Impact of National Fadama Development Project Phase (II) On Poverty and Food Security among Rice Farming Beneficiaries in Kogi State, Nigeria

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Abstract

The study was conducted to examine the National Fadama Development Project (II) (NFDP,II) as a panacea to poverty and food insecurity among rice-farmer beneficiaries in Kogi State, Nigeria. Four LGAs that participated in the Fadama (II) project and grew rice were selected. Two fadama community associations (FCAs) were also randomly selected from each of the four selected LGAs. A total of 112 farmers constituted the sample size for the study. A set of interview schedule and questionnaire were used for data collection. Descriptive statistics like frequency, percentage and mean score were used to analyze the data. Foster, Greer and Thorbecke (FGT) poverty model and food security model were used to determine farmers' food security status and poverty level. Information from fellow farmers was the most popular (96.4%) source of information on fadama project. The food security analysis of the farmers revealed there was an increase of 2.8% of the beneficiaries who were food insecure after the project. The project had an appreciable impact on poverty reduction of the farmers by a change in the poverty incidence by 66.8% and 96.0% change in the poverty depth. It is recommended that, for rural development in Nigeria, the approach of the national fadama development project phase two should be adopted for intervention programmes going by the impact of this project.

{**Citation:** Olaolu M.O., Akinnagbe O. M., Agber, T. Impact of national Fadama development project phase (II) on poverty and food security among rice farming beneficiaries in Kogi State, Nigeria. American Journal of Research Communication, 2013, 1(10): 280-295} www.usa-journals.com, ISSN: 2325-4076.

Introduction

Poverty is one of the gravest challenges facing the world today, with a staggering 40 per cent of the world's population living with the reality or the threat of extreme poverty, and one in five persons living in a state of poverty so abject that it threatens survival (Gustavo and Kostas, 2007). Globally, extreme poverty continues to be a rural phenomenon despite increasing urbanization. And out of the world's 1.2 billion extremely poor people, 75 percent live in rural areas and, they largely

depend on agriculture, forestry, fisheries and related activities for survival (Gustavo and Kostas, 2007).

Poverty is a multi-faced affliction as well as a raging economic and social phenomenon that manifests in the inability of the victims to acquire the basic necessities of life. Poverty goes beyond material deprivation to include insecurity, vulnerability and exposure to risks, shocks and stress. It specifically includes not having enough to eat, poor drinking water, poor nutrition, unfit housing, a high rate of infant mortality, low life expectancy, low level of energy consumption, low education opportunity, low employment opportunities, inadequate health care, lack of active participation in decision making process (Ajayi, 2008). Poverty in Nigeria has been described as "widespread and severe" (World Bank, 1996). The United Nations Development Programme (UNDP)'s Human Development Index (HDI) ranked Nigerian as the 137th among the 174 countries listed with HDI of 0.384 in 1996; by 1997, the country slipped to 142nd position and ranked among the 44 poorest countries. By 2002, Nigeria ranked number 148. Nigeria's basic indicators now placed the country among the 26 poorest countries in the world. The proportion of Nigerians living below the poverty line of one dollar a day has increased dramatically during the last two decades. In the year 2000, more than 70% of Nigerians were estimated to be living below the internationally defined poverty line. In the same year, both per capita income and per capita private consumption were lower than the early 1970s. Per capita income fell from $1,600 in 1980 to $270 in 2000 (ADF, 2003). About two-thirds of the Nigerian people are poor, despite living in a country with vast potential wealth (National Planning Commission, 2004).

The links between poverty and hunger are unambiguous, which means that poverty alleviation must play a major role in food security for all considerations (Franz, Achi, Nyangito, Martine, et al 2004). Food security is now defined as the situation when all people, at all times, have physical and economic access to sufficient, safe and nutritious food for a healthy and active life (FAO 1996; Franz, *et al* 2004). However, this term has gone through stages of definition and redefinition. Approaches to its definition have ranged from an emphasis on self-sufficiency to an emphasis on coping with vulnerability and risk in food and nutrition access. In the 1970s, food security was equated to adequate food production. In the 1980s, food security was considered to refer to the security of food access and availability. In the 1990s, the importance of nutrition was recognized, and hence the concept of food security was combined with that of nutrition security. In the 2000s, the concepts of food and nutrition security were integrated with vulnerability, risk coping, and risk management (Franz, *et al* 2004).

