

**DETERMINANTS OF PRODUCTIVITY AMONG BENEFICIARIES AND NON-BENEFICIARIES FARMERS OF THIRD NATIONAL FADAMA DEVELOPMENT PROJECT IN KADUNA NORTH LOCAL GOVERNMENT AREA OF KADUNA STATE, NIGERIA**

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**Abstract**

*The National Fadama Development Project (NFDP) is a project of the Federal Government of Nigeria through the pooled World Bank Loan. The project aims at boosting incremental food production and the standard of living of the beneficiaries. The studies access the determinants of productivity among beneficiaries and non- beneficiaries of Fadama III project in Kaduna North Local Government Area of Kaduna State, Nigeria. Multi stage sampling technique was used for the study. Data were collected by interview method with structured questionnaires from one hundred beneficiaries and non- beneficiaries farmers. Descriptive statistics and production function analysis were used to analyse the data. The results of the study showed that majority (84.69% and 85.26%) of the beneficiaries and non- beneficiaries farmers are males with highest age range of 31– 40 years. Majority (90.82% and 92.63%) are married having household size between 6-10 persons and quranic education (42.86% and 62.11%) as the highest educational level. The linear and semi-log production function was the lead equation with  $R^2= 93.93%$  and  $93.96%$  for beneficiaries and non- beneficiaries farmers. Variables such as farm size was significant at 1% while quantity of seeds, quantity of fertilizers and labour used were significant at 5% probability level for beneficiaries farmers. Non-beneficiaries farmers had farm size significant at 1%, quantity of seed was significant at 5% and quantity of fertilizers used was significant at 10% probability level. The problem limiting increased production of respondents in the study areas are inadequate capital, high cost of labour, unavailability of labour and high cost of inputs. However, it was recommended that Kaduna State Agricultural Development Programme (KADP) and National Fadama Development Programme (NFDP) should ensure timely supply of agricultural inputs at a subsidized rate to the farmers. This will enhance efficient utilization of inputs and increase the productivity of the farmers*

**Key Words:** *Fadama, Beneficiaries, Variables, Determinants, Kaduna State*

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**Introduction**

The fact that many government agricultural intervention development programmes in Nigeria have not had lasting impact on agricultural

development and that many have not yielded the expected results of sustained increase in food production is well documented (Baba and Singh, 1998). The National *Fadama* Development Project

(NFDP) in Nigeria is one of such programmes in States with *Fadama* potentials. Nigeria as a country is blessed with potentially good land and water resources required for sustainable agricultural development.

The National *Fadama* Development Project (NFDP) is a project of the Federal Government of Nigeria through the pooled World Bank Loan, to finance the development of *Fadama* lands by introducing small scale irrigation in states with *Fadama* development potentials. The project aims at boosting incremental food production and the standard of living of the beneficiaries. *Fadama* are low lying lands subject to seasonal flooding or water logging along the banks of streams or depressions. It is a Hausa word meaning, the seasonally flooded or floodable plains along major savannah rivers and or depressions or adjacent to seasonally or perennially flowing streams and rivers, it is called *Akuro* in Yoruba land.

The enormous potentials for irrigated agriculture in the *Fadama* and flood plain are unquestioned. According to Baba and Singh (1998), the *Fadama* lands have high potentials and agricultural values several times more than the adjacent upland. *Fadama* development is a typical form of small scale irrigation practice characterized by flexibility of farming operation, low inputs requirement, high economic values, minimal social and environmental impact and hence conform with the general criteria for sustainable development.

National *Fadama* Development Project was established consequent to the failure of large scale irrigated schemes, which the country has pursued for the last two (2) decades to yield the anticipated increase in food production despite the huge sums of money spent on it. Presently, the NFDP is widely being implemented in all the 36 states of the

Federation and the Federal Capital Territory (FCT). The states are Bauchi, Gombe, Jigawa, Kaduna, Kano, Kebbi, Zamfara, Kwara etc.

