EFFECT OF THE THIRD NATIONAL FADAMA ADDITIONAL FINANCING PROJECT ON THE OUTPUT AND POVERTY LEVELS OF RICE FARMERS IN ENUGU STATE, NIGERIA

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ABSTRACT
The study analysed effect of the Third National Fadama Additional Financing project on the output and poverty levels of rice farmers in Enugu state, Nigeria. Multi-stage random sampling technique was used to select 240 respondents (120 Fadama and 120 non - Fadama rice farmers). Data for the study were collected through a structured questionnaire as well as field observation and analyzed using descriptive statistics and Z-test analysis. Results showed that 60.0% (Fadama farmers) and 61.7% (non-Fadama) farmers were males, both farmer groups had mean household sizes of 6 persons and mean annual income ofN479, 398.37 (Fadama farmers) and N179,426.80(non - Fadama farmers). Results indicate that Fadama farmers had mean rice output of 2014.58kg/ha as against 802.50kg/ha for non-Fadama farmers, Poverty status showed that 67% and 71.0% of Fadama and non – Fadama farmers were poor, while 53.0% (Fadama farmers) and 49.0% (non – Fadama farmers) were non poor. Results of Z-test on rice output and poverty levels showed that there were significant differences in rice output and poverty levels of Fadama and non – Fadama rice farmers at ($Z= p<0.01$)in the study area. The study recommended prompt delivery of farm inputs, payment of counterpart funds by Federal, State and Local Governments and extension of the project to non-beneficiary communities in order to increase rice output and reduce poverty.
Keywords: Effect, Fadama, Output, Poverty, Rice Farmers

INTRODUCTION

The Federal Government of Nigeria has taken several steps over the years to use agriculture as a vehicle to alleviate poverty and attain food security. There is low and declining productivity of Nigeria's rice agricultural sector due to poorly developed irrigation facilities, non - access to funds inadequate infrastructure, ineffective agricultural research and extension systems, non- availability and poor distribution of key inputs(Fertilisers, chemicals, machinery and improved seeds) (Ajala and Gana, 2015). In Nigeria, rice has witnessed some remarkable developments particularly in the past ten years both in production and consumption. According to Nigeria rice production statistics, the imports stood at 50% and has risen to 7 million metric tons with only 2.7 million metric tons produced by Nigerian farmers in 2017 (Federal Ministry of Agriculture and Rural Development, 2017; Nwaobiala, 2015). Akinbile, Aminu and Sokeye (2008) reported that the high rate of rice production in Nigeria has forced government to take several steps to redress this trend, by restricting rice importation through land borders to encourage domestic production.

Poverty is a global menace that threatens the standard of living of the people across various countries of the world and it is an endemic phenomenon that is on the increase in Nigeria (Olorunsanya, Falola and Ogundeji, 2011). Despite various efforts of Government to reduce the incidence of poverty through different poverty alleviation programmes and strategies, Nigeria continues to be one of the poorest countries in the world (International Fund for Agricultural Development, 2017). Poverty in Nigeria is pervasive although the country is rich in human and natural resources that should translate into better living standards (Nwaobiala, 2014). According to United Nations' Sustainable Goal (2017), 86.9 million of Nigerians now living in extreme poverty represents nearly 50% of its estimated 180 million population with Enugu State having a poverty index of 28.8%. .However, a significant reduction in poverty requires sustained long-term double digit growth. This is a major challenge, given that public sector funds are still being invested in loss making public enterprises and policy implementation remains weak (Institute of Development Studies, 2016). However, evidence suggests that the key to alleviating poverty in many parts of the world is a more productive and profitable agricultural sector (Ogbonna and Nwaobiala, 2014). This is because agriculture paves the way for economic growth in developing nations; through income distribution and food security (World Bank, 2013; Food and Agriculture Organisation, 2010).

