality, variety and quantity of their food intake were not substantially reduced.

2. This work also found that about 62% of the variations in the food security status of the Fadama Women Farmers were explained by variations in socio-economic indicators like age, farm size, extension contacts, farming experience, access to credits, education, household size and membership of association.

3. Findings from this work indicated that only training was perceived to be poor with a mean weight of 1.91 while other variables including input supply, funding and planning were found to be perceived as good while monitoring, contributions by group members and meeting attendance were perceived to be excellent by the Fadama Women Farmers. The

Fadama III Project has made agricultural extension services more client-driven and efficient.

4. This work also established that labour shortage posed a major constraint to Fadama Women Farmers toward attaining food security with 92%, closely followed by pest and disease also with 92% level of constraints.

### **Recommendations**

Based on the findings of this study, the following recommendations are made:

1. Extension contact was positive and significant to food security status. Hence, there is need for more support and strengthening using facilitators or extension agents by research institutes for continuity of purpose towards attaining food security in the study area.
2. Access to credits was positively and significantly related to the food security status of the women farmers. Hence, women farmers should be given more assistance to obtain more credit facilities through financial institutions and Non-Governmental organizations by reducing the bottle necks associated with bank loans.
3. Membership of cooperatives was positively and significantly related to the food security status of the Fadama Women Farmers. It is recommended that women farmers who are not members of the Fadama III project are encouraged to show their interest in this project and become active members so as to enjoy the great benefits of this project for continuity of purpose even after the expiration of the Fadama III project.

4. The Fadama women farmers' perception to the Fadama III project was good in terms of input supply, funding and planning while monitoring, contributions by group members as well as meeting attendance were perceived to be excellent. This indicates that these activities had positive impact in achieving food security in Benue State. Hence, a continuity of these activities should be encouraged to help strengthen the Fadama Women Farmers capacity and empowering the women farmers in the study area.
5. The Fadama Women Farmers should endeavor to promote continuity of their farming activities within their groups; this could be through regular attendants of meetings as well as constant and regular pay of their counterpart funds to the project. This is to create a higher sense of ownership, accountability as well as sustainability and thus, leading to their empowerment and also ensuring the attainment of food security.

## REFERENCES

- Abalu, G. O. I. (1990). The Attainment of Food Security in Nigeria: The Role of Resource Constrained Nigeria Farmers. In: Olukosi, J. O., Ogungbile, A. O. and Kalu, B. A. (eds.) *Appropriate Agricultural Technologies for Resource- Poor Farmers*. Proceedings of the National Farming Systems Research Network held in Calabar, Cross River State, Nigeria, August 14-16, Pp 5 – 17.
- Adams, M. E. (1982). *Agricultural Extension in Developing Countries*, Longman Press, United Kingdom.
- Adewumi, J. B. O. (1997). Constraints to Irrigation Investments in Nigeria Possible Ways Forward. A paper presented at the First Irrigation Symposium, House of Assembly, Kano State, 24<sup>th</sup> March, Pp 11.
- Adubi, A. A. (1992). An Empirical Analysis of Production Risks and Attitudes of Small Farmers in Oyo State, Nigeria. Unpublished P.hD. Thesis, University of Ibadan, Nigeria.
- Agnes, R., Q.; Lynn, R. B.; Hilary, S. F.; Lawrence, H. and Christine, P. (1995): Women: The Key to Food Security. Food Policy Report. The International Food Policy Research Institute, Washington, DC, Pp 1 – 14.
- Agenor, P. R.; Izquierdo, A. and Fofack, H. (2004): IMPMPA: A Quantitative Macroeconomic Framework for the Analysis of Poverty Reduction Strategies. The World Bank, Washington D.C.
- Agwu, A. E. and Abbah, H. O. (2009): Attitude of Farmers towards Cost-Sharing in the Second National Fadama Development Project (NFDP-II): The Case of Kogi State of Nigeria. *Journal of Agricultural Extension*, Vol. 13 (2): 1-11.
- Ahmed, S. S. (2011). Comparative Analysis of Tomato Production among Farmers using Informal and Formal Credit Sources in Three Local Government Areas of Kano State. Unpublished M.Sc thesis, Department of Agricultural Economics and Rural sociology, Ahmadu Bello University, Zaria, Nigeria.
- Aina, O. I. (2003): ‘General Overview of the States of Women in Nigeria: In Abiola Akinyode Afolabi (Eds), *Gender Gaps in the 1999 Constitution of Nigeria*, Lagos: WARDC.
- Ajayi, M. T. and Okafor, C. (2006). “Extension Agents’ Perception of Participatory Agricultural Extension Approaches Adopted by Agricultural Development Program (ADP) in Ondo State, Nigeria.” *International Journal of Agricultural and Biological Sciences*, 4(1): 20-25.

