Available online@www.actasatech.com

acta SATECH 13 (1):13 – 25 (2021)

Journal of Life &Physical Sciences

Research

Effects of anchor borrowers' programme on rice production in Irepodun/Ifelodun Local Government Area, Ekiti State

Agboola Timothy Olusola[1], *Akintunde Olaide Kamila[1], Balogun Olubunmi Lawrence[2], Jimoh Lateef Olatunbosun[1] and Apata Moses Oluwanisola[1]

[1]*Department of Agricultural Economics and Agribusiness Management, Osun State University, Osogbo, Osun State*

[2]*Department of Agriculture, Babcock University Ilisan Remo, Ogun State*

*Corresponding author: olaide.akintunde@uniosun.edu.ng

Abstract

In an attempt to address the challenges and re awaken the agricultural sector, the Federal government in 2015 launched the Anchor Borrowers' Programme (ABP) to ensure food security, job creation, and diversification of economy. This study focused on the effects of Anchor Borrowers' Programme (ABP) on rice farmers in Ifelodun/Irepodun Local Government Area, Ekiti State. Primary data were collected with the use of a well-structured questionnaire from a total of 120 rice farmers in the study area. Multi-stage sampling procedure was employed to select rice farming households head for the study. The analytical tools used were descriptive, farm budgetary techniques, and regression analysis. The major constraints as ranked include unpredictable climatic conditions, transportation problem, inadequate extension services, and inadequate of finance. Input supply, farming equipment, and trainings were the major benefits received from the ABP. The average net profit for ABP beneficiaries of ₦562,295±20,012 was higher than ₦263.709±22,317 for ABP non-beneficiaries. Years spent in school, years of rice farming experience, and anchor borrower's awareness were statistically significant at 5% level and had a positive relationship with the level of rice farmers' participation in ABP. Also, farm size was statistically significant at 1% level and had a positive effect on rice farmers' participation in the programme. The study recommends a policy trust that will make ABP more accessible to the farmers should be formulated and ABP non-beneficiaries rice farmers should be encouraged to participate in the programme.

Keywords: Rice, ABP, production, participation, profit, Nigeria

.

Introduction

Nigeria has a leading role in rice production in West Africa and ranks highest as both the producer and consumer of rice in the Sub-region. The trend for the region is that the production and consumption of rice is growing faster than for other food staples (Aye, 2013). Uduma *et al.*, (2016) noted that the inability of local production to meet up with rice demand by Nigerian populace has given rise to the high import of rice in Nigeria. Commercially, the crop is the most important cereal after wheat. It is widely consumed and there is hardly any country in the world where it is not utilized in one form or the other (Omofonwan and Kadiri, 2007).

The Nigeria government realized that less patronage of locally growing crops may have adverse effect on Nigeria economy in many ways including loss of revenue, high rate of unemployment, inflation, decline in foreign reserve, increase inventory, proliferation of sub-standard grains in the market, price discrimination, problem association with rural-urban migration, and low productivity among others (Alarima *et al.*, 2011). Successive Administrations had initiated several policies to boost rice production including procurement and distribution of quality seed to out-growers, encouragement of farmers through input subsidy, use of high-yielding varieties and expansion of upland rice cultivation. However, these initiatives could not achieve the desired results of making the country rice sufficient for local consumption needless to say for export due to some bottlenecks such as late arrival of inputs to farmers, scarcity of high-yielding varieties, inadequate supplies of inputs, high cost of inputs and improved seeds.

In an attempt to address the challenges and re-awaken the agricultural sector, the Federal government in 2015 launched the Anchor Borrowers' Programme (ABP). Anchor Borrowers' Programme (ABP) was part of Federal Government's efforts to ensure food security, job creation, and diversification of economy. The programme was launched on November 17, 2015 in collaboration with Central Bank of Nigeria (CBN), but became effective in the last quarter of 2016 to provide funding to the country's smallholder farmers. The program provides farm inputs in kind and cash to increase the production of key agricultural commodities (including rice), stabilize the supply of inputs to agro processors, and address the country's negative balance-of-payments on food. At harvest time, farmers exchange with the agro-processor (i.e., the Anchor) their production for a cash equivalent.