In order to deal with the problems of food insecurity and high incidence of poverty among the rural poor in Nigeria, it is very imperative that agricultural productivity should be rejuvenated. It has been empirically established that low productivity in agriculture is the cause of high incidence of food insecurity and poverty in Nigeria (World bank, 1996). This is because agriculture is the mainstay of Nigeria's economy, contributing about 42% to total GDP and employing about 77% of the working population. It is therefore obvious that any policy measure aimed at alleviating poverty must take agriculture and rural development into consideration. The Federal Office of Statistic/World Bank (2001) in Adeolu and Taiwo (2004), analyzed the poverty trend in Nigeria and noted that poor families are in higher proportion in farming households that are mainly in the rural area. Therefore, it is very important to raise food production, create employment, and improve the institutional and policy framework for agriculture, as well as to rehabilitate and expand physical and social infrastructure in rural areas; all of which require increased and sustained investment and support for agriculture (Franz et al, 2004).

The need for support for agriculture in Nigeria made the government go into several programmes in a bid to improve agricultural production, one among such programmes was the first National Fadama Development Programme FNFDP which was initiated for small-scale irrigation

development, to increase the productivity of the farming system during the dry and wet seasons (F.M.A.N.R, 1997; Agu 2002; Nwalieji and Ajayi, 2009). It was implemented in the seven states of Bauchi, Gombe, Jigawa, Kano, Kebbi, Sokoto and Zamfara. All the other states participated as facilitating states, that is, states in which Fadama I activities were introduced on pilot basis. These states (five of the non-core Fadama (I) states, that is Borno, Katsina, Kogi, Kwara, and Plateau, and one of the Fadama I core states, (Jigawa) being co-funded by African Development Bank (ADB) were selected for the funding support for the second phase of the project on the basis of a comprehensive set of criteria. As a follow up to the FNFDP, the World Bank and the ADB have jointly supported the Federal Government of Nigeria (FGN) to invest in the Second National Fadama Development Project (SNFDP) known as Fadama (II) project.

The implementation of Fadama (II) project commenced in January 2004 and lasted for 6 years with expected results of increase in income of the farmers, employment and reduction in poverty as the major outcome. The National Fadama Development Project (NFDP-II) target was the development of small-scale irrigation, especially, in the low-lying alluvial floodplains or "Fadama". The NFDP-II attempted to increase the productivity, income, living standards and development capacity of the economically active rural communities while increasing efficiency in delivering implementation services to an estimated four million rural beneficiary households (Kudi, Usman, Akpoko and Banta, 2008; Nwalieji and Ajayi, 2008). The design of Fadama (II) had incorporated in it a paradigm shift from the traditional public sector dominated/supply-led development approaches of the past to a private sector-led, demand-driven strategy.

The consolidated baseline survey of the six states funded by ADB in the NFDP(II) project, showed that poverty level in Kogi state was 0.23 (Gini coefficient) as at the year 2003 and the annual income from crop production as a primary occupation was on the average, ₦103,568:00. The results of the baseline study made the state one of the states in need of an intervention (Fadama development office FDO, 2006). Hence the Kogi state NFDP-(II) was negotiated and signed on the 12th December, 2003. It became loan effective and disbursement effective on 3rd May, 2004 and 26th July, 2005, respectively. (KOGI ADP-SFDO, 2007). The project had the loan number 2100-15000-7169, and the funding arrangement was such that ADB funded 90% of the total cost of infrastructure sub-projects and advisory services activities (ASA) as well as 100% of the total cost of capacity building activities (CBA), (KOGI ADP-SFDO, 2007).