- Ajibefun, I. A. and Aderinola, E. A. (2004). Determinants of Technical Efficiency and Policy Implication in Traditional Agricultural Production: Empirical Study of Nigeria Food Crop Farmers. Final Report Presentation at the Bi-annual Research Workshop of African Research Consortium, Nairobi, Kenya.
- Akello, C. and Sarr, F. (1999). The Economic Role of Women in Agricultural and Rural Development: The Promotion of Income Generation Activities. CTA Annual Report: Special Paper, Pp 3.
- Alamu, J.F., and Rahman, S.A. (2002): Agricultural Supply Response Evidence from Four Cereal Crops in Nigeria. *The Nasarawa Journal of Humanities*, 1(1): 198 - 203.
- Amaza, P. S.; Umeh, J. H. and Adejobi, A. O. (2006). Determinants and Measurement of Food Security in Nigeria: Some Empirical Policy Guide. Contributed Poster prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia.
- Anderson, J. R.; Feder, G. and Ganguly, S. (2006). The Rise and Fall of Training and Visit (T&V) System: An Asian Mini-Drama with an African Epilogue. World Bank Policy Research Working Paper (3928), Washington D.C.
- Aniedu, C.; Nwachukwu, I.; Uwakah, C. T. and Unamma, R. I. A. (2007): Gender Factors Influencing Adoption of Yam Mini-sett Technique by Farmers in Southern Eastern Nigeria. Implications for Sustainable Yam production. *Journal of Agriculture and Social Research*. 7 (2): 56 - 62 [www.ajol/journals/jasr](http://www.ajol/journals/jasr).
- Arokoyo, T. D.; Chikwendu, D. O. and Maigida, D. N. (1994). Baseline Survey of Women's Participation in Agriculture: Report Submitted to AOMEU, Kaduna, Nigeria.
- Attah, A. W. (2012). African Research Review Food Security in Nigeria: The Role of Peasant Farmers in Nigeria. *An International Multidisciplinary Journal, Ethiopia*, 6 (4): 173 - 190.
- Baba, K. M. and Sigh, B. R. (1998). Sustainable Development of Fadama Land in Northern Nigeria. A review of the Potentials and challenges. *Nigerian Journal of Rural Sociology*, 2 (1): 95 - 105.
- Babatunde, R. O.; Omotosho, O. A. and Sholatan, O. S. (2007). Socio-economic Characteristics and Food Security of Farming Household in Kwara State, North Central Nigeria. *Pakistan Journal of Nutrition*, 6 (1): 49 - 58.
- Bali-Swain, R. (2006). Microfinance and women's empowerment. SIDA Working Paper. Stockholm: Division of Market Development, Swedish International Development Cooperation Agency.



- Banmeke, T. O. A. (2003). Accessibility and Utilization of Agricultural Information in the Economic Empowerment of Women Farmers in South Western Nigeria. Unpublished Ph.D Thesis submitted to the Department of Agricultural Extension and Rural Development, University of Ibadan, Pp142.
- Bebbington, A.; Lewis, D.; Batterbury, S.; Olson, E. and Siddiqi, M. S. (2007). Of Text and Practices: Empowerment and Organizational Cultures in World Bank funded Rural Development. *Journal of Development Studies*, 43 (4): 597 - 621.
- Benor, D. and Harrison, J. O. (1984). Agricultural Extension: The Training and Visit System. The World Bank, Washington. D.C.
- Benue State Agricultural and Rural Development Authority (BNARDA, 1999). Project report.
- Benue State Fadama Coordination Office. <http://www.bsfc.org>. Retrieved on 25<sup>th</sup> October, 2012.
- Benue State Map. <http://www.Benuespc.org>. Retrieved on 31<sup>st</sup> January, 2014.
- Berger, M.; Delancy, V. and Mellencamp, A. (1984). *Bridging the Gender Gap in Agricultural Extension*. International Center for Research on Women, Washington, D.C.
- Bindish, V. and Evenson, R. E. (1997). The impact of T&V extension in Africa: the experience of Kenya and Burkina Faso. *The World Bank Research Observer*, 12 (2): 183 - 201.
- Blackburn, J. and Holland, J. (1998). Institutionalizing Participation in Development, I.T. Publications, United Kingdom, Pp 34.
- Blanch, R. M. and Ingawa, S. A (2004). A Practical Guide for National Fadama Development Project II on Conflict and Management. The World Bank Research PCF/ Government of Nigeria Project Coordinating Unit, Fadama II, Pp 1 - 19.
- Brown, M. E. and Funk, C. C. (2008). "Climate - Food security under climate change". *Science publication*, 319 (5863). [doi:10.1126/science.1154102](https://doi.org/10.1126/science.1154102). [PMID 18239116](https://pubmed.ncbi.nlm.nih.gov/18239116/).
- Bureau of African Affairs (2010). Background note: Nigeria. Retrieved from <http://www.state.gov/r/pa/ei/bgn/2836.htm>.
- Burnstein, H. (1971). The Modernization Theory and the Sociological Study of Development. *Journal of Development studies*, 7(2): 141 - 160.
- Canada International Development Agency (CIDA) (2003): Promoting Sustainable Rural Development Through Agriculture: Canada Making a difference in the world. Ministers of Public Works and Government Services, Canada.