Twenty-nine states (29) were involved in Anchor Borrowers' Programme including Kebbi, Ebonyi, Anambra, Cross Rivers, Kano, Kaduna, Ogun,and Ekiti States to mention just a few. The targeted commodities of the programmers include cereals such as Rice, Maize, and wheat, Cotton, Roots and Tubers (Cassava, Potatoes, Yam, Ginger etc.),

Sugarcane, Tree crops (Oil palm, Cocoa, Rubber etc.), Legumes (Soybean, Sesame seed, Cowpea etc.), Tomato, Livestock (Fish, Poultry, Ruminants etc.). The purpose of the Anchor Borrowers' Program (ABP) is to create economic linkage between smallholder farmers and reputable large-scale processors with a view to increasing agricultural output and significantly improving capacity utilization of processors. It also intended to, among other things, increase banks' financing to the agricultural sector, reduce agricultural commodity importation and conserve foreign external reserves, increase capacity utilization of agricultural firms, create new generation of farmers/entrepreneurs and employment, assist rural smallholder farmers to grow from subsistence to commercial production levels, deepen the cashless policy and financial inclusion and reduce the level of poverty among smallholder farmers.

It is therefore imperative to analyze the effects of the ABP in order to assess the significant impact of the programme on rice production in the study area. The main objective of this study was to assess the effects of Anchor Borrowers' Program on rice production, while specific objectives were to examine the rice farmers' constraints to participating in the program and compare the gross margin between the beneficiaries and non-beneficiaries of the program, and analyze factors influencing the rice yield of ABP beneficiaries farmers in the study area.

Materials and methods

Study area: The study was carried out in Ifelodun/Irepodun Local Government Area in Ekiti State. The state is chosen because it is one of the twenty nine benefitting states of the program. Ekiti State is one of the South-Western States created in 1996. The State was cut out of the former Ondo State. Ekiti State has sixteen Local Government Areas. The State is located between latitudes 7025' and 8005'N and between longitude 4045' and 5'46N East. It is a landlocked State; having no coastal boundary. The main occupation of Ekiti people is farming; producing economic crops such as cacao, kola nut, yam, maize, cassava, rice, palm oil, and some vegetables**.** Temperature is almost uniform throughout the year. It ranges between 21°C and 28°C with relatively high humidity. The state enjoys an average of 1400mm annual rainfall. The tropical rain forest exists in the south, while the guinea savanna occupies the northern peripheries.

Sampling techniques: Multi-stage sampling procedure was employed to select representatives of rice farming households for this study. The first stage involved purposive selection of one Local Government Area (Ifelodun/Irepodun) out of the five rice-producing LGAs in the State based on high concentration of producers in the area. The second stage was random selection of six villages from the selected Local Government

Area in anticipation of twenty rice farmers to make one hundred and twenty (120) respondents. The final stage involved random selection of Twenty (20) from each village to make a total of one hundred and twenty (120) respondents for the study. The selected rice producing communities are Igbemo, Iworoko, Are, Igede, Iyin and Afao.

Method of data collection: Primary data were collected through the use of a well-structured interview schedule.

Analytical techniques: The analytical tools that were used in the study include: descriptive, inferential statistics (regression analysis), and farm budgetary techniques.

Farm budgeting techniques: GM = TR- TVC

Where: GM = Gross Margin, TR = Total revenue, TVC = Total Variable Cost

Regression analysis: Ordinary least square regression technique was used to determine the factors influencing the rice yield of ABP beneficiaries farmers in the study area.

The empirical model is expressed as:

$Y = f(X_1,X_2,X_3,X_4,X_5,X_6,X_7,X_8,X_9,X_{10},et)$

Where:

Y = Yield (Kg)

X_1= Age (Yrs)

X_2 = Gender (1 if Male, 0 otherwise)

X_3 = Marital Status (Single or Married or Divorce)

X_4 = Household Size (Number or Range)

X_5 = Level of Education (Years)

X_6 = Primary Occupation (Years)

X_7 = Secondary Occupation (Years)

X_8 = Farm Size (Hectares)

X_9 = Farming Experience (Years)

X_{10}= Source of credit (commercial banks, cooperative society, personal savings, friends and

relatives)

et = error term

Results and discussion

Socio-economic characteristics of the rice farmers

Table 1 presents the socio-economic characteristics of rice farmers. The results in Table 1 show that the mean age of the ABP beneficiaries farmers is 45.5 ± 2.12 years while the mean age of the non ABP beneficiaries farmers is 47.11± 0.21 years which implies that ABP beneficiaries rice farmers are younger than their counterparts ABP non beneficiaries rice farmers. The mean age for all the rice farmers is 46.2 ± 9.53 years. This implies that most of the rice farmers were above forty years of age which

might likely reduce their level of farm productivity.

