



Effects of Fadama III Project on the Income of Dry Season Rice Farmers in Sokoto State, Nigeria

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Abstract

The effects of Fadama III project to the improvement in the income of participating dry season rice farmers in Sokoto state was studied. Population of the study comprised of all dry season rice farmers in Sokoto state. Purposive sampling was used to select six Local Government Areas. Purposive sampling was used to ensure the selection of LGAs with outstanding potentials in the cultivation of dry season crops. Random sampling technique was used to select 20 project participants and 12 non-project participants from each of the selected LGAs. Descriptive statistics and gross margin analysis were used for data analysis. Findings of the study revealed that Majority of project beneficiaries (71.30%) and non-project beneficiaries (63.38%) did not attain any form of formal education. Cost of labour (family and hired) dominated the production cost for both the project beneficiaries and non-project beneficiaries. Result of the gross margin analysis showed that the project participants made more profit (₦319, 459.44 Per Hectare) in dry season rice production compared to ₦270, 334.61 Per Hectare earned by non-project participants. It was recommended that the *Fadama* III project should as much as possible expand their area of operation so that more farmers can benefit from their services.

Keywords: Fadama III Project, Dry Season, Rice Farmers, Income

1. Introduction

In recent years, Nigeria had witnessed the implementation of several agricultural development programmes as a strategy to alleviate poverty through improved productivity and incomes of the poor small farmers. This category of farmers live and operate in the rural areas all over Nigeria and are involved in the cultivation of different types of food and cash crops using the traditional production methods. One of such agricultural development programmes is the *Fadama* Development Programme (*Fadama* I), established in 1992 with the aim of encouraging poor farmers to embark on dry season cropping in order to generate more income and alleviate poverty. The second National *Fadama* Development Project (*Fadama* II) came as a follow – up to *Fadama* I project and the Third National *Fadama* Development Project (*Fadama* III) as a follow – up to *Fadama* I and II projects. The *Fadama* III project was an Official Development Assistance funded project and it operates for five years (2009 - 2013) in the thirty-six (36) states and the FCT.

In Sokoto state, agriculture is the dominant occupation, though farmers are constrained by the lack of finance to enhance their agricultural production activities. Another constraint is the fact that Sokoto State is located in the semi-arid region where rain fed agriculture is the most widely practiced and the rainy season last for six months or less [1]. As a result of the limited rainy season, households whose primary occupation is agriculture-

based have often contented with idleness of their resources (especially labour and land) during the dry season, thus the profitability of agricultural activities is severely impaired [2]. *Fadama* farming is therefore essential not only to increase the chances of success of crop and animal productions in the dry season, but also to reduce risks in the wet season resulting from fluctuations in rainfall pattern thus, enhancing the welfare of the beneficiary households. The *Fadama* III is one of such efforts by government to ease farmers' financial constraints with a view to enhance their welfare. The objective of this paper therefore is to examine the extent to which *Fadama* III Project had contributed to the improvement of income of the benefiting households as against non-beneficiaries. In this regard, rice which is a popular dry season crop cultivated in *Fadama* areas in the state is considered. The performance of beneficiary farming households who were supported by *Fadama* III project with improved production technology, inputs, finance and other support services were assessed as against non-beneficiary farming households.

2. Methodology

The study was conducted in Sokoto state, which is located in the northwestern corner of Nigeria. The state has a land area of 33,776.89 square kilometers and is located between longitudes 11° 30' and 13° 15' East and latitudes 4° and 6° North of the equator. The state is boarded in the north by Niger Republic, Zamfara State to the East and Kebbi State to the South and West [1]. The

state consists of twenty-three (23) Local Government Areas, each endowed with different natural resources and a vast *Fadama* land for irrigation farming. The state falls within the savannah vegetation zone, with mean annual rainfall ranging from 500mm to 1,300mm. There are two major seasons in the state; the wet and dry seasons. The dry season starts from October and last up to April or May. The wet season on the other hand begins in May or June and lasts up to September or October. The harmattan, a dry, cold and fairly dusty wind is experienced in the state between November and February. Heat is severe in the state in the months of March to May. But, the weather in the state is always cold in the morning and hot in the afternoon. Over 80 percent of the inhabitants of the state practice one form of agriculture or the other. They produced such crops as millet, guinea corn, maize, rice, potatoes, groundnut, beans and vegetables as well as rear livestock [1].