- Central Bank of Nigeria (CBN) (2006). Central Bank of Nigeria Statistical Bulletin, 2 (4): 138
- Conroy, C. (2003). New Directions for Nigeria's Basic Agricultural Services. A discussion paper for Basic Agricultural Service (BAS). Natural Resources Institute, University of Greenwich, United Kingdom, Pp 1 - 61.
- Danida (2004). Farm Women in Development – Impact Study of Four Training Projects in India, Danida, World Bank.
- Dercon, S. and Krishnan, P. (1996). Income Portfolios in Rural Ethiopia and Tanzania: Choices and Constraints, *Journal of Development Studies*, 32 (6): 850 - 875.
- Dill, B. (2009). The Paradoxes of Community Based Participation in Dar'es-Salaam, *Development and Change*, 40 (4): 717 - 743.
- Disarre, L. (1981). The Critical Needs of African Women and Appropriate Strategies in the Framework of the Giseyi Lisaka Mulpocs. *An UNECA/ARTRCW Research series*.
- Dongier, P.; Van Domelen, J.; Ostrom, E.; Rizvi, A.; Wakeman, W.; Bebbington, A.; Alkire, S.; Esmail, T. and Polski, M. (2001). Community-Driven Development. In J. Klugman, (ed.). *A Sourcebook for Poverty Reduction Strategies*, Washington DC., World Bank.
- Donovan, C. and Jaqualino, M. (2007). Illness, Death and Macro-nutrients: Adequacy of Rural Mozambican Household Production of Macro-Nutrients in the Face of HIV/AIDS. *Food and Nutrition Bulletin*, Vol. 28: 31 - 38.
- Duyilemi, A. N. (2007). Girl-Child Education and Empowerment. Keynote Address Presented at Workshop for Senior Secondary School Female Students, Teachers and Education officers in Ondo, South West Senatorial Districts, Ondo State.
- Economic Commission for Africa (ECA) (1973). Women and National Development in African Countries. Position paper prepared by Human Resource Development Division, ECA.
- Ekong, E. E. (2005). *An Introduction to Rural Sociology*, Dove Publishers Limited, Ibadan, Oyo State.
- Evans, D. R. (1999). Games and Simulations in Literacy Training, Tehran, Iran: International Institute for Adult Literacy Methods.
- Fapohunda, T. M. (2011). Empowering Women through Higher Education in Nigeria. *European Journal of Humanities and Social Sciences*, 9 (1): 9 - 16.
- Federal Ministry of Agriculture and Rural Development (FMARD) (2001). National Fadama Development Project Appraisal Report.

- Federal Ministry of Agriculture and Rural Development (FMARD) (2006). National Program for Food Security (NPFS) Expansion Phase Project 2006-2010 Main Report, Nigeria.
- Federal Ministry of Education (1989). Blue Print on Women Education in Nigeria. Special Speech. Education on Women for National Development: A key note address by the Vice-Chancellor, University of Benin. Proceedings of the National Workshop for the Production of a print on Women Education in Nigeria. 23<sup>rd</sup> - 26<sup>th</sup> Sept. Durbar Hotel, Lagos, Nigeria.
- Food and Agricultural Organization (FAO) (1993). Agricultural Extension and Farm Women in the 1980s, FAO, Rome.
- Food and Agricultural Organization (FAO) (1996). Food for all. Report of the World Food Summit, Rome, Pp 160.
- Food and Agricultural Organization (FAO) (2006). State of Food Insecurity 2001, FAO, Rome.
- Food and Agricultural Organization (FAO). IPM Secretariat, 1993. *'IPM Farmer Training: The Indonesia Case'*. Yogyakarta, Indonesia.
- Food and Agricultural Organization of the United Nations (FAO) (2003). Extension through Women's Community Development Groups: a case study of Female Extension Assistants in Azad Jammu & Kashmir, FAO, Rome.
- Food and Agriculture Organization (FAO) (1983). The State of Food and Agriculture World Review: The Situation in Sub Saharan African. Women in Development Agriculture. F.A.O. Agriculture series No. 16, Rome.
- Foster, A. (1986). A Common Future for Women and Men (and all Living Creatures). A Submission Note to the World Commission on Environmental and Development. EDPRA Consulting Inc., Ottawa Canada, Pp 160.
- GCARD (2010). Transforming Agricultural Research for Development: Report for GCARD from the Global Author Team, FAO, Rome.
- Gebremedhin, T. G. (2000), Problems and Prospects of the World Food Situation. *Journal of Agribusiness*, 18 (2): 221- 236.
- Gillespie, S. (2004). Scaling up Community-Driven Development: A Synthesis Experience. Food and Nutrition Division Discussion Paper 181. International Food Policy Research Institute, Washington, D.C.
- Hagmann, J.; Chuma, E.; Murwira, K. and Connolly, M. (1999). Putting Process into practice: Operationalizing Participatory Extension. Network-Paper-Agricultural-Research- and Extension-Network, ODI (UK), Pp 23 - 94.

- Heemskerk, W. (2003). A Guide to Demand-driven Agricultural Research. The Client-oriented Research Management Approach: Rural Service Delivery for Agricultural Development. 2003, KIT (NL), Pp 171.
- Heyzer, N. (1992). Gender, Economic Growth and Poverty Development, Vol. 1: 50 - 53.
- Idachaba, F. S. (1993). "World Food Day 99". In Aregbe, K. T. (ed): *Nigeria Agriculture and development journal*, 3 (4): 28 - 34.
- Idachaba, F. S. (2004). Food Security in Nigeria, Challenges under democratic dispensation. Paper presented at the 9<sup>th</sup> Agricultural and Rural Management Training Institute, Annual Lecture, 24<sup>th</sup> March, Ilorin, Kwara State.
- IFPRI (2005). Reaching Sustainable Food Security for all by 2020: Getting the Priorities and Responsibilities Right, Pp 1 - 8.
- Igbodalo, F. (1990). Contributions of Women to National Development. Paper presented at the NAUW on Contribution of women to National Development.
- Ingawa, S. A.; Oredipe, A. A.; Idefor, K. and Okafor C. (2004). Facilitators Project Implementation Manual, Second National Fadama Development Project. Federal Ministry of Agriculture and Rural Development. Abuja, Nigeria.
- Jibowo, A. A. (2003). History of Agricultural Extension in Nigeria, In: Adedoyin, S. F. (eds). *Agricultural Extension Society of Nigeria: Agricultural and Rural Management Training Institute, Ilorin, Nigeria*, Pp 1 - 12.
- Jiggins, J. (1986). Gender-Related Impacts and the World of the International Agricultural Research Centers. Consultative Group on International Agricultural Research (CGIAR). Study Paper No. 17. The World Bank, Washington, D.C.
- Jiggins, J. (1994). *Changing the Boundaries, Women-Centered Perspective on Population and the Environment*. Island Press, Washington, D.C.
- Kabeer, N. (2001). Conflicts over Credit: Re-evaluating the Empowerment Potential of Loans to Women in Rural Bangladesh. *World Development*, 29 (1): 63 - 84.
- Kabeer, N. (1999). The conditions and consequences of choice: Reflections on the measurement of women's empowerment. UNRISD Discussion Paper No. 108. Geneva: United Nations Research Institute for Social Development.
- Kaul, R. N. (1993). Gender in Farming, Part II: Selected Case Studies in Development and Extension of Farm and other Equipment to Women in Northern Nigeria, *Journal for Farming Systems Research Extension*, 3 (2): 25 - 38.
- Khan, M. H. (2000). Rural Poverty in Developing Countries. Finance and Development. IMF, Washington, D.C.