The constraints militating against sustainable *Fadama* development in Nigeria are legion. According to Akinbile and Ogedenbe (2006) thousands of *Fadama* lands remain uncultivated due to the problem of accessibility or remoteness, which tends to inhibit the spread of new ideas and concept of *Fadama* development. Also, according to Oladoja and Kola (2008) some of the common draw back in the management of *Fadama* are the occurrence of marshy lands and swamps, which are difficult to work, thereby making the development and management of *Fadama* expensive and occasionally unhealthy. Baba and Singh (1998) noted that lack of post harvest technology, poor handling, poor road network and the lack of means of preservation constitute a major constraint of *Fadama* products preservation. Another major constraint to *Fadama* development is the problem of pests, insects and diseases. Such as *Quelea* birds, migrating locusts, grasshoppers, army worms and head worm have devastating effects and can cause crop losses as high as 25 – 30%.

Small holder agriculture, the dominant occupation of rural Nigerians, is mainly rain – fed and characterized by low capital and low productivity. The farming systems in the rural areas are predominantly upland subsistence agriculture that are highly dependent on the vagaries of the weather while the potential for irrigation, using underground and surface water, remain under developed (World Bank, 2001). The use of inputs such as fertilizer, improved seed and mechanization is low and irrigation efficiency (about 20%) is low (FDP, 2005). Therefore, in an attempt to reduce the poverty level

among rural Nigerians and also to increase the income and productivity of the rural dwellers, *Fadama* Development Project was established by Nigerian Government in collaboration with the World Bank and African Development Bank.

According to Akinbele and Ogedengbe (2006), Nigeria had many intervention programmes in the agricultural sector, which have not had lasting impact on agricultural development nor yield the expected result of sustained increase in food production. It is therefore, necessary to assess the determinants of productivity among beneficiaries farmers of NFDP to prevent the programme from suffering the same fate like the earlier ones. Besides, little or no effort has been made to assess National *Fadama* Development Project on beneficiary farmers in the study area to see if some of the project objectives has being realized or not. It is against this premises the research was undertaken to access the determinants of productivity of beneficiaries and non- beneficiaries farmers of National *Fadama* Development Project (NFDP) III in Kaduna North Local Government Area of Kaduna State, Nigeria. The objectives of the study are:

- i. To examine the socio-economic characteristics of beneficiaries and non- beneficiaries farmers of NFDP.
- ii. To determine the input and output relationship of beneficiaries and non- beneficiaries farmers of NFDP

- iii. To identify the problems limiting increased production of respondents in the study areas

The hypothesis of the study were stated in null form as follows

H<sub>0</sub>: There was no significant difference between the inputs and output of beneficiaries farmers of NFDP

H<sub>0</sub>: There was no significant difference between the inputs and output of non-beneficiaries farmers of NFDP

## **Research Methodology**

### ***Study Area***

The study was conducted in Kaduna North Local Government Area of Kaduna State (Figure 1). Kaduna North lies between latitudes 10°35' and 10°40' North and longitudes 7°25' and 7° 20' E. It is bounded in the North by Igabi Local Government Area. It has its headquarters at Magajin Gari in the Metropolis. The Local Government Area has six districts namely: Doka, Kabala, Angwan Shanu, Rafingusa, Malali, Kawo and Gabasawa. It has an area of 72km<sup>2</sup> and a population of 357, 694 at the 2006 population census (NPC, 2006). The main economic activities of the people are farming which include the cultivation of maize, rice, beans, fish, vegetables, dairy products, poultry egg production etc. The study area normally experience both wet and dry season and it comprises of clay loam soil. Crops like maize, rice, sorghum are planted during the rainy season while crops like pepper, tomatoes, cabbage are planted during the dry season.