The population of the study comprised of all dry season rice farmers in Sokoto state. Purposive sampling was used to select six Local Government Areas (LGAs) for the study. Purposive sampling was used to ensure the selection of LGAs with outstanding potentials in the cultivation of dry season crops, two from each agricultural zone. The LGAs selected were Wurno and Goronyo for Sokoto East, Kware and Sokoto North for Sokoto Central, Shagari and Yabo for Sokoto South agricultural zones.

The project data base was used to obtain a list of project beneficiaries and non-beneficiaries and their villages. The non-beneficiaries were drawn from a list of those who earlier indicated interest in the project but were not selected for participation. Random sampling technique was used to select 20 project participants and 12 non-project participants from each of the six LGAs to arrive at 120 respondents from project participants and 72 respondents from non-project participants for the rice

enterprise. The number of participants and non-participants drawn from the samples were proportionate to the sizes of the populations of the two sets of respondents. However, 115 and 71 questionnaires for project participants and non-project participants, respectively, were used for analysis.

Descriptive statistics were employed for data analysis on socio-economic features of respondents. Gross Margin analysis was employed to assess the gross margin obtained by the two categories of respondents. The model used is of the form:

$$GM = TR - TVC \tag{1}$$

Where, GM = Gross Margin (₦)

TR = Total Revenue (₦)

TVC = Total Variable Cost (₦)

3. Results and Discussion

3.1 Socio-Economic Characteristics of Respondents

Socio-economic characteristics of respondents considered in the study include age, gender, marital status, household size, educational attainment, major occupation and years of farming experience. These variables were considered because of the role they play in describing important features of the respondents involved in the study.

3.1.1 Age of respondents

With regard to involvement or participation in agricultural activities, age becomes a very important factor to consider. It is often said that agriculture in developing countries is dominated by old people who are not responsive to change age of a farmer was reported to be very vital in determining the level of production of a community [2]. In this study, the mean age of beneficiary respondents was 44.28 ± 11.84 years, while that of non-beneficiaries was 43.63 ± 13.23 years. The distribution of respondents according to age is presented in Table 3.1.

Table 3.1: Distribution of Respondents According to Age

Age range (years)	Project beneficiaries		Non-beneficiaries	
	Frequency	Percentage	Frequency	Percentage
21-30	15	13.04	12	16.90
31-40	25	21.74	18	25.35
41-50	41	35.65	19	26.76
51-60	23	20.00	15	21.13
61 above	11	9.57	7	9.86
Total	115	100.00	71	100.00

Source: Field Survey, 2015

Result of the study revealed that 35.65% of project beneficiaries and 26.76% of non-beneficiaries were aged between 41 and 50 years. Up to 21.74% of beneficiaries and 25.35% of non-beneficiaries were aged between 31-40 years while, 9.57% and 9.86% of respondent

beneficiaries and non-beneficiaries, respectively were aged 61 years and above (Table 3.1).

This shows that majority of both respondent beneficiaries and non-beneficiaries were aged 50 years or less. This implies that participants in the project were in their active/productive years and can easily be convinced to

accept new innovations. This is in line with the findings of [3] who reported that majority of the respondents (64.08% and 65.87% for *Fadama II* beneficiaries and non-beneficiaries respectively) were within the age range of 30 – 50 years.

3.1.2 Gender of Respondents

Although there are female farmers actively involved in agriculture, the proportion of male farmers always dominates in almost all communities in North Western Nigeria. The females are much more involved in

processing activities. Findings of the study with regards to gender shows that majority (85.22%) of the respondent beneficiaries were male, while the remaining 14.78% were female. For the non-beneficiaries, majority (87.32%) were male, while the remaining 12.68% were female. Participation of female in agriculture is low due to religious and cultural reasons.

3.1.3 Marital Status of Respondents

Findings of the study with regards to marital status of respondents are presented in Table 3.2.