- Khwaja, A. (2001). *Can Good Projects Succeed in Bad Communities? Collective action in the Himalayas*. Cambridge, Harvard University Press, U.S.A.
- Kidane, J.; Alemu, Z. G. and Kundhlande, G. (2005). Causes of Household Food Insecurity in Koredegaga Peasant Association Oromiyan Zone Ethiopia. *Agrekon*, 44 (4): 523 - 560.
- Lamming, G. N. (1983). *Women in Cooperation: Constraint and Limitation to Full Participation*. A publication of Human Resource Institute and Agrarian Reform Division, Food and Agricultural Organization of the United Nations, Rome, Italy.
- Llanto, G. (1987). *Rural Credit Policy: Do We Need To Target?* Agricultural Credit Policy Council, Philippines.
- Madukwe, M. C. (2006). Delivery Extension Services to Farmers in Developing Countries. Retrieved from <http://Knowledge.cta.int/en/content/view/full/3009>, 3<sup>rd</sup> February, 2012.
- Manor, J. (1999). *The Political Economy of Democratic Decentralization*. World Bank, Washington D.C.
- Mansuri, G. (2004). Community Based and Driven Development: A Critical Review. *World Bank Research Observer*, 19 (1): 1 - 39.
- Marc, S. S. and Lewis, C. (1996). Role of Farm Level Diversification in the Adoption of Modern Technology in Brazil, IFPRI, Vol. 144: 1 - 3.
- Maunder, A. H. (1972). *Agricultural Extension: A Reference Manual*. FAO, Rome.
- Mayoux, L. (1998) Participatory Learning for Women's Empowerment in Micro-Finance Programmes. Negotiating Complexity, Conflict and Change. *IDS Bulletin* 29 (4): 39 -51.
- Mettrick, H. (1993). *Development Oriented Research in Agriculture: An ICRA Textbook* Wageningen. The Netherlands: International Center for Development Oriented Agriculture.
- Mohammed, K. Y. (2003). Determinants of Youth Participation in Change Program in Rural Nigeria. *Anthropologist*, 5 (3): 101 - 102.
- Mwabu, G. (2002). *Poverty and Malaria in Africa: A Research and Policy Agenda*, AERC Special Papers.
- Najafi, B. (2003). An overview of Current Land Utilization Systems and their Contribution to Agricultural Productivity. Report of APO Seminar on impact of Land Utilization System on Agricultural Productivity, Productivity Organization, Islamic Republic of Iran, Asian.

- National Bureau of Statistics (NBS) (2007). *Nigeria Poverty Assessment (harmonized)*. National Bureau of Statistics, Abuja.
- National Fadama Coordinating Office (2007). *Poverty Reduction through Empowerment*. Publication of PCU-NFCO, Abuja.
- National Fadama Coordinating Office (2011). *Documentation of the available Women Fadama User Groups in Benue State*. Retrieved on 20<sup>th</sup> February, 2013, at the National Fadama Coordination Office, Abuja.
- National Planning Commission (NPC) (2001). *National Policy on Food and Nutrition in Nigeria*. FCT, Abuja, Nigeria.
- National Population Commission (NPC), 2006. *Census Figures for Nigeria*. Retrieved on the 23<sup>rd</sup> March, 2012. <http://www.population.gov.ng>
- Neuchael Group, (1999). *Common Framework on Agricultural Extension*. Paris: Bureau des Politiques Agricoles et de la Securite Alimentaire.
- National Fadama Development Programme (NFDP) (2008). *National Fadama Development Appraisal Report by the Federal Republic of Nigeria*, Abuja.
- Njoku, J. E. (1991). *Factors Influencing the Adoption of Improved Oil Palm Technologies by Small-holders in Imo State, Nigeria*.
- Nnadozie, B. and Ibe, I. (2000). *Women in Agriculture: Problems and Prospects*, In: Nwosu A. C.; Nwajiuba, C. U. and Mbanasor, J. A., *Agricultural Transformation in Nigeria* (eds). *Novelty Industrial Enterprises*, Owerri, Imo State, Nigeria, Pp 24 – 35.
- Nwogu, F. C. (2006). *Prospects and Pitfalls of Agricultural Production in Nigeria*. Blessed Publication / Consultants, Ibadan, Nigeria.
- Nyam, T. T. (2005). *The Concept and Philosophy of the Special Program for Food Security*. Paper presented at the site level sensitization workshop on concept and philosophy for Food Security held in Makurdi, Otukpo and Katsina-Ala Sites, Match 16<sup>th</sup> - 29<sup>th</sup>.
- Obanya, P. (2004). *Revitalizing Education in Africa*. Stirling-Horden Publishers (Nig.) Ltd, Ibadan, Pp 130 - 135.
- Obibuaku, L. O. (1983). *Agricultural Extension as a Strategy for Agricultural Transformation*. University of Nigeria Press, Nsukka, Nigeria.
- Odey, M. O. (2002). "Alternative Approaches to Food Security Strategies in Nigeria in the New Millennium". In Ogiji, P. (ed): *Implications for Food Security and Agricultural Reforms in Nigeria*. Essays in Honour of David Iornongo Ker; The Food Basket Myth Aboki Publisher, Makurdi.