Members of fadama resource user groups (FRUGs) were the primary beneficiaries of the project. They included all the rural dwellers who derived their livelihoods from the fadama extension activities among whom are crop farmers (rice farmers), pastoralists, hunters, fisher folks, marketers of fadama farm produce, agro-processors, gatherers, youth groups, service providers, livestock farmers, marginalized groups such as women, widows, the elderly, unemployed/ unskilled youth and people living with HIV/AIDS (KOGI ADP-SFDO, 2007).

At the end of the project life cycle, it was expected that the following achievements should have been made: (a) construction of quality fadama access roads; market infrastructure, and rehabilitation of many feeder-roads. Others include portable water supply and demarcation of route and grazing reserves; (b) dissemination of useful and practical crop and animal production technologies and skills; (c) building the capacity of the communities to identify, prioritize and implement their own projects; (d)drastic reduction in the prevailing constant conflicts between the crop farmers and the pastoralists; (e) introduction of sustainable land management practices that would reduce land degradation normally caused by deforestation, bush burning and pollution and increase the income of the rural farm families, reduce their poverty level and improve their food security (KOGI ADP-SFDO, 2007).

It is evident from the foregoing that the fadama extension activities in Kogi state were many. However, this study concentrated solely on crop farmers. The crop farmers are involved in the

production of different crops among which are rice, vegetables, egg plant, water melon, groundnut, maize, cowpea and sugar cane. Since it was absolutely impossible to effectively cover the different crops simultaneously, the fadama rice farmers were the only target of the study.

Rice is an important grain crop whose production has been growing in arithmetic progression while its consumption has been growing geometrically. Over the years, the crop has witnessed a steady increase in demand and its growing importance is evident given its important place in the strategic food security planning of Nigeria (Shehu, 2010). Hence, there is need to improve its production. Under fadama programme in Kogi state, intensive efforts was made for the period of the years of the implementation to bring about the expected improvement in rice productivity for the purpose of food security, drastic reduction in poverty level among the rice farmers and at the same time, sustaining their socio-economic life.

According to the Kogi state ADP-SFDO (2007), some improved rice agronomic practices have been disseminated and the rice farmers responded favourably. After about six years of yearly rice production by the farmers, some improved yield in production and socio-economic impact question became relevant: what is the impact of the fadama development project phase (II) on poverty reduction and house hold food expenditure among rice producers in Kogi state?

Objectives of the study

1. describe the socio-economic characteristics of the rice farmers beneficiaries;
2. determine the poverty level and food security status of the rice-farmer beneficiaries; and
3. assess the impact of the project on poverty reduction and food security of beneficiaries.

Conceptual framework

The Project Objectives, Project inputs, Project Outputs, Project Effect, Project Impact and Project Beneficiary (POIOEIB) Model, REAP, before and after and survey models was adapted to generate a conceptual framework for assessing the impact of the national fadama development project phase-II on poverty reduction and food security in Kogi state. The framework in figure 1 presents a view that reform and empowerment in fadama rice farming will lead to poverty reduction if not total eradication and sustainable food security through its positive effects as observed by Oriola (2009). The framework shows how the NFDP-II could lead to higher productivity and better natural resource management for higher income and help in reducing poverty protect the environment and attain food security at a sustainable level.

Block A, consists of block A1, A2, and A3. Block A1 consists of the project objectives of the NFDP (II) (reduction of poverty by improving the living conditions of the rural poor; contribution to food security; and increased access to rural infrastructure), while block A2 contains the project inputs (which includes personnel, finance, infrastructural facilities, staff training, procurement of several farming inputs, etc). Block A3 is made of project outputs (fertilizer, improved seeds, herbicides, farmers' skill improvement in the areas of rice production and processing among other) made available to the farmers, these could lead to the effects on the farmers as in block B.