Table 3.2: Distribution of Respondents According to Marital Status

Marital status	Beneficiaries		Non-beneficiaries	
	Frequency	Percentage	Frequency	Percentage
Married	90	78.26	60	84.51
Single	18	15.65	6	8.45
Divorced	6	5.22	4	5.63
Widowed	1	0.87	1	1.41
Total	115	100.00	71	100.00

Source: Field Survey, 2015

Majority of the respondents representing 78.26% and 80.51% of the beneficiaries and non-beneficiaries, respectively were married. Only 15.65% for beneficiaries and 8.45% of non-beneficiaries were single, while the rest were either divorced or widowed. In a similar study, Abarshi [4] reported that 79.50% and 79.95% of beneficiaries and non – beneficiaries respectively were married. Married people are seen to be more committed to agricultural production activities with a view to growing enough food to feed the family and income to take care of family expenses. Married people also have the potential for having children that can assist in farm work.

3.1.4 Household Size

Household size determines the amount of family labour available for farm work particularly in rural households. Therefore, the farm size a family can cultivate is determined by the amount of family labour available. Gulma [2] reported household size as an important factor, as it represents the number of persons available for farm work as well as the farm size that can be cultivated by households. The mean house hold size for respondents in this study was found to be 7.81 ± 3.42 members for beneficiaries, while that of non-beneficiary respondents stood at 7.80 ± 3.40 members. The distribution of respondents according to household size is presented in Table 3.3.

Table 3.3: Distribution of Respondents According to Household Size

House hold size	Beneficiaries		Non-beneficiaries	
	Frequency	Percentage	Frequency	Percentage
1-5	16	13.91	10	14.08
6-10	85	73.91	52	73.24
11-15	8	6.96	6	8.45
16-20	5	4.35	3	4.23
21 and above	1	0.87	-	-
Total	115	100.00	71	100.00

Source: Field Survey, 2015

Table 3.3 shows that majority (73.91% and 73.24%) of the respondent beneficiaries and non-beneficiaries, respectively had household sizes of 6-10 members. Up to 13.91% of beneficiaries and 14.08% of non-beneficiaries had household sizes of 1-5 members, while only 4.35% of beneficiaries and 4.23% of non-beneficiaries had household sizes of 16-20 members. An average household size of 10 members for tomato farmers

participating in *Fadama II* Project was reported in Niger State [5].

3.1.5 Educational attainment of respondents

Respondents' level of education is an important aspect of human resource development. It contributes to the understanding and adoption of new farming techniques, thus enhancing productivity and output. Abarshi [4] held that more literate and educated farmers are better than the

less literate or less educated farmers in agricultural productivity. The level of educational attainment of respondents is presented in Table 3.4.

Table 3.4: Distribution of respondents according to educational attainment

Level of education	Beneficiaries		Non-beneficiaries	
	Frequency	Percentage	Frequency	Percentage
Informal	82	71.30	45	63.38
Primary	23	20.00	16	22.54
Secondary	10	8.70	10	14.08
Total	115	100.00	71	100.00

Source: Field Survey, 2015

Result of the study revealed that majority (71.30%) of project beneficiaries and (63.38%) of non-beneficiaries did not attain any form of formal education. Up to 20.00% of beneficiaries and 22.54% of non-beneficiaries attained primary education, while 8.70% of beneficiaries and 14.08% of non-beneficiaries had secondary education. The findings of the study show that, the literacy level of the respondents was low compared to the findings by Mohammed *et al.*, [6] where 41.75% and 25.71% of respondent beneficiaries and non-beneficiaries, respectively did not have any formal education and that of Abarshi [1] who reported 43.08% and 44.72% of beneficiaries and non-beneficiaries, respectively. Majority of the respondents in this study (Table 3.1) were aged 41 years and above. The fact that higher proportion of respondents in this study did not

attain formal education could be due to the fact that many primary schools in the study area were not in existence when these respondents were of school age.

3.1.5 Crops Cultivated by Respondents

Respondents were engaged in the cultivation of different crops during the dry season. However, the study focused on rice which is a popular dry season crop cultivated in *Fadama* areas by farmers in the study area.

3.2 Gross Margin Analysis Per Hectare for Beneficiary and Non-Beneficiary Dry Season Rice Farmers

Table 3.5 presents gross margin analysis per hectare for the two categories of respondents in rice production in the study area. Gross margin analysis assesses the profitability of an enterprise or otherwise.