- Odurukwe, S. N.; Mathews-Njoku, E. C. and Ejioku-Okereke, N. (2006). Impacts of the Women- In-Agriculture (WIA). Extension Programme on Women's lives: Implications for Subsistence Agricultural Production of Women in Imo State, Nigeria, Pp 4 – 21.
- Ogbonna, K. I. and Nidifon, H. N. (2003). Farmers Innovation and Communication Systems in Rural Nigeria: A Case Study of Cocoa Farmers in Ikom Agricultural Zone of Cross River State. Paper presented at the National Conference on Indigenous Knowledge and Agriculture, October 23<sup>rd</sup> - 25<sup>th</sup>. University of Agriculture, Makurdi, Nigeria.
- Ogunfeditimi, O. O. (2000). Concepts of Development. Unpublished Lecture Notes on AES 401: Extension Practices, University of Ibadan.
- Ogungbile, A. O.; Tabo, R. and Rahman, S. A. (2002). Factors Affecting Adoption of ICSV111 and ICSV 400 Sorghum Varieties in Guinea and Sudan Savanna of Nigeria. *The plant Scientists*, 3: 21 - 22.
- Ogunwale, A. B. (2003). Adoption of Farm Innovation among Rural Women in Ogbomoso North, Nigeria. *International Journal of Gender and Health Studies*, 1 (1): 56 - 66.
- Ohuegbu, C. (1989). Women in Agriculture Program in Imo State. Paper presented in the World Bank Workshop on Agricultural Extension, Ibadan, Nigeria.
- Ojimba, T. P. (2000). The Contribution of Women to Agricultural development in Nigeria: An overview in *Technical Education Today*, 10 (1&2): Pp 104 - 112.
- Oke, A. (2000). Challenges of HIV/AIDS in Nigeria in the New Millennium. A keynote address delivered at the 3<sup>rd</sup> biennial general meeting of the secretary for Women and AIDS in Africa, Pp 11.
- Okunlola, J. O. and Adekunle, O. A. (2000). Indigenous Knowledge Approach for Rice Pests and Disease Control by Rice Farmers in Nigeria for Sustainable Environmental Management. *Journal of Environmental Extension*, 1 (1): 28 - 30.
- Olaleye, S. O. (1998). Women in Rural Development. *Nigerian Agricultural Magazine*: Pp 32 -33.
- Olaniyan, O. F. and Jibowo, A. A. (1997). Pre-Harvesting Crop Production Activities of Women farmers in Iseyin Ekiti State.
- Olawoye, J. E. (1985). Rural Women's Role in Agricultural Production: An Occupational Survey of Women from Six Selected Rural Communities in Oyo State, Nigeria. *Nigerian Journal of Rural Sociology*, 2 (1&2): 34 - 37.
- Olawoye, J. E. (1989). Diffusion for Rural Women in Securing Resources for Agricultural Production: Two Case Studies from Oyo State, Nigeria. *Rural Development in Nigeria*, 3 (2): 77 - 81.

- Olawoye, J. E. (1996). Agricultural Production in Nigeria, In: Okiki, A. (eds), *Utilizing Research Findings to Increase Food Production. What the Mass Media Should Do in Taming Hunger*: Proceedings of the One-Day Seminar Organized by the Oyo State Chapter of the Media Forum for Agriculture, IITA, Ibadan.
- Olayiwole, C. B. (1984). Rural Women's Participation in Agricultural Activities: Implication for Training Extension Home Economics. A Doctor's Dissertation Kansas State University, Manhattan, Kansas.
- Olukosi, J. O.; Ogungbile, A. O. and Kalu, B. A. (2002). Appropriate Agricultural Technologies for Resource Poor Farmers. National Farming System network, Pp 51 - 55.
- Oloruntoba, A. (2000), "Evaluation of Management Training Programme on Job Behaviour of Senior Agricultural Officer, Ondo State, Nigeria. Pp 16-20.
- Oluwatayo, I. B. (2009). Poverty and Income Diversification among Households in Rural Nigeria: A Gender Analysis of Livelihood Patterns. The 2nd Instituto de Estudos Sociais e Económicos (IESE) Conference on 'Dynamics of Poverty and Patterns of Economic Accumulation in Mozambique' Maputo, Mozambique.
- Omonona, B. T. (2009). Quantitative Analysis of Rural Poverty in Nigeria. Nigeria Strategy Support Program (NSSP) background paper 9, International Food Policy Research Institute, Washington D.C.
- Omogbee, F. E. (1996). Communication of Improved Farm Practice to Rural Women Contact Farmers in Benue State, Nigeria. An Unpublished M.Sc. Thesis, Department of Agricultural Extension and Communication, University of Agriculture, Makurdi, Nigeria, Pp. 105.
- Omogbee, E. F. and Ighoro, A. (2012). Effect of Agricultural Cooperative Membership on Farmers' Income and Poverty in Delta State, Nigeria. Open Science Repository Agriculture, online (open access), e70081911.
- Onyemobi, F. I. (2000). Towards Agricultural Revolution and Rural Development. In Onyemobi F.I (editor). *Women in Agriculture and Rural Development towards Agricultural Revolution in Nigeria*. Falude Publishers, Enugu, Nigeria.
- Onyibe, J. E. (2001). Technology Dissemination through Women Groups. A Quarterly Newsletter of the Nigerian Agricultural Question and Answer Service. (NAQAS Newsletter), 1 (2): 6 – 13.
- Oredipe, A. A. (2005). An Overview of National Fadama Development Project (NFDP). A paper presented at a workshop on Local Development Plan Harmonization.
- Oyebanji, O. O. (1998). The Agricultural Development Extension System in Nigeria. Proceedings of an International Workshop held in Yaounde, Cameroun.