Table 1 revealed that majority **(**70.8%) of the rice farmers had a household size of 5-10 persons. The mean household size of all the farmers is 7; the mean household size for the ABP beneficiaries is 8 persons while the mean household size for the ABP non-beneficiaries is 6. This implies that most of the rice farmers would be able to minimize cost of labour through utilization of their family members as source of labour on the farm. Table 1 showed that more than half (53.3%) of the rice farmers had secondary education out of which 38 were ABP non-beneficiaries and 26 were ABP beneficiaries. Also, few (37.9%) of the ABP beneficiaries had tertiary education. However, high level of education of ABP non-beneficiaries compare to ABP beneficiaries might be due to the fact that elites in the Nigeria might not easily participate in the government's intervention programme as in the most cases the programme might not be executed perfectly. The level of literacy of ABP beneficiaries is expected to assist the rice farmers in adoption of innovation and modern techniques of rice production thereby enhance their productivity.

The mean years of experience in rice farming for all the rice farmers is 12.25 ± 3.88 years; the mean years in rice farming for the ABP beneficiaries is 9.55 ± 0.68 years while 13.11 ± 1.55 is the mean years in rice farming for the ABP non-beneficiaries. Two-third (63.3%) of all the rice farmers had less than one hectare with mean farm size of 1.89 ± 0.56 ha. The mean farm size of the ABP beneficiaries is 1.92 ± 0.33 ha while the mean farm size of the ABP non-beneficiaries is 0.86 ± 0.11 ha. This indicates that the rice farmers cultivate on small acreage. This result confirms the similar study of Olanrewaju (2019) that established cultivation of rice farm by ABP on small size. The implication of this small acreage has resulted in short-supply of local rice to the teeming Nigeria populace which has manifested in massive importation of foreign rice to bridge the supply gap created by local production

.

Table 1: Socio-Economic Characteristics of ABP and non ABP Rice Farmers

	ABP beneficiaries		**ABP non-beneficiaries**		**All farmers**	
	Freq. (66)	**(%)**	**Freq. (54)**	**(%)**	**Freq. (120)**	**(%)**
Age						
< 30	10	15.2	1	1.9	11	9.2
31-40	5	7.6	15	27.8	20	16.7
41-50	18	27.3	12	22.2	30	25.0

51-60	16	24.2	4	7.4	20	16.7
>61	17	25.7	22	40.7	39	32.5
Mean	45.5		47.11		46.22	
SD	2.12		0.21		9.53	
Household size						
<5	5	7.6	6	11.1	11	9.2
5-10	55	83.3	30	55.6	85	70.8
> 10	6	9.1	18	33.3	24	20.0
Mean	8.72		5.82		7.21	
SD	2.22		3.58		1.94	
Education						
Primary education	15	22.7	6	11.1	21	17.5
Secondary education	26	39.4	38	70.4	64	53.3
Tertiary education	25	37.9	10	18.5	35	29.2
Experience (yrs)						
<5	4	6.1	0	0	4	3.3
6-10	34	51.5	4	7.4	38	31.7
11-15	6	9.1	28	51.9	34	28.3
16-20	3	4.5	21	38.9	24	20.0
20>	19	28.8	1	1.8	20	16.7
Mean	9.55		13.11		12.25	
SD	0.68		1.55		3.88	
Farm Size (ha)						
<1.0	40	60.6	36	66.7	76	63.3
1-2.0	15	22.7	6	11.1	21	17.5
3-4.0	6	9.2	12	22.2	18	15.0
5-6.0	5	7.6	0	0	5	4.2
Mean	1.92		0.86		1.89	
SD	0.33		0.11		0.56	

Source: Field Survey Data, 2020.