Block B, consists of the project effects, which includes block B1 and block B2. Block B1 shows high productivity and block B2 better natural resource management (soil and irrigation water). These effects result in the project impact as can be seen in block C. Block C consist of the project impact on the beneficiaries of the project on the long run. Block C consist of blocks C1,C2 and C3. Block C1 contains the increase in income, consumer price, economic growth, improved consumption and health on the beneficiaries of the project, while block C2 has reduction in poverty level. Block C3 shows protected natural resource as well as block C4 sustained food security. REAP and Survey will be used to collect relevant data for this study of the impact of the NFDP-II on the reduction poverty level and food security status among rice farmer-beneficiaries in Kogi state.

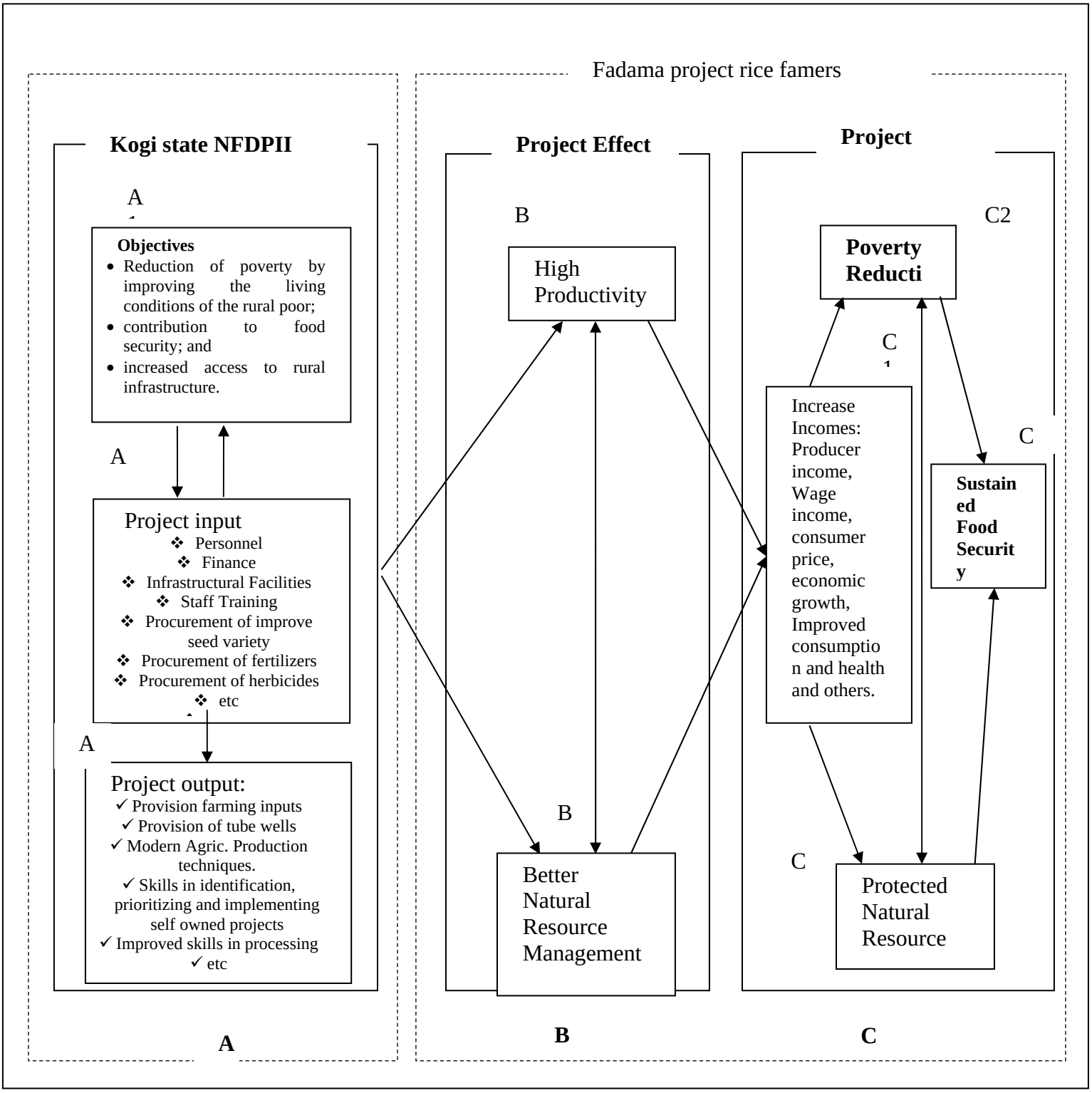

Figure 1: Conceptual framework for measuring the impact of the national fadama development project phase II on poverty reduction and food security in Kogi state (Modified from Oirola 2009).