- Papaek, H. (1983). 'Employment Linkages for Women: A Comparative Analysis of South-East Asian Countries and Egypt'. *Women and work in the Third World. Industrialization and Global Economic Interdependent*. Compiled by Nagat El-Sanabury, Berkeley: University of California, Pp 265 - 274.
- Plateau, J. P. (2004). Monitoring Elite Capture in Community-Driven Development. *Development and Change*, 35 (2): 223 - 246.
- Project Coordinating Unit, Federal Ministry of Agriculture and Rural Development (PCU-NFDO) (2005). Fadama Development Project Poverty Reduction and Increased Productivity through Empowerment, Abuja, Nigeria.
- Quisumbing, A. (1994). Male – Female Differences in Agricultural Productivity. *World Development*, 24: 1579 – 1595.
- Rahman, S. A. (2008). Women's Involvement in Agriculture in Northern and Southern Kaduna State. *Journal of Gender Studies*, 17 (1): 17 - 26.
- Rivera, M. W. (2001). Whither Agricultural Extension Worldwide, Reforms and Prospects. In: S.D.Z. Wolf, (eds). *Knowledge Generation and Technical Change: Institutional Innovation in Agriculture*. Berkeley: University of California.
- Rivera, W. and Alex, G. (2004). The Continuing Role of Government in Pluralistic Extension Systems. *Journal of International Agricultural and Extension Education*, 11 (3): 41-52.
- Rogers, E. M. (1995). *Diffusion of Innovation*. The Free Press, New York.
- Rolling, N. G. (1988). *Extension Science: Information Systems in Agricultural Development*. Cambridge University Press, United Kingdom.
- Saito, K. (1996). Raising the Productivity of Women Farmers in Sub-Saharan Africa: World Bank Discussion Paper No. 230. Africa Department Series. World Bank, Washington D.C.
- Salawu, B. (2007). *Sociology, Concepts and Themes: An Introduction* (Second Edition) Crethill Publishers, Ibadan.
- Sanusi, R. A.; Badejo, C. A. and Yusuf, B. O. (2006). Measuring Household Food Security in Selected Local Government Areas of Lagos State and Ibadan, Nigeria. *Pakistan Journal of Nutrition* 5 (1): 62 - 67.
- Smith, L. and Haddad, L. (2000). Explaining Child Malnutrition in Developing Countries. A Cross-Country Analysis. Research Report III, IFPRI, Washington, D.C.
- Solomon, O. (2008) Identification of Training Needs of Oil Palm (*Elaeis guinensis* jocq) Farmers in Rainforest Zone of South Western Nigeria. Unpublished PhD Thesis, University of Agriculture, Abeokuta. Pp 124.

- Steenhuijsen, B. P.; Heemskerk, W. and Van Der Pol, F. (2003). The Public and Private Agricultural Research Discourse in Sub-Saharan Africa: Capabilities, Mobilization and Institutional Transformation. Proceedings of the International Coalition for Environmentally Responsible Economies, Summer School, Amsterdam 23<sup>rd</sup> - 26<sup>th</sup> June.
- Third National Fadama Development Office. <http://www.Fadama.net> accessed on 6<sup>th</sup> April, 2012.
- Third National Fadama Development Project (2008). Strategies for the sustainable use of Fadama lands in Northern Nigeria. International Institute for Environment and Development, Zaria, Nigeria, Pp 29-34.
- Third National Fadama Development Project (2008). Project Implementation Manual, Abuja, Nigeria.
- Uganneya, S. I. and Umaru, I. (2008). Access to Information and Communication Media by Women Farmers in Benue State, Nigeria. *Production Agriculture and Technology*, 4(1): 53 - 56.
- United Nations Development Projects (UNDP) (1996). Nigeria Human Development Report, Lagos, Nigeria.
- Upandhya, S. (1992). Spreading News and Literacy in Nepal: The Batahven Wall Newspaper. Development Communication Report, No.79, Pp 45 – 49.
- USAID, (2003). HIV/AIDS and Agriculture: Food Security and Nutrition. Report of USAID Workshop, Pp 11.
- World Bank (1992). Designing and Implementing Agricultural Extension for Women Farmers: Technical Not, World Bank - Women and Development Division, Washington, D.C.
- World Bank (1992). Staff Appraisal Report. National Fadama Development Program (NFDP), In: Haruna, U. (2005). Optimum Crop Combinations in the Fadama Area of Bauchi State: A Linear Programming Approach. *Journal of Sustainable Development in Agriculture and Environment*, 2 (1): 1 - 30.
- World Bank (1996). Project Appraisal Document (PAD) for the Second National Fadama Development Project, Unpublished Document.
- World Bank (2000). World Development Report 2000/2001: *Attacking Poverty*, Oxford University Press, United Kingdom.
- Zald, M. N. (1975). Organizations as Politics: In Kramer, C. M. R. and Sperch, H. (eds.). *Reading in Community Organization Practices*. New Jersey, Engle Wood. Cliffs: Prentice-Hall Inc, Pp 26 – 38.