Sources of credit: Result in Table 2 showed that less than half (42.5%) of the rice farmers sourced credit from NGO/ Co-operatives out of which 40 of them ABP beneficiaries and 11 were ABP non-beneficiaries. 25.0 percent of the respondents sourced credits from their personal savings out of which 25 of them were ABP non-beneficiaries and 5 were ABP beneficiaries. 10.0% of the respondents sourced credits from commercial. They cited high interest rates and unnecessary bureaucracy as hindrances to obtaining loans from banks

Table 2: Sources of credit utilized by rice farmers in the study area

	ABP Beneficiaries		ABP Non-beneficiaries		All farmers	
Sources	Freq.	(%)	Freq.	(%)	Freq.	(%)
Banks	6	9.1	6	11.1	12	10.0
Co-operative	40	60.6	11	20.3	51	42.5
Personal savings	5	7.6	25	46.4	30	25.0
Family and friends	12	18.1	6	11.1	18	15.0
Others	3	4.5	6	11.1	9	7.5

Source: Field Survey Data , 2020.

Table 3: Constraints to rice in the study area

Constraints	Frequency	Percentage (%)	Rank
Climatic conditions	119	99.2	1st
Transportation problem	104	86.7	2nd
Lack of extension contact	86	71.7	3rd
Lack of finance	75	62.5	4th
Low production of rice	40	33.3	5th
Small farm holding	35	29.3	6th
Inadequate labor supply	21	17.5	7th
Inadequate storage facilities	11	9.2	8th
Low inputs supply	10	8.3	9th
Price fluctuations	6	5.0	10th
High interest rate	2	1.7	11th

Source: Field Survey Data, 2020.

Constraints to rice production: The constraints to the rice farmers are presented in Table 3. In Table 3, rice farmers in the study area indicated that they were faced with certain constraints in

the course of production. These constraints included in descending order: unpredictable climatic conditions (99.2%), transportation problem (86.7%), lack of extension contact (71.7%), lack of finance (62.5%), low production of rice (33.3%), small farm holding (29.3%) and inadequate labor supply (17.5%).

Benefits received from ABP: Table 4 revealed the benefits received by the rice farmers from anchor borrowers programme. Majority (90.0%) of the rice farmers indicated that they received benefits of inputs supply from the programme, 70.0 percent received farming equipment, 49.2 percent of them received training on rice farming, 38.3 percent of them received advisory services from the programme and 32.5 percent of the rice framers received other form of benefits such as irrigation from the programme. This implies that the major benefits received by the rice farmers form the programme includes input supply, farming equipment and training, which will increase the farmers yield and improve the economy of their environment either directly or indirectly.

Table 4: Benefits received by rice farmers in the study area from ABP

Benefits	Frequency	Percentage (%)
Training	59	49.2
Advisory services	46	38.3
Input supply	108	90.0
Farming equipment	84	70.0
Others (Irrigation)	39	32.5

Source: Field Survey Data, 2020.

Costs and returns analysis

Costs and returns are presented in Table 5. Table 5 shows that the cost for average kg/ha of rice seeds for ABP beneficiaries was low ₦10560.32 compared to ABP non-beneficiaries ₦150136.87. Labour in man-day for the ABP beneficiaries was lower ₦157500 compared to ABP non-beneficiaries was ₦180000.00. The average litre/ha herbicide for the ABP beneficiaries was lower ₦14370.51 compared to the ABP non-beneficiaries ₦25955.37. The average litre/ha pesticide for the ABP beneficiaries was ₦3168.00 while ₦4300.44 was the average amount for the ABP non-beneficiaries

Table 5: Cost and returns analysis of beneficiaries and non-beneficiaries of anchor borrowers programme rice farmers in the study area