Despite millions of dollars committed into various development projects in Nigeria by past successive governments and international donor agencies the agricultural sector appears to be undeveloped (Nwaobiala, 2013).Due to the shortcomings of past Fadama Development Projects, the World Bank initiated a financing approach to ensure that rice production in the rice producing areas of Nigeria is drastically improved; create employment opportunities, encourage access and adoption of improved rice production technologies and reduce poverty (World Bank, 2013). Though these development programmes were centred towards increasing rice output, alleviating rural poverty and to raise the standard of living of the people, especially the poor resource

farmers, it seems the effect has not been determined. In view of the foregoing the study was designed to analyse the effect of the Third National Fadama Additional Financing project on the output and poverty levels of rice farmers in Enugu State, Nigeria. The specific objectives are to:

i. describe selected socioeconomic characteristics of Fadama and non – Fadama rice farmers in the study area
ii. estimate the rice output of Fadama and non – Fadama rice farmers and;
iii. determine the poverty status of Fadama and non – Fadama rice farmers

The hypotheses of the study are stated as follows;

$H_0$1: There is no significant difference in the output levels of Fadama and non-Fadama rice farmers in the study area.

$H_0$2: There is no significant difference in the poverty levels of Fadama and non-Fadama rice farmers in the study area.

METHODOLOGY

This study was conducted in Enugu State. It is one of the states in South – Eastern Nigeria and beneficiary of the Fadama Additional Financing Project. The State is located at 6°30′N 7°30′E of the Equator and 6.500°N 7.500°Eof the Greenwich Meridian (Enugu State Planning Commission, 2006). The study comprised of all Fadama III additional financing beneficiary and non-beneficiary rice farmers in Enugu State. Multi-stage random sampling technique was used in the selection of Local Government Areas, Fadama Community Associations (FCAs), Fadama Users Groups (FUGs) and Fadama rice farmers and non-farmers. First 5 (five) LGAs were randomly selected out of seven (7) that participated in the project. Second, two (2) FCAs each were randomly selected from the selected LGAs to give a total of 10 FCAs. Four (4) FUGs were randomly selected from each FCA to give a total of 40 FUGs. From the selected FUGs three (3) Fadama rice farmers each were randomly selected to give a sample of 120 Fadama rice farmers. Finally one hundred and twenty (120) non Fadama rice farmers were randomly selected from the areas where the beneficiary farmers were chosen from a sampling frame of 180 rice farmers. This gave a grand sample size of two hundred and forty (240) rice farmers (120 each for Fadama and non – Fadama farmers). Specifically, objectives i and ii were analyzed using means, percentages and frequency distribution while objective iii was analysed using poverty gap analysis and hypotheses tested with Z-test analysis

Model specifications

The poverty levels of Fadama and non Fadama rice farmers in the study area were tested with Poverty gap which as expressed below;

H= q/n…….(i)

H= head count ratio

Q= Number of poor Fadama and non - Fadamarice farmers

N= Total number ofpoor Fadama and non - Fadama rice farmers

1= [(z-y)/z]……..ii)

1= Poverty gap

Z=Poverty line estimated using the mean household expenditure of Fadama and non - Fadama rice farmers

Y= Average income of Fadama and non - Fadama rice farmers

(a) The poverty line is expressed thus

Z=2/3(y)

Where,

Z= Poverty line measured in Naira (N).

Y= Mean of per capita household expenditure of Fadama and non - Fadama rice farmersin Naira (N)

Given that; Mean Capita House Food Expenditure

$$= \frac{\text{Total per capita household expenditure}}{\text{Total number of household}}$$

Per Capita Expenditure

$$= \frac{\text{Total monthly household expenditure}}{\text{household size}}$$

i. Z-test analysis of comparison of output levels of Fadama and non Fadama rice farmers is specified thus:

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

$n_1 + n_2$ - 2 degrees of freedom

Where,

"Z" = "Z" statistic

$\bar{X}_1$ = sample mean of output of Fadama farmers

$\bar{X}_2$ = sample mean of output of non-Fadama farmers.

σ^2_1 = standard deviation of output of Fadama farmers

σ^2_2 = standard deviation of output of non-Fadama farmers

n_1 = sample size for Fadama farmers

n_2= sample size for non-Fadama farmers

ii. Z-test analysis of comparison of poverty levels of Fadama and non Fadama farmersis specified thus:

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

$n_1 + n_2$ - 2 degrees of freedom

Where,

"Z" = "Z" statistic

X_1 = sample mean of poverty levels of Fadama farmers

$\bar{X}_2$ = sample mean of poverty levels of non-Fadama farmers
σ^2_1 = standard deviation of poverty levels of Fadama farmers
σ^2_2 = standard deviation of poverty levels of non- Fadama farmers
n_1 = sample size for Fadama farmers
n_2= sample size for non- Fadama farmers