Zeller, M.; Diagne, A. and Mataya, C. (1998) Market Access by Small-holder Farmers in Malawi: Implications for Technology Adoption, Agricultural Productivity and Crop Income. *Agricultural Economics*, Pp 219 - 229.

**APPENDIX**

DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY,  
AHMADU BELLO UNIVERSITY, ZARIA

(FARMERS' RESEARCH QUESTIONNAIRE)

**TOPIC: ROLE OF FADAMA III PROJECT IN EMPOWERING FADAMA  
WOMEN FARMERS TOWARD ATTAINING FOOD SECURITY IN  
BENUE STATE, NIGERIA.**

Dear respondent,

This questionnaire is for an M.Sc. Thesis in the Department of Agricultural Economics and Rural Sociology, Faculty of Agriculture, Ahmadu Bello University Zaria. Please tick where necessary. All information will be treated with utmost confidentiality and will strictly be used for the purpose of research.

Thanks for your cooperation.

(A) Background information

(i) Name of Respondent.....

(ii) Village.....

(iii) Date of interview.....

Socio –Economic Characteristics of the respondent (Section B)

1. Age of farmer (yrs).....

2. Gender: Male ( )                      Female ( )

3. Marital Status: (a) Single ( ) (b) Married ( ) (c) Widow ( ) (d) Divorced ( )

4. What is your household size? .....

5. Level of Education:    (a) No formal Education ( )

(b) Adult education ( )

(c) Primary Education ( )

(d) Secondary Education ( )

(e) Post-Education ( )

6. Kindly indicate the pattern of land ownership you cultivate

(a) Borrowed ( )

(b) Purchased ( )

(c) Gift ( )

- (d) Rented ( )
- (e) Inherited ( )
- (f) Others specify.....

7. What is your farming experience in years?.....

8. If the farm land was rented, what does it cost to rent one hectare of land per season in your village? ₦.....

9. If the land was bought, what does it cost to buy one hectare of land in your village ? ₦.....

10. What is the total size of land owned..... (ha)

11. Kindly give a rough estimate of the total size of land cultivated..... (ha)

12. What is the total harvest from your farm in a cropping season..... (ka)

**Section B: Food Security of the Women Farmers.**

13. Is food available all through the year for your consumption? (a) Yes ( ) (b) No ( )

(i). If yes, what is the level of availability

(a) rarely available ( ) (b) moderately available ( ) (c) highly available ( ) (d) not sure ( )

(ii). Is food available all through the year for your sale? (a) Yes ( ) (b) No ( )

(iv) If yes, what is the level of the food available for your sale? (a) rarely available ( ) (b) moderately available ( ) (c) highly available ( ) (d) not sure ( )

14. Do you have access to purchasing food all year round? (a) Yes (b) No

(i). If yes, to what extent (a) readily accessible ( ) (b) moderately accessible ( ) (c) highly accessible ( ) (d) not sure ( )

(ii). If not, give reason.....

15. Does the project provide facility that helps you to have access to food?

Yes ( ) No ( )

(i). If yes, to what extent? (a) readily accessible ( ) (b) moderately accessible ( ) (c) highly accessible ( ) (d) not sure ( )

(ii). If not, give reason.....

16. Dose the Fadama III Project provide infrastructure that helps you have access to food?

Yes ( ) No ( )

(i). If yes, to what extent ? (a) readily accessible ( ) (b) moderately accessible ( ) (c) highly accessible ( ) (d) not sure ( )

(ii). If not, give reason.....

17. What crop types do you grow? Please give details in the table below

Farm (ha)	Crop	Total qty (Kg) produce	Qty consumed	Qty sold	Qty for other use (specify)
1.	1. 2.				
2.	1. 2.				
3.	1. 2.				

18. What non-farming activities are you involved in ? (i).....

(ii).....

(iii) others specify .....

### Section C: Level of Perception of the Fadama III Project

19. Do you have contacts with Facilitators? Yes ( ) No. ( )

(i) If yes, how many times did the Facilitators visit you in the cropping season.....

(ii). How many times do you visit the Facilitators to get information.....

(iii) How many times do the Facilitators visit for training in cropping season.....

(iv). Do you interact jointly with the Facilitators? Yes ( ) No. ( )

If no why?.....

(v) Do you offer suggestions to the Facilitators ? Yes ( ) No ( )

If no why?.....

(vi). Do you address problems jointly with the Facilitators? Yes ( ) No. ( )

(vii). Are you involved in making decision? Yes ( ) No. ( )

If no why?.....