Methodology

The study was carried out in Kogi state. The State lies on latitude 7^1 49^oNorth and longitude 6^1 45^oEast with a geological feature depicting young sedimentary rocks and alluvium along the riverbeds, which promotes agricultural activities and has an average maximum temperature of 33.2^{o}C and average minimum of 22.8^{o}C. It shares common boundaries with Niger, Kwara, Nassarawa and The Federal Capital Territory to the north. To the east, the State is bounded by Benue state, to the south by Enugu and Anambra States, and to the west by Ondo, Ekiti and Edo states. Ethnically, Igala, Yoruba, Egbira, Nupe and Bassa form the main ethnic groups. Kogi state occupies 29,833 square kilometers and has a population of 3,314,043 out which 1,672,903 are male and 1,641,140 female (NPC, 2007). The State has two distinct weather the dry season, which lasts from November to February and rainy season that lasts from March to October. Annual rainfall ranges from 1016mm to 1524mm (www.kogistatenigeria/aboutus.org*)*.

A multistage sampling technique was used. In stage one, 4 LGAs were purposively selected out of the 10 LGAs that participated, this was based on their involvement in rice production. The LGAs were Idah, Ibaji, Lokoja and Kogi. The second stage involved collection of the list of communities that were involved in the Fadama rice production from each of the LGAs. From that list two communities were selected through simple random sampling technique. This shows that a total of eight communities were involved in the study. The third stage involved collection of a list of participant fadama rice farmers in each of the eight communities. From the list, a total of fourteen rice farmers were selected through simple random sampling technique. This indicates that a total of 112 farmers were interviewed for the study. Data were collected using interview schedule.

Table 1: Population and sampling proportion for the study.

LGAs Selected	Communities P	Communities S	Communities selected	Population of rice farmers	Sample of rice farmers
Idah	4	2	Akpatega	34	14
			Township	29	14
Ibaji	3	2	Odeke	36	14
			Eyano	35	14
Lokoja	5	2	Sarkin-Noma	32	14
			Kugbani- karara		
			Uweyin	31	14
Kogi	2	2	Okpaka	29	14
				29	14
Total:	**14**	**8**	**8**	**255**	**112**

Note : P= population and S= sample

The socio economic characteristics were analyzed using frequency, percentage and mean. the food security status, food security index was also be measured by per- capital food expenditure of households examined (both cash and farm produce consumptions) in their naira value per house. For food security index, the households were classified into food secure and food insecure households using food security index, as used by Omonona, *et al* (2007), the food security index used, it is given as:

$$Ft = \frac{Per\ capita\ food\ expenditure\ on\ i\ th\ household}{\frac{2}{3}\ mean\ per\ capita\ food\ expenditure\ in\ all\ household}$$

Where Fi= food security index

When Fi ≥ 1= food secure ith household

Fi ≤1= food insecure ith household.

This measurement for per-capital food expenditure of household was for the year 2003 and 2009.

Section 5 : To determine the poverty levels of the respondents, F-G-T index as used by Siddiqui (2009) and Igbalajobi (2010) was used for the year 2003 and 2009. Which they defined as:

F-G-T index as: $P_{\alpha} = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z - y_i}{z}\right)^{\alpha}$

Where:

n= total population (household)

q= number of households with income below poverty line

z= poverty line.

Yi= the income of the ith poor household

α = parameters of the FGT index (P_{α}), α > and it can take two values of 0 and 1 These values give different implications.

Implications

a) If α = 0, the FGT index Po measures poverty index. This represents the index of the households that are impoverished.

b) If α= 1, the FGT index P1 measures the poverty depth of the households. This denotes the proportion of the poverty gap that the average poor will require to get to the poverty line.