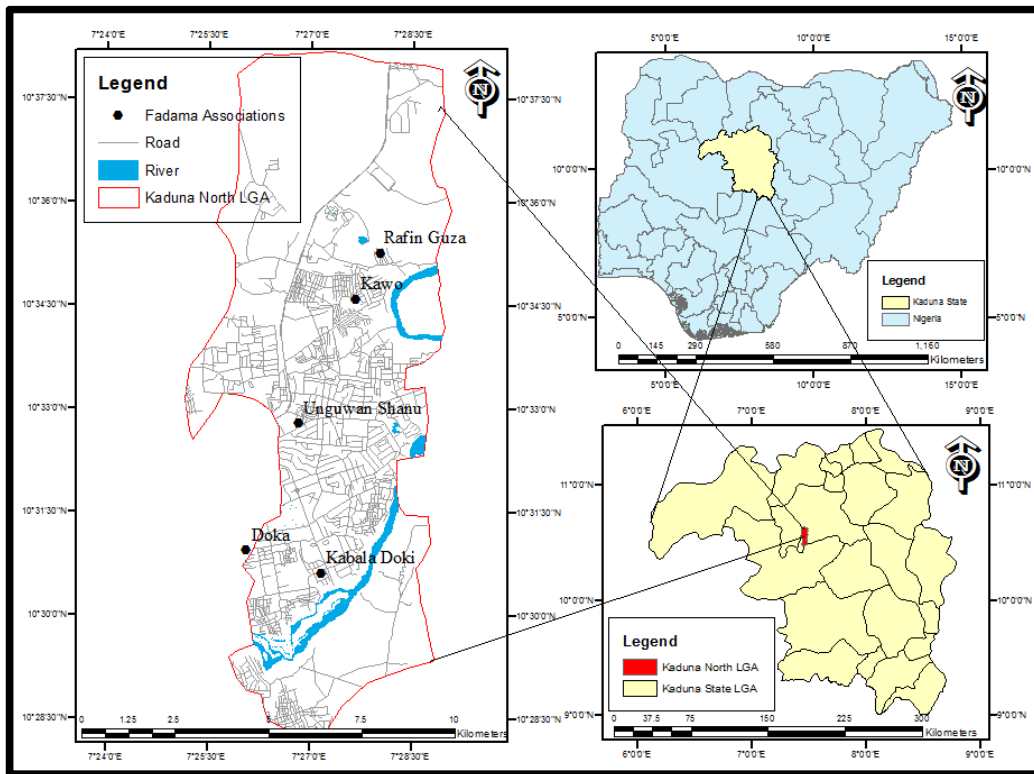


Fig. 1: Map of Nigeria showing Kaduna State and the study areas

### Sampling Procedure

The study makes use of multistage sampling techniques. In the first stage, purposive sampling was used to select five communities having *Fadama* Association. These communities are Rafingusa, Kabala Doki, Kawo, Angwan Shanu and Doka. The second stage involved random selection of ten beneficiaries from *Fadama* Association and ten non-beneficiaries of NFDG from each community. This makes a total of 50 beneficiaries farmers and 50 non-beneficiaries farmers and a total number of 100 respondents as sample size. Only 46 and 47 questionnaires were used for beneficiaries and non-beneficiaries farmers in the analysis.

### Method of Data Collection

The data for this study was obtained from primary source. The primary source involved the use of well-structured questionnaire which was administered in equal number of fifty to beneficiaries and

non-beneficiaries farmers of NFDG in the five (5) *Fadama* Communities association respectively. The questionnaire was designed to cover the objectives of the study and it consists of both open ended and close ended questions.

### Data Analysis

The data collected were analysed using inferential and non-inferential statistics. Descriptive statistics such as mean, percentage, frequency distribution and tables were used to describe the socio-economic characteristics of beneficiaries, non-beneficiaries farmers and problems limiting increased production of respondents in the study area. Production function analysis (Multiple regression) was used to determine the inputs and output relationship of beneficiaries and non-beneficiaries farmers of NFDG. Three functional forms were specified: Linear, Semi log and Double log (cob Douglas) function.

The implicit form of the model was specified as:

$$Y = f(X_1, X_2, X_3, X_4, X_5, U)$$

Y = Independent variable (maize yield in Kg)

X<sub>1-5</sub> = Explanatory variables

U = Random error term

The explicit forms of all the models were stated below:

Linear function:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + U$$

Semi-log function:

$$Y = \ln \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \ln U$$

Double log (Cobb-Douglas):

$$\ln Y = \ln \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \ln U$$

Where:

Y = Output/ hectare in Kg (maize yield)

X<sub>1</sub> = Farm size (ha)

X<sub>2</sub> = Quantity of seeds used (kg)

X<sub>3</sub> = Chemicals (litres)

X<sub>4</sub> = Quantity of Fertilizer (kg)

X<sub>5</sub> = Labour used (Man-days)