(viii). Is decision carried out together with the Facilitators? Yes ( ) No. ( )

20. How would you rate the Fadama III Project in the following area in terms of

	Poor	Fair	Good	Excellent
Input supply				
Funding by agency				
Training				
Service disbursement				
Planning				
Monitoring				
Contribution by group members				
Meetings				

21. Has the project contributed in building your capacity ? Yes ( ) No. ( )

If yes, in what area? (i).....

(ii).....

(iii) others specify .....

**SECTION D:**

22. Benefits of the Fadama III Project

(i) Do you belong to the Fadama Women Groups farmers' association or cooperative society?

Yes ( ) No. ( )

(ii). If yes how long have you been in the association or cooperative .....  
(years)

(iii) At what level are you involved in the association for your farm activity?

- (A) Involved ( ) (B) partially involved ( )  
(B) (c) actively involved ( ) (d) passively involved ( )

23. Have the Fadama III helped empowered you to get input such as improved seeds, fertilizers, farm implements, training, credit? Yes ( ) No. ( )

(i.) If yes, in what area has the program empowered you? (a ) input supply, (b ) credit  
(c ) training ( d) others specify

(ii) Is fertilizer, improved seeds and other farm inputs always adequate for your use via the Fadama III project

Yes ( ) No. ( )

(iii) Is fertilizer, and other farm inputs provided at affordable prices via this approach?

Yes ( ) No. ( )

(iv). Does the Fadama III Project make fertilizer and other farm inputs always arrive on time

Yes ( ) No. ( )

(v). Is fertilizer and other farm inputs gotten with ease via this project approach?

Yes ( ) No. ( )

24. Do you have access to credit via the empowerment of this project?

(i). If yes, how much did you obtain in the last farming season? ₦.....

(ii). Do you get enough credit for your farm activities? Yes ( ) No. ( )

(iii). Do you get credit facilities for your farm activities on time Yes ( ) No. ( )

(iv). Do you get credit facilities with ease? Yes ( ) No. ( )

(v). Have the program provided you access to markets where you can sell your goods?

Yes ( ) No. ( )

(vi). If yes, how accessible? (a) poorly ( ) (b) moderately ( ) (c) highly ( )



25. Have you undergone any training under the empowerment program?

Yes ( ) No. ( )

(i). If yes, how often do you receive training from the Facilitators in a farming season

(a) Weekly ( ) (b) Monthly ( ) (c) Quarterly ( ) (d) Yearly ( )

(ii). What kind of training do you receive? Please specify

(a).....

(b).....

(c).....

(d).....

(iii). Have you been receiving any follow up on the training from the Facilitators?

Yes ( ) No. ( )

(iv). Is there any other activity the Facilitators helps you to achieve? Yes ( ) No. ( )

(v). If yes please specify .....

26. Have you been visited by facilitators through this program? Yes ( ) No. ( )

(i) If yes how often do facilitators come to visit your group?

(a) Rarely ( ) (b) sometimes ( ) (c) always

27. Dose the program empowers you to have access to other institutions such as the ADP, BNARDA and other agricultural extension outlets? Yes ( ) No. ( )

If yes, in what way .....

28. Has the program helped in increasing your number of meal taken per day?

Yes ( ) No. ( )

29. Has Fadama III Project empowered you in sponsoring you children to school?

Yes ( ) No. ( )

30. Has the program enabled you to live in a better than before?

Yes ( ) No. ( )

31. What has the program enabled you to own? (a) Car ( ) (b) house ( ) (c) shops ( )

(d) Land ( ) (e) others specify.....

32. How is money being generated in this group for your farming activities? (a) borrow ( ) (b) personal contribution / donations ( ) (c) collateral ( ) (d) dues ( ) (e) grants ( ) (f) others please specify.....

(i) Give an estimate of the total money you generate in your group in a year ₦  
.....

33. Have you benefitted anything from this program approach? Yes ( ) No. ( )

34. What benefits have you derived from the Fadama III project.

	Not sure	Not benefitted	Beneficial
Credit			
Service disbursement			
Training			
Access to farm input			
Access to market			

Others please specify ....., (ii) .....

35. If you have not benefitted from this Fadama III Project, why? Please state

(i).....

(ii).....

(iii).....

(iv) others reasons specify .....

**SECTION E**

36. Constraints of the Women Farmers towards attaining Food Security

(i). which of the following problem(s) do you face towards attaining food security?

Please tick as appropriate.

- a. Pests and Diseases ( )
- b. Lack of access to improved planting materials ( )
- c. Poor access to markets ( )
- d. Lack of improved post-harvest processing and storage facilities ( )
- e. Inefficient or ineffective extension delivery systems ( )
- f. Poor access to financial service ( )
- g. Labor shortage due to migration to urban centers and poor health ( )
- h. Others please specify.....

37. What are the constraints associated with the Fadama III Project. Please list below

- (i).....
- (ii).....
- (iii).....
- (iv) Specify others .....

#### SECTION F

38. Women Fadama's opinion about the Facilitators

(i) In your opinion, are the Facilitators adequately trained?

- (a) Agree ( ) (b) Disagree ( ) (c) highly disagree ( ) (d) Highly agree ( )

(ii) Do you agree that the Fadama Program has enough staff to work with women farmers in this project? (a) Agree ( ) (b) Disagree ( ) (c) highly disagree ( ) (d) Highly agree ( )

(iii) Do you agree that the Facilitators teach messages / information that are difficult to understand by the women farmers in the program?

- (a) Agree ( ) (b) Disagree ( ) (c) highly disagree ( ) (d) Highly agree ( )

(iv). Give suggestions on how the Fadama project can improve its activities

.....

Thanks for your cooperation