ABP Beneficiaries	ABP Non-beneficiaries

Variable Input	Average Quantity	Price/Unit (₦)	Amount (₦)	Average Quantity	Price/Unit (₦)	Amount (₦)
Average farm size	**1.920ha**			**0.860ha**		
Average kg/ha of rice seeds	78.2246	135.00	10560.32	111.2125	135.00	150136.87
Labour in man-day	105	1500.00	157500	120	1500.00	180000.00
Average Litre/ ha Herbicide	6.8431	2100.00	14370.51	12.3597	2100.00	25955.37
Average Litre/ ha Pesticide	2.6400	1200.00	3168.00	3.58137	1200.00	4300.44
Average bag/ha organic fertilizer	44.4143	1100.00	44414.3	28.4567	1000.00	28456.70
Average bag/ha Inorganic Fertilizer	7.9212	5500.00	43566.60	10.4582	6025.00	63010.65
Tools Purchased (Cutlass, hoes)			10500.00			12500.00
Total Cost (TC)			284079.73			464360.03
Average rice output tons/ha	5.6625	150000.00	849375.00	4.8538	150000.00	728070.00
Total Revenue (TR)						
Gross margin (TR-TC)			562295.27			263709.97

Source: Field Survey Data, 2020.

which was higher, the cost for average bag/ ha organic fertilizer for the ABP beneficiaries ₦44414.3, which was higher than the ABP non-beneficiaries ₦28456.70.

The average bag/ ha inorganic fertilizer for the ABP beneficiaries was ₦43566.60, which was lower compared to ABP non beneficiaries was ₦63010.65. The tools purchased (cutlass, hoes) for the ABP beneficiaries was ₦10500.00, which was lower compared to ABP non-beneficiaries ₦12500.00. The total cost for ABP beneficiaries is

₦284079.73 was lower compared to ₦464360.03 for the ABP non-beneficiaries which were relatively high. The total revenue for the ABP beneficiaries is ₦849375.00 was higher than the total revenue for the ABP beneficiaries which is ₦728070.00. The profit for the ABP beneficiaries ₦562295 was higher than ₦263709.97 for the ABP non-beneficiaries. This result clearly shows that the rice farmers of ABP beneficiaries had a higher profit than the ABP non-beneficiaries.

Gross margin difference of ABP beneficiaries and Non-ABP beneficiaries: Difference in gross margin of ABP beneficiaries and Non-ABP beneficiaries is presented in Table 6. The table reveals that the gross margin of the ABP beneficiaries is ₦37111487.00 which was higher than the non-beneficiaries of ₦14240338.00. The T-test value is 4.112. This showed that the rice farmers of ABP beneficiaries had more profits compared to the non-beneficiaries. This confirms the findings of Ayinde *et al.,* (2018) and Okeke *et al.,* (2019) that ABP has enhanced the capacity of the beneficiaries to realize significant increase in their income.

Table 6: Test for significant difference between gross margin of ABP beneficiary and Non-ABP beneficiary

	Total Variable Cost TVC (₦)	Total Revenue TR (₦)	Gross Margin GM (₦)	GM/Ha (₦)	T-test	P-value
ABP beneficiaries (n=66)	18749238.00	56058750.00	37111487.00	19328899.0	4.112	0.000
Non-beneficiaries (n=54)	25075441.00	39315780.00	14240338.00	16558532.0		

Source: Field Survey Data, 2020.

Table 7: Factors Influencing Farmers Participation in Anchor Borrowers' Programme.

Independent Variable(s)	Coefficient	Standard Error	T-statistic
Age	0.03394	0.02925	1.16
Gender	0.34545	0.47867	0.72
Marital status	-0.54293	0.76014	-0.71
Household size	-0.00793	0.1216	-0.07
Years spent in school	0.00490**	0.00203	2.41

Farming experience	1.63432**	0.62214	2.63
Farm size	0.03084***	0.00097	3.15
Anchor Borrower's awareness	0.06161**	0.03044	2.02
Extension visit	-0.00063	0.16437	-0.09
Constant	-0.60390	1.55361	-0.39
Pseudo R2= 0.5482			
Log likelihood = -19.069273			

Source: Field Survey Data, 2020.