$\beta_0$  = Intercept

$\beta_1$ ---  $\beta_5$  = Parameters or regression coefficients

## Results and Discussion

### *Socio-economic Characteristics of Beneficiaries and Non-Beneficiaries Farmers*

The socio-economic characteristics of the respondents presented on Table 1 showed that majority (84.78% and 91.49%) of the beneficiaries and non-beneficiaries farmers are males while (15.22% and 8.51%) were females. Adegbite *et al.* (2007a) found most of the respondents, 57.8% and 60% for beneficiaries and non-beneficiaries of National *Fadama* Development Project II to be males. This shows that males are more involved in *Fadama* farming than females in Kaduna North Local Government. This finding may be attributed to the tradition and custom of the study area whereby most farmers are

predominantly Hausa Muslims and their wives are usually preferred to stay at home to engage in processing of farm products and other off-farm activities.

The table further shows that 36.96% and 42.55% of beneficiaries and non-beneficiaries farmers are between the ages of 31– 40 years which is termed as youthful or active age. This implies that most of the farmers are still within their productive and active working age range, hence their ability to participate or produce to earn some revenue in the *Fadama* project area. This agreed with the finding of Adegbite *et al.* (2007a).

Also, from Table 1, 91.30% and 93.62% of the beneficiaries and non-beneficiaries farmers were married. This corroborates the finding of Adegbite *et al.* (2007a) which found 89.9% of the

beneficiaries of *Fadama* II project married. This shows that married men were actively involved in *Fadama* III project in the study area. This was attributed to early marriages usually practiced in the study area.

The size of household is an important factor in traditional agriculture because it influences to a large extent the supply of labour for immediate farm employment (Akinyemi, 1998). According to this study majority (50.00% and 72.34%) of beneficiaries and non-beneficiaries farmers had family size of between 6-10 persons. The implication is that the relatively large household size may likely enhance family labour supply on the farms hence supporting the favourably, productive capacities of the farmers already enhanced by their ages. This corroborates (Adegbite and Oluwalana 2004, Adegbite *et al.*, 2007b) Agbamu, 1993 and Okweche *et al.*, 1998; that the larger the household size, the more the likelihood of sustainable labour efficiency on farmers' farms given the constant labour supply.

The educational status of the respondents showed that majority of the beneficiaries and non-beneficiaries farmers (60.87%, 76.60%) had quaranic education, (10.87% and 8.51%) had secondary education, (21.74% and 12.77%) had primary education while only (6.52% and 2.13%) had tertiary education. This showed that the beneficiaries farmers of NFDP are more educated than non-beneficiaries

farmers. This may enhance their participation in the programme. The finding here also implies that there is less need for extension services to translate production guides to the language of the respondents for easy understanding.

In term of the years of farming experience, 78.26% and 78.72% of the beneficiaries and non-beneficiaries farmers had farming experience that falls between 11-15 and 6-10 years, which was found to be the majority. This implies that majority of the beneficiaries farmers are more experience in farming than non-beneficiaries farmers. This also connotes that the two groups (beneficiaries and non-beneficiaries farmers had good experience of farming.

Farm size is an important fixed input resource factor in agricultural production. This is because it determines to a large extent the level of agricultural production (i.e. small, medium or large scale production). The size of the farm evaluated by farmers is a function of population pressure, family size, labour availability, financial background and experience of the farmer (Imonikhe, 2004). Majority (50.00%) of the beneficiaries farmers had farm size ranges from 1.5- 2.0 hectares while 74.47% of non-beneficiaries farmers cultivated 0- 0.5 hectares of land. This showed that the beneficiaries farmers of NFDP cultivated more land than non-beneficiaries farmers. This could be attributed to their participation in the programme.