RESULTS AND DISCUSSION

Socioeconomic characteristics of respondents

The result in Table1 shows that 60.00% (Fadama) and 61.70% (non Fadama) farmers were males as against 40.00% (Fadama) and 38.30% (non Fadama) farmers that were females. This implies that rice farming in the state is dominated by male farmers. The result is in tandem with Nwaobiala and Adesope (2013) that rice farming is dominated by males in Ebonyi State. The mean ages for the Fadama farmers were 42.70 years as against that of the non – Fadama farmers (49.20 years). The result implies that they were still in their active ages. They can effectively utilise technologies disseminated and withstand rigorous work involved in rice farming. Omninikari (2017) affirmed that farmers within the active age group have more innovative ability and capacity to do manual work than farmers in inactive ages especially in rice production activities. Result also shows that Fadama and non- Fadama farmers had mean household sizes of 6 persons respectively. With the appreciable amount of members of household, it can be inferred that both farmer groups have the opportunity of family labour which will enhance their rice farming activities. The household sizes may have positive implications for these farmer groups since it has been found that most rural households depend on their family members to provide cheap labour (Olajide, 2014). Issa (2017) and Tijani and Aluko (2014) opined thata household size of 4-6 members which could provide labour can be used to defray labour cost. The annual mean income derived from rice production were N479,398.37 (Fadama farmers) and N179,426.80 (non - Fadama farmers). This implies that the annual farm income of rice farmers who benefited from the project was higher than the non-beneficiaries. Ogbonna and Nwaobiala (2014)noted that increased income for beneficiary Fadama farmers may be attributed to yield enhancing rice technologies disseminated to them which translates to increased living standard. In the same vein, Onugu, Agbasi and Nweke (2018) reported that participation of farmers in Fadama projects increased their incomes thereby reducing poverty.

Table 1: Selected socioeconomic characteristics of Fadama and non-Fadama rice farmers in the study area (n = 120 Fadama and n = 120 non – Fadama Farmers)

	Fadama Farmers		Non – Fadama Farmers	
Variables	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Gender				
Male	72	60.00	74	61.70
Female	48	40.00	46	38.30
Age (years)				
21 – 31	31	25.80	12	10.00
32 – 42	20	16.70	13	10.80
42 – 51	36	30.00	44	36.70
52 – 61	31	25.80	39	32.50
62 – 71	2	1.70	12	10.00
Mean	**42.7**			**49.2**
Household Size (numbers)				
2 – 4	33	29.50	46	38.30
5 – 7	62	51.70	37	30.80
8 – 10	19	15.80	37	30.80
11 – 14	6	5.00	-	-
Mean	**6**			
Annual Farm Income (N)				
100,000 – 300,000	18	15.00	114	95.00
301,000 – 500,000	30	25.00	6	5.00
501,000 – 800,000	22	18.40	-	-
801,000 – 1,000,00	59	41.60	-	-
Mean	**479,398.37**			**179.426.83**

Source: Field Survey, 2017

Output levels of Fadama and Non Fadama rice farmers in the study area

Result in Table 2 shows that 53.3% of Fadama farmers had rice output of between 2100-3050kg

while, the non - Fadama farmers (94.2%) realized between 1100-1500kg per annum. The mean rice outputs for both groups of farmers were2014.58 kg (Fadama farmers) and 802.50 kg (non-Fadama farmers). This result implies that Fadama rice farmers had more rice output than the non-Fadama farmers. The higher output of Fadama farmers may be attributed to improvement in the yield of rice which is vigorously pursued through the development of improved varieties and cultivars by National Cereals Research Institute and transferred by facilitators of National Fadama Development Project to their farmers. Also regular participation of farmers in different Fadama project phases has enhanced output through trainings and adoption of rice technologies. This result is in tandem with that of Nwaobiala (2017) who obtained a similar result among IFAD farmers in Abia and Cross River States and that of Onwumere and Alimba (2010) that noted that participating in development projects increases farmers' output.