The FGT index (P_{α}/α= 0,1) is bounded between zero and one. The closer the FGT index is to one, the greater the poverty level. The FGT index has been widely used to determine level of poverty (Greer & Thorbecke, 1986; Aigbokhan, 2000; Okurat *et al*; 2002 and Adejobi, 2004 in Igbalajobi 2010). Generally, the higher the Po, the worse the poverty situation can be. Similarly, the higher the P1 value the greater is the depth of poverty. This study used the relative poverty line of ₦128:00 as at 2003 and ₦150:00 in the years 2009. This was done in order to maintain a widely accepted trend.

Results and discussion

Respondents' socio-economic characteristics

Table 2 shows that majority (51.8%) of the farmers were male also and 25.0% were female farmers. This implies that the sex distribution of the respondents among fadama rice farmers is skewed towards males in the fadama development project in Kogi state. This agrees with Emodi (2009) findings where 59.5% of her respondents were male in South-eastern Nigeria as well as with Adeola, Adebayo and Oyelere (2008) as cited in Emodi (2009) findings, that rice production in Oyo state is dominated by male farmers with only 5.0% female farmers engaged in rice production.

Results of the analysis on the ages of the farmers in this study shows that about 43.0% of the respondent were between the age range of 40 to 49 years. This was followed by 29.5% within the age range of 50 to 59 years, 12.6% of the respondents were between the age range of 30 to 39years while respondents with age ranging between 20 to 29years and 60years and above were about 7.0% and 8.0% respectively. The mean age of the farmers was 45.5years. This implies that majority of the respondents are still within their middle age as well as active years.

It is evident from Table 2 that a greater proportion (76.8%) of the respondents was married while 13.4% of them were widowed and about 6.0% of them were single. The remaining 3.6% of the farmers were divorced. The result on the farmers' marital status confirms Emodi's (2009) findings that there were more married farmers in improved rice technology.

The educational level of the respondents investigated revealed in Table 2 that about 13.0% of the respondents did not have any formal education and 18.8% of the farmers completed tertiary (OND, NCE, HND, first degree and Ph.D.) education. About 30.0% and 16.0% of the farmers completed their secondary and primary education respectively. This implies that majority (64.8%) of the farmers have had a form of formal education at different levels. Education has been shown to be a factor in

the adoption of modern practices. It is generally considered an important variable that could enhance farmers' adoption of new technology (Obinne, 1991).

The profile on the religion of the respondents in Table 2 show that the a greater proportion (55.4%) of the farmers were Christians while the remaining 44.6% were Muslims. Religion affects people's believes and as such could constitute a bearer to the acceptance of new technologies as may be introduced.

Entries in Table 2 also show about 58% of the farmers' household size was 6-10 persons. This was followed by 16.1% of the farmers with household size of 11- 15 persons. Also, 10.7% of the farmers had 16-20 persons in a household. Mean household size in the study area was about 11 persons. This implies that the farmers had a fairly large household, which could probably supply farm labour Households are characterised by high number of members with high dependency ratio in Nigeria (Udo, 1999 in Emodi 2009)

A greater proportion (38.4%) of the farmers had 26-35 years of farming experience as can seen in Table 2. About 30.0% of them had 16-25 years of farming experience, while 16.1%, 12.5%and 2.7% had between 36-45yeras, 6-15years and 46-55 years of farming experience respectively. Their mean farming experience was 27.7 years. These finding implies that most of the respondents have been in the farming system for quite a long time. Long period is an important advantage in farm productivity since it encourages faster adoption of farm innovations (Obinne, 1991 in Nwalieji 2005).

Table 2 also show that majority (42.9%) of farmers also had farming as their secondary occupation. About 38.0% of the respondents had trading as a secondary occupation. It is also evident from the table that 12.5%, and 0.9% had fishing and hunting respectively as their secondary occupation. While about 5.0% of the farmers had no secondary occupation. The implication of this is that the respondents have other sources of income which is a way of diversifying trade as means of alleviating poverty.