Table 1: Distribution of the respondents according to their socio-economic characteristics

Socio-economic variables	Fadama Beneficiaries N= 46	Percentage	Non- beneficiaries N= 47	Percentage
<b>Sex</b>				
Male	39	84.78	43	91.49
Female	7	15.22	4	8.51
<b>Age (Years)</b>				
21-30	11	23.91	8	17.02
31-40	17	36.96	20	42.55
41-50	9	19.57	7	14.89
51-60	7	15.22	9	19.15
61-70	2	4.35	3	6.38
<b>Marital status</b>				
Married	42	91.30	44	93.62
Single	4	8.70	3	6.38
<b>Household size</b>				
0- 5	14	30.43	9	19.15
6- 10	23	50.00	34	72.34
11- 15	7	15.22	2	4.26
16-20	2	4.35	2	4.26
<b>Educational status</b>				
Primary education	10	21.74	6	12.77
Secondary education	5	10.87	4	8.51
Tertiary education	3	6.52	1	2.13
Quranic education	28	60.87	36	76.60
<b>Farming experience</b>				
0-5	3	6.52	7	14.89
6-10	5	10.87	37	78.72
11-15	36	78.26	2	4.26
16-20	2	4.35	1	2.13
<b>Farm size (Hectares)</b>				
0- 0.5	6	13.04	35	74.47
1- 1.5	15	32.61	7	14.89
1.5- 2.0	23	50.00	5	10.64
> 2.0	2	4.35	-	-

**Regression Analysis of Input- Output Relationship of Beneficiaries Farmers**

The regression analysis of Input-Output relationship on Table 2 showed that linear function gave the best result

among the various functional forms tried and was selected based on higher R<sup>2</sup> value, F-statistic and t-ratio. The functional equation of the linear function is given as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \mu_i$$

$$Y = 144.785^{**} + 714.443 X_1^{***} + 12.499 X_2^{**} - 0.074 X_3 + 0.855^{**} X_4 - 2.661 X_5^{**} + \mu_i$$

(2.65)            (6.80)            (2.08)            (-0.00)            (2.24)            (-2.28)

Result of the analysis revealed that X<sub>1</sub> (farm size), X<sub>2</sub> (quantity of seeds) and X<sub>4</sub> (fertilizers) were positively related to output. Thus, 714.443, 12.499

and 0.855 unit increase in each of X<sub>1</sub>, X<sub>2</sub> and X<sub>4</sub> will bring about one unit increase respectively in respondents output. On the other hand, variables X<sub>3</sub> (chemicals)

and X<sub>5</sub> (labour) were found to be negatively related to the output. That is 0.074 and 2.661 unit increase in each of X<sub>3</sub> and X<sub>5</sub> will result in corresponding one unit decrease respectively in respondents net return. The R<sup>2</sup> value of 0.9393 means that 93.93% of the total variation in the dependent variable or output could be explained by the independent variables (inputs) included in the model, while the remaining 6.07% was due to error term. The result further revealed that X<sub>1</sub> was significant at 1%, X<sub>2</sub>, X<sub>4</sub> and X<sub>5</sub> were significant at 5% level of probability while X<sub>3</sub> was not significant in the model. This result was similar to the findings of Adegbite *et al.* (2007a) which found land area (X<sub>1</sub>) and cost of labour (X<sub>5</sub>) significant at 1

percent probability level and cost of agro-chemicals (X<sub>4</sub>) significant at 5 percent probability level to the total revenue of beneficiaries farmers of National *Fadama* Development Project II (*Fadama* II) in Ogun State, Nigeria. The determinants of productivity (output or yield) of beneficiaries farmers from this present study are farm size, quantity of seeds used, quantity of fertilizers used and labour used. The value of F-statistics (126.99) obtained shows that the combined influences of the inputs were significant at 1% level of significance in influencing the output. With this result the null hypothesis (H<sub>0</sub>) which states that there was no significant difference between the inputs and output of beneficiary farmers is rejected.

Table 2: Regression co-efficient and t- values of Linear production function of *Fadama* beneficiaries farmers

Variables	Regression co-efficient	t- values
Constant term	144.785	2.65***
Farm size (X <sub>1</sub> )	714.443	6.80***
Quantity of seed (X <sub>2</sub> )	12.499	2.08**
Chemical (X <sub>3</sub> )	-0.074	-0.00 ns
Fertilizer (X <sub>4</sub> )	0.855	2.24**
Labour (X <sub>5</sub> )	-2.661	-2.28**
F- Statistics	126.99	
R- Squared	0.9393	
Adjusted R- Squared	0.9320	

\*\*\* Significant at 0.01, \*\* Significant at 0.05, Ns= Not significant, Prob.> F= 0.000