Table 2: Frequency distribution of rice output of Fadama and non Fadama rice farmers in the study area

	Fadama farmers		Non-Fadama farmers	
Rice Output (kg/Annum)	**Frequency**	**Percentage**	**Frequency**	**Percentage**
501-1000	7	5.8	7	5.8
1001-1500	21	17.5	113	94.2
1501-2000	21	17.5	-	-
2001-2500	64	53.3	-	-
25001-3000	7	5.9	-	-
Mean	**2014.58**		**802.50**	

Source: Field Survey, 2017

Poverty status of Fadama and non – Fadama farmers in the study area

Results in Table 3 show the poverty status estimates of Fadama and non- Fadama farmers in the study area. The results show a mean expenditure value of ₦87,279.63 and ₦45,578.24 for the Fadama and non- Fadama farmers respectively, with estimated per capita expenditure of ₦14,136.59 (Fadama farmers) and ₦7,547.69 (non - Fadama farmers). Also 67% of Fadama farmers were poor, as against 71% of the non-Fadama farmers). The result further revealed that 53% and 49%) of Fadama and non – Fadama farmers were non-poor. The result infer that the project has reduced the poverty status of the beneficiary farmers than the non – beneficiaries. This result corroborates with that of Mbagwu (2018) that poverty status of cooperators and non - cooperators in Abia State differ significantly.

Table 3: Frequency Distribution of Poverty Estimates of Fadama and Non- Fadama Rice Farmers in the Study Area

Variables	Fadama farmers	Non-Fadama farmers	Total
Expenditure (N)	87,277.63	45,578.24	
Household Size	5.67	5.67	
Per Capita Expenditure (N)	14,136.59	7,547.69	
Poor (%)	67	71	138
Non-Poor (%)	53	49	102

Source: Result from STAT13

Differences in rice output levels of Fadama and non – Fadama farmers

Results in Table 4 show the Z-test estimates of difference in rice output of Fadama and non - Fadama farmers in the study area. The results show that the Z- test value of 21.79 was highly significant at 1.0% levels of probability, indicating difference in rice output between the beneficiaries and non-beneficiaries. The levels of rice output among the Fadama beneficiaries were significantly higher than the non - Fadama farmers. The result is in agreement with Ogbonna and Nwaobiala (2015) as they obtained a similar result among Fadama and non – Fadama farmers in Gombe State, Nigeria. Nwaobiala, (2015)in his study also found a difference in rice output among famers in Ebonyi State, Nigeria. The hypothesis which states that there is no significant **d**ifference between output levels of Fadama and non- Fadama rice farmers in the study area is hereby rejected.

Table 4: Z-Test analysis of the difference in output levels of Fadama and non-Fadama farmers

Variables	Mean	Standard Deviation	Z-value
Fadama farmers	1989.55	557.480	21.792***
Non-Fadama Farmers	805.00	119.239	

Combined	1397.27	119.041
Difference	**1184.55**	

Source: *Result from STATA 13*
***P ≤ 0.1

Differences in poverty levels of Fadama and non – Fadama farmers

Results in Table 5 show the Z-test estimates of the difference in poverty levels of Fadama and non Fadama farmers study area. The results show a Z-test value of 9.7054 which was highly significant at 1.0% level. This implies a significant difference in the poverty level of Fadama and non-Fadama rice farmers. The result is in tandem with the findings of National Bureau of Statistics (2015) that poverty profiles of farmers after project execution guide to determine appropriate programme policies to be formulated by donor-sponsored agencies. The hypothesis which states that there is no significant **d**ifference between poverty levels of Fadama and non- Fadama rice farmers in the study area is hereby rejected.

Table 5: Z-test analysis of difference in poverty levels of Fadama and non-Fadama rice farmers

Variables	Mean	Standard Deviation	Z-Value
Fadama Farmers	14,136.59	11,333.59	9.7054***
Non - Fadama Farmers	7,547.69	5539.45	
Combined	10,842.13	9,492.19	
Difference	-6588.94	1213.869	

Source: *Result from STAT 13*
***P ≤ 0.1

CONCLUSION AND RECOMMENDATIONS

The study has shown that Fadama farmers realized more income and rice output than the non-Fadama farmers thereby the project reduced the poverty status of the beneficiary Fadama rice farmers.

The study therefore recommends that;

i. Prompt and timely delivery of inputs to Fadama rice farmers by the project facilitators is essential, considering the time bound nature of farming
ii. The need for the State and Local Government to pay their counterpart funds on time in order to sustain the project, due to the time bound nature of farming.
iii. The Project should be replicated in other Local Government Areas of the State. This will help reduce the poverty status of the rural dwellers and in turn increase output.

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