*Significant at 10% level, **significant at 5% level, ***significant at 1% level

Factor influencing the rice yield of ABP beneficiaries farmers in the study area

Table 7 presents the factors influencing the yield of ABP beneficiaries rice farmers in the study area. The ordinary least square regression technique shows a pseudo R^2 of 0.5482 which implies that 54.82% of variation was explained by the explanatory variables included in the model. The results in Table 7 reveal that coefficients of years spent in school, years of rice farming experience, and anchor borrower's awareness were statistically significant at 5% level and had a positive relationship with the rice yield of farmers who participated in Anchor Borrowers Programme. Also, coefficient of farm size was statistically significant at 1% level and had a positive effect on the rice yield of ABP beneficiaries farmers.

The coefficient of years of education shows a positive relationship to the rice yield of ABP beneficiaries rice farmers. The value thereof implies that for every one unit increase in years of education of the ABP beneficiaries rice farmers there will be an increase in the yield of rice grown by 0.00490 units. The coefficient of variable of years of rice farming experience had a positive coefficient of 1.634 indicates that for every one unit increase in the years of rice farming experience will lead to an increase in the yield of rice cultivated by 1.634 units

The coefficient of Anchor borrowers' awareness shows a significant relationship to the rice yield of ABP beneficiaries farmers. This result implies that for every one unit increase in respondent awareness about Anchor borrowers, will result into 0.062 increase in the yield of rice produced by ABP beneficiaries rice farmers. This finding is consistent with finding of Olarewaju (2019) that reported that awareness about AB programme has a positive influence on farmers' participation and the yield of rice grown. The coefficient of farm size was statically significant and has a positive relationship of 0.031 with the rice yield of ABP beneficiaries farmer. The implication of this result implies that 10% increase in the farm size

tends to increase the yield of rice farmers who participated in ABP programme by 0.31.

Conclusion and recommendations: The findings of this study have revealed that Anchor Borrowers' Program (ABP) has enhanced the income of rice farmers in the study area. Also the beneficiaries of ABP have better access to credit and farm input which may improve their production. However, transportation and unpredictable climatic conditions are major problems limiting rice farmer's participation in anchor borrower's program, we hereby recommend that non benefiting rice farmers in the study area should participate in the program to increase their income and raise their standard of living. More importantly, policy trust that will make it easy and necessary awareness to enable other farmers participate in the program should be initiated without delay.

References

Alarima C.I, Adamu C.O, Masunaga T and Wakatsuki T. 2011. Constraints to sawah Rice production system in Nigeria. Faculty of life and Enviromental Science, Shimmane University, Mastsue, Japan, Department of Agricultural Extension and Rural Development, University of Agriculture, Abeokuta, Nigeria and faculty of Agriculture, Kinki University, Nara Japan pp 122-129

Aye, G. C. 2013. Efficiency and policy analysis in agriculture: Methods and applications. Saarbrucken: Lambert Academic Publishing.

Ayinde O.E., Fatigun, O., Ogunbiyi, K., Ayinde, K. and Ambal, Y.O. 2018. Assessment of Central Bank Intervention on Rice Production in Kwara State, Nigeria: A Case-study of Anchor Borrower's Program. 30th International conference of agricultural economist, July 28 to August 2, 2018. Vancouver. .

Ekeleme F. Kamara A.Y, Omoigui L.O, Tegbara A, Mshella J and Onyibe J.E. 2008. International Institute of Tropical Agriculture; (IITA). Guide to rice production in Borno State, Nigeria. pp 1-2.

Ekiti State Government, 2006.: "Ekiti State in Brief" Ekiti State Diary.

Okeke, A.M, Mbanasor, J.A and Nto, P.O. 2019. Effect of Anchor Borrowers' Programme Accessamong Rice Farmers in Benue State, Nigeria: Application of Endogenous Switching Regression Model. International Journal of Agriculture and Earth Science, (5)3: 23-32

Olanrewaju, O. 2019. Assessment of awareness and determinants of anchor borrowers program's adoption among rice farmers in Kaduna State, Nigeria. JCIRAS, (2)1: 35-45

Omofonwan, S. and Kadiri, M. A. 2007. Problems and Prospects of Rice Production in Central District of Edo State. Journal of Human Ecology 22(4):361-364.

Uduma, B.U., Adeoye, S. and Mure, A. 2016. Irrigation potentials and rice self-sufficiency in Nineria: A review. African Journal of Agricultural Research, 11 (5): 298-309.