**Regression Analysis of Input-Output Relationship of Non-Beneficiaries Farmers**

The semi-log gave the best fit of the three tested functional forms based on

$$Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \mu_i$$

$$Y = -802.413 + 1178.062 \ln X_1^{***} + 526.252 \ln X_2^{**} + 49.888 \ln X_3 + 570.146 \ln X_4^* - 3.823 \ln X_5 + \mu_i$$

(-1.27)      (6.96)                      (2.46)                      (0.23)                      (1.70)  
 (-0.09)

The result of the analysis revealed that X<sub>1</sub> (farm size), X<sub>2</sub> (quantity of seed),

higher R<sup>2</sup> value, F-statistics and t-ratio (Table 3). The functional form equation of the semi – log is given below.

X<sub>3</sub> (chemicals) and X<sub>4</sub> (fertilizers) were positively related to net returns. Thus, on



the other hand, variable  $X_5$  (labour) was found to be negatively related to net returns. That is, 3.823 unit increases in  $X_5$  will result in corresponding one unit decrease in respondents output. The  $R^2$  value of 0.9396 implies that 93.96% of the total variation in the dependent variables could be explained by the independent variables included in the model, while the remaining 6.04% was due to error term. The result further revealed that  $X_1$  was significant at 1%,  $X_2$  was significant at 5% and  $X_4$  was significant at 10% while  $X_3$  and  $X_5$  were not significant in the model. The regression of total revenue of non-beneficiaries farmers of *Fadama II* project by Adegbite *et al.* (2007a)

recorded cost of planting materials ( $X_3$ ), cost of agro-chemicals ( $X_4$ ) and cost of labour ( $X_5$ ) to be significant at 1 percent probability level and cost of farm tools ( $X_2$ ) significant at 5 percent level of probability. The result of this study showed that farm size, quantity of seeds and quantity of fertilize used are the determinants of productivity (output or yield) for non-beneficiaries farmers of NFDP. The value of the F-statistics (109.48) showed that the overall equation was statistically significant at 1% probability level. With this result the null hypothesis ( $H_0$ ) which states that there was no significant difference between input and output of non-beneficiaries farmers is rejected.

Table 3: Regression co-efficient and t- values of Semi- log production function of Non-Beneficiaries Farmers

Variables	Regression co-efficient	t- values
Constant term	-802.413	-1.27
Farm size ( $X_1$ )	1178.062	6.96***
Quantity of seed ( $X_2$ )	526.252	2.46**
Chemical ( $X_3$ )	49.888	0.23 ns
Fertilizer ( $X_4$ )	570.146	1.70*
Labour ( $X_5$ )	-3.823	-0.09 ns
F- Statistics	109.48	
R- Squared	0.9396	
Adjusted R- Squared	0.9305	

\*\*\* Significant at 0.01, \*\* Significant at 0.05, \*Significant at 0.10, Ns= Not significant, Prob.> F= 0.000

### **Problems Limiting Increased Production of Respondents in the Study Areas**

The problems limiting increase production of respondents in the study areas are presented on Table 4. The table showed that the major problems limiting increase production of beneficiaries of NFDP in the study area were inadequate capital (22.22%), high cost of labour (17.87%), unavailability of labour (14.01%) and high cost of inputs (13.04). Other problems such as inadequate supply of inputs, inadequate storage facilities, inadequate

mechanisation and inadequate extension services & training had 11.11%, 8.70%, 7.25% and 5.80% respectively. The non-beneficiaries of NFDP had the highest problems of inadequate capital and inadequate supply of inputs, each having 14.73%. This was followed by high cost of inputs (14.11%), unavailability of labour (13.48%) and high cost of labour (13.17%). Problem of inadequate storage facilities, inadequate extension services and training and inadequate mechanisation had 12.23%, 10.97% and 6.58% respectively.