The sources of information on the fadama programme was sought and results shown in Table 2 revealed that 86.6%, 58.9%, 92.9%, 88.4%, 59.8%, 96.4%,7.1% and 93.8% of the farmers sourced information on the programme from radio, television, friends/neighbours, ADP/ministry of agriculture, family members, fellow farmers buyers and fadama facilitators respectively. Thus of all the sources of information, buyers of farm produce were the only source that was not a popular one on information about the fadama programmes to the farmers, while fellow farmers were seen as the most popular source of information on fadama to the farmers.

Table 2 reveals also that 100% of the respondents grow rice, while about 5% grow cowpea and 61.6%, 3.6%, 74.1% and 35.7% plant vegetables, sugarcane cereals and tuber respectively. The implication of this is that farmers have more than one crop produced and this is good for food security.

Table 2: Distribution of the respondents by socio-economic characteristics

Socioeconomic characteristics	Farmers (N=112)		
	Frequency	Percentages (%)	Mean(M)
Sex			
Male	58	51.8	
Female	54	48.2	
Age (years)			45.5
20-29	8	7.2	
30-39	14	12.6	
40-49	48	42.9	
50-59	33	29.5	
60 years and above	9	8.0	
Marital status			
Single	7	6.2	
Married	86	76.8	
Widowed	15	13.4	
Divorced	4	3.6	
Educational level			
No formal education	15	13.4	
Primary school attempted	6	5.4	
Primary school completed	18	16.1	
Secondary school attempted	19	17.0	
Secondary school completed	33	29.5	
OND/NCE	15	13.4	
HND/First degree	5	4.5	
M.Sc./PhD	1	0.9	
Religion			
Christianity	62	55.4	
Islam	50	44.6	
Household size			
1-5 persons	9	8.0	10.6
6-10 persons	65	58.0	

11-15 persons	18	16.1	
16-20 persons	12	10.7	
21-25 persons	5	4.5	
Above 25 persons	3	2.7	
Years of farming/working experience			
6-15 years	14	12.5	
16-25 years	34	30.4	27.7
26-35 years	43	38.4	
36-45 years	18	16.1	
46-55 years	3	2.7	
Secondary occupation			
None		4.5	
Farming	5	42.9	
Trading	47	37.5	
Fishing	42	12.5	
Hunting	14	0.9	
Sources of information on Fadama programme*	1		
Radio			
Television	97	86.6	
Friends/Neighbour	67	59.8	
ADP/ Ministry of agriculture	104	92.9	
Family members	99	88.4	
Fellow farmers	67	59.8	
Buyers	108	96.4	
Fadama facilitator	8	7.1	
Types of crops grown*	105	93.8	
Rice			
Cowpea	112	100	
Vegetables	5	4.5	
Sugarcane	69	61.6	
Cereals	4	3.6	
Roots and tuber	83	74.1	
	40	35.7	

Source Field survey 2010. * Multiple responses

Food security statuses of respondents by households

Results in figure 2 reveals that 93.8% of the respondents were food secured while 6.2% of the respondents were not food secured as at 2003. While on the other hand 91% of them were food secured as at 2009 and 9% were those not food secured in the same year. This implies that in the years 2003 and 2009, 93.8% and 91% respectively of the respondents had per capita monthly food expenditure above or is equal to two-third of the mean per capita food expenditure of the entire population. This means that more persons were food secured before the programme than after. This findings could be as a result of the food security model used which measured the respondents' statuses based on household food expenditure, this can be affected by inflation rate in the country since the mean of household food expenditure was higher after (₦18,013:76) the programme than

before (₦ 10,483:63). According to CBN (2010), the food inflation (12 month average change per year for 2010 June, July and August) rate was 14.40, 14.50 and 14.70 respectively. The report also gave 2003 food inflation of 12 months average change for October, November and December rate as 5.00, 5.40 and 6.00 respectively and in the year 2009 it was 15.40, 15.00 and 14.80 for October, November and December respectively.