Table 3.5: Gross Margin Analysis per Hectare for Beneficiary and Non-Beneficiary Respondent Rice Farmers

Variable Inputs	Beneficiary rice farmers		Non-beneficiary rice farmers	
	Cost per ha (₦)	% of total	Cost per ha (₦)	% of total
Seeds	2966.01	5.08	1167.78	4.01
Fertilizer	22035.48	37.72	9239.79	32.19
Agro-chemical	2596.67	4.45	1194.67	4.16
Family labour	18727.60	32.06	6616.76	23.05
Hired labour	12090.90	20.69	10485.51	36.53
Total variable cost	58416.66	100.00	28704.51	100.00
Total revenue	377876.10		299039.12	
Gross margin	319459.44		270334.61	

Source: Field Survey, 2015

From Table 3.5, it can be seen that cost of labour (32.06% and 20.69%) for family and hired labour combined dominated the production costs, accounting for 52.75% of the total cost of production for project beneficiaries, while the cost of labour accounted for 59.58% of the total cost of production (23.05% and 36.53%) for family and hired labour, combined for non-beneficiaries of the project. This is followed by the cost of fertilizer which accounted for 37.72% of the total cost of production for beneficiaries and 32.19% for non-beneficiaries of the project. The total variable cost for beneficiary

respondents exceeded that of non-beneficiary respondents because beneficiary respondents expended more money on essential inputs (seed, fertilizer, agro chemicals and labour) compared to the amount expended on the same inputs by non-beneficiary respondents (Table 3.5).

The gross margins generated in rice production were ₦319,459.44 and ₦270,334.61 for beneficiary and non-beneficiary respondents', respectively. This shows that beneficiary respondents earned more profit than non-beneficiary respondents in the rice enterprise. This was

not surprising given the fact that beneficiary respondents used more improved inputs and obtained higher yields than non-beneficiary farmers. The result of this study compared so well with findings of [2,6,7] who reported that beneficiary respondents in *Fadama* projects earned more profit than non-beneficiary respondents.

4. Conclusion

The cultivation of dry season rice is gradually gaining popularity in Sokoto state. It is a means of improving farmers' income and their food security status. However, the output obtained by farmers was limited by the use of traditional production methods and lack of finance to acquire the required inputs among other constraints. The *Fadama* III project supported farmers participating in the project to improve their output and income. As a result, participating farmers spent more on variable inputs (seeds, fertilizer, agrochemical and labour) compared to the non-beneficiaries but earned higher output and thus higher gross margin compared to the non-beneficiaries, thus implying that the *Fadama* III project had positive impact on the improvements in incomes of participating dry season farmers in the state.

References

1. SOSG. Sokoto State Government Dairy. Sokoto State Government Printer, Sokoto. 2010.
2. Gulma SS. Impact of National *Fadama* Development Project (NFDP) on Crop Yields, Resource use and Farm Income in some Selected Local Government Areas of Kebbi State [MSc Thesis]: Usmanu Danfodiyo University, Sokoto, Nigeria; 2004
3. Ngaski A.A, Kamba AA, Senchi ID. Impact of *Fadama* II project "pilot asset acquisition scheme" on rural household income and poverty in Yauri Emirate of Kebbi State, Nigeria. Proceedings of Annual National Conference of Farm Management Association of Nigeria. 2009. 695–703.
4. Abarshi YM. The impact of *Fadama* program on agriculture and poverty reduction among farmers in Bauchi State [PhD Dissertation]: Ahmadu Bello University Zaria, Nigeria; 2014
5. Tanko L, Jirgi AJ, Ogundeji AA. Impact of *Fadama* II project on tomato farmers in Niger State, Nigeria. African Journal of Agricultural Research. 2010;5(15): 1973–1942.
6. Mohammed MI, Baba KM, Tanko L. Impact of Second National *Fadama* Development Project on Income and Wealth of Crop Farmers in Niger State, Nigeria. International Journal of Agric Science. 2014; 4(4): 224–234
7. Baba KM, Wando MA. Impact of membership of *Fadama* users' association on resource use, crop yield and farm income: A case study from two local government areas in Niger state. *Nigerian Journal of Basic and Applied Sciences*. 1998; 7: 31–41.