Table 4: Problems limiting increased production of respondents in the study areas

Problem	Beneficiaries farmers		Non- beneficiaries farmers	
	Frequency*	Percentage	Frequency*	Percentage
Unavailability of labour	29	14.01	43	13.48
High cost of labour	37	17.87	42	13.17
Inadequate capital	46	22.22	47	14.73
Inadequate storage facilities	18	8.70	39	12.23
Inadequate mechanisation	15	7.25	21	6.58
Inadequate extension services & training	12	5.80	35	10.97
Inadequate supply of inputs	23	11.11	47	14.73
High cost of inputs	27	13.04	45	14.11
Total	207		319	

\*Multiple responses

### Conclusion and Recommendations

From the findings of the study, it has been possible to establish the fact that the majority of the beneficiaries of the NFDP are male, more educated and having more years of farming experience than non- beneficiaries farmers. The determinants of productivity (output or yield) of the beneficiaries farmers of NFDP as revealed in the analysis of production function model (regression model of inputs- output relationship) are farm size, chemicals, fertilizers and labour while non- beneficiaries farmers productivity are determined by farm size, quantity of seed and fertilizers respectively. The problems limiting increase production of respondents in the study areas are inadequate capital, high cost of labour, unavailability of labour and high cost of inputs. Other problems are inadequate supply of inputs, inadequate storage facilities, inadequate mechanisation and inadequate extension services and training.

The following recommendations were made based on the findings of the study

- i. More awareness through campaign should be created about the benefits of National *Fadama* Development Project in the state, this will increase

the number of participant farmers in the project

- ii. Availability and access to affordable credit facilities should be provided to the farmers as this will improve their capital base and expand farmers outputs
- iii. Timely supply of production inputs at a subsidized rate are very essentials if the farmers is to meet up with the timely operations on the farm, therefore, Kaduna State Agricultural Development Project (KADP) and the NFDP should ensured timely supply of agricultural production inputs at a subsidized rate to the farmers, this will enhance efficient utilization of inputs and increase the productivity of the farmers.

### References

- Adegbite, D.A., Adubi, K.O., Oloruntoba, A., Oyekunle, O. and Sobanke, S.B. (2007a). Impact of National *Fadama* Development Project II on Small-Scale Farmers' Income in Ogun State: Implications for Financial Support to Farmers. *ASSET Series. An International Journal*, 2(1): 110-130
- Adegbite, D.A., Momoh, S. and Alalade, A. (2007b). Determinants of

- Savings Mobilisation in Ogun State, Nigeria in *Journal of Sustainable Development*, 14(1/2): Amstys Books and Publishing Co, 2007.
- Adebite, D.A. and Oluwalana, E.O. (2004). "Revolving loan Scheme as a Poverty Alleviation Strategy: A case Study of Women Groups in UNAAB Extension Villages", *FAMAN Journal*, 7(2): 18-32.
- Agbamu, J.U. (1993). "Analysis of farmers' characteristics associated with adoption of soil management innovations in Ikorodu LGA of Lagos State" *The Nigerian Journal of Rural Extension and Development*, 1(2&3): 57-67.
- Akinbile, O.A. and Ogedenbe, K. (2006). Dynamics of Advance Wetting Irrigated Rice Cultivation in Akwa Ibom. *Journal of Social Science*, 9: 1140 – 145.
- Akinyemi, S.D. (1998). Status, problems and prospects of rural land tenure in Kaduna state and some reflections on land tenure policies in Nigeria. An unpublished Ph.D thesis, Cornell University, USA. Pp. 75
- Baba, O.J. and Singh, A. (1998). Effect of World Bank Assisted *Fadama II* Project on Performance of Crops. Pp. 150 – 156.
- Fadama Development Project Appraisal Report (2005). Pp. 2
- Imonikhe, T.A. (2004). "Impact of Katsina State Agricultural and Community Development Project on Income and Productivity of Farmers" An unpublished Ph.D Thesis, Ahmadu Bello University, Zaria, Nigeria. Pp. 40 – 59.
- NPC, (2006). National Population Census Publication.
- Okweche, V.A., Voh, J.P. and Ogunwale, S.A. (1998). "Socio-economic characteristics influencing the adoption behaviour of women Cooperators and non-Cooperators in Oju LGA of Benue State. *Journal of Agricultural Extension*, 2(3): 143- 152.
- Oladoja, M.A. and Kola, M. (2008). Assessment of Small Games on *Fadama* Land in South Eastern Part of Ago-Iwoyi. A project report submitted to the department of agricultural extension and rural management.
- World Bank (2001). Agricultural Development Project in Nigeria – Operation Evaluation Development. The World Bank Group.