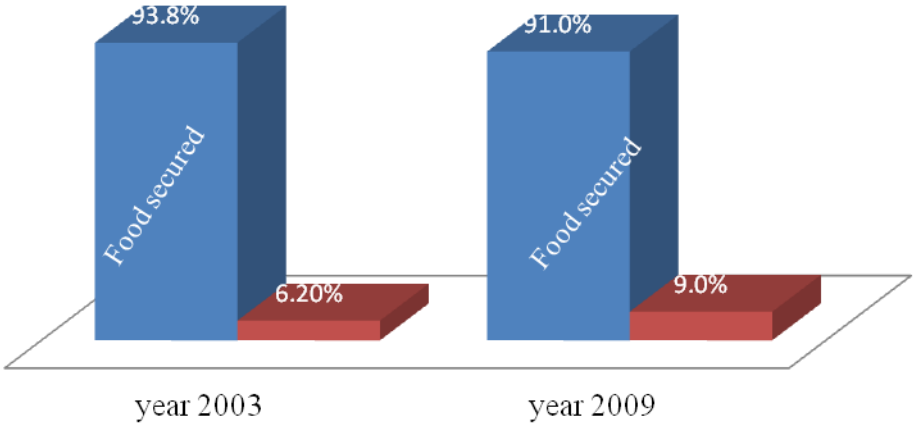

Fig. 2 Percentage distibution of the various respondents' household food security status in the year 2003 and 2009 (N=112)

Poverty levels of the rice –farmer beneficiaries

According to entries in Table 3, the poverty line of the respondents was ₦58, 400:00 in the year 2003 while in the year 2009 the poverty line was ₦68, 437:50. The poverty threshold, or poverty line, is the minimum level of income deemed necessary to achieve an adequate standard of living in a given country. The common international poverty line has in the past been roughly $1 a day. In 2008, the World Bank came out with a revised figure of $1.25 at 2005 purchasing-power parity (PPP) (http://en.wikipedia.org/wiki/Poverty_threshold.). This poverty lines was based on a dollar and a half

per day, though subjective and relative. This study used the relative poverty line of ₦160:00 as at 2003 and ₦187:50 in the years 2009.

Data on the poverty incidence using the FGT model was 0.0268 and 0.0089 for the years 2003 and 2009 respectively from Table 3. The result indicates a 66.7% change of the poverty incidence between the years 2003 and 2009. The implication of the result is that in the year 2003, 3.0% of the total respondents were poor while 1.0% were poor in the year 2009. This reduction could be attributed to the increase in the beneficiaries' income which could have resulted from increased productivity which was brought about by the intervention of the NFDP(II).

Table 3 also shows the poverty depth of the respondents which was 138,650.81 in the year 2003 and by the year 2009, the depth of poverty became 53,995.84. The result on the poverty depth was the amount needed for the proportion of the respondents poor to be taken out of poverty. This implies that as at the year 2003, the total amount of money needed eliminate poverty was ₦138,650:00 in a whole year. Also in the year 2009, ₦ 53,995:00 was the amount needed for the proportion of the respondents poor to taken out of poverty. This result also shows that the programme has made an appreciable impact on poverty reduction among the beneficiaries as there was a 96.0% reduction in the poverty depth.

Table 3: Respondents' estimates of poverty incidence and depth of poverty

Year	Poverty line *(₦)	Po (poverty incidence)	% change	P_1 (poverty depth)	% change
2003	58,400:00	0.0268	**66.8**	1,338,650.81	**96.0**
2009	68,437:50	0.0089		53,995.84	

*Poverty line is based on annual income of $1.25 per-day converted into Nigerian Naira.

Conclusion and recommendation

Based on the findings of the study, the following conclusions were arrived at the programme made appreciable impacts on mean household food expenditure, poverty reduction and farmers' income. This shows that Fadama II served as the solution to the problems of food insecurity and poverty in the rural areas of Nigeria with a case of Kogi state. The study also recommend that all participating LGAs and state should ensure prompt and complete payment of the counterpart funds.

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