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## Effect of Institutional Credit on Farmers' Output in Benue State of Nigeria

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### ABSTRACT

The study examined the effects of institutional credit on farmers' output in Benue State of Nigeria using Bank of Agriculture (BOA) as a case study. A sample size of 362 respondents was selected through a proportionate random sampling technique. The study used both descriptive and the test of mean differences. The results of the study showed that there is significant difference between the farmers' output before and during the benefits from BOA loan in Benue State. The study therefore, recommends that government should encourage the establishment of more formal credit institutions in the rural areas, generally; and revive the moribund branches of BOA in the State. The government and BOA should also create more awareness about the existence of formal agricultural credits for agricultural production among the farmers, and enlightenment campaign on how to access these credit facilities especially in the rural areas.

**Keywords:** Farmers' Output, Bank of Agriculture and Institutional Credit

### INTRODUCTION

Agricultural development remains very vital to the growth and development of every economy. Therefore, the place of agriculture in an agrarian society cannot be overemphasized given its importance in the life of human beings. Agriculture is expected to ensure adequate supply of food to the people, among other roles. Though the world agricultural output has grown by 2.4 percent per annum over the past two decades, it has remained insignificant because more than

780 million people are chronically undernourished (Organization for Economic Cooperation and Development/Food and Agriculture Organization-OECD/FAO, 2010). According to Okuneye (2001), millions of people in the developing world simply cannot obtain food they need for a healthy and productive life.

Available statistics from the World Trade Organization (WTO) shows that agriculture accounts for more than one-third of export earnings of 50 developing countries (World

Development Indicators-WDI, 2006; OECD/FAO, 2010; OECD, 2012). The sector also plays an important role in rural development of most developing economies employing up to 80percent of the rural population. It also sustains the growing population, stimulates growth and employment in the agro-allied industry.

In Nigeria, agricultural output is increasingly recognized to be central to sustainable economic development. The sector plays a very significant role in addressing food insecurity, poverty alleviation and human development challenges (Etonihu, Rahman & Usman, 2013). Despite the importance and potential contribution of this sector for economic development, the sector has continued to perform below average (Omanukwue, 2005). Etonihu *et al.*, (2013) noted some factors responsible for low agricultural output and development which have remained restricted access to finance, dearth of agriculture inputs, inefficient market systems and continued use of traditional agricultural techniques.

Several surveys have shown that most of the Nigerian farmers are

small farmers trapped in vicious cycle of poverty. Scholars are of the opinion that when agricultural credit is made available to farmers, it will go a long way in breaking this cycle of poverty and liberating them to improve their adoption of modern farm technologies which could enhance output and farmers income. Ojo and Adebayo (2008), for example, observed that agricultural credit enhances output, productivity and promote standard of living by breaking vicious cycle of poverty of the resource poor farmers. Similarly, Nwaru *et al.*, (2006) observed that credit facilitates adoption of innovations leading to increased farm productivity and income, encourages capital formation and improves marketing efficiency.

In the light of improving access and use of these credits by farmers that will enable them use modern farm inputs that would lead to increased output, income and improved standard of living, the Nigerian government took several steps over the years in addressing the challenge. These government financial policies were grouped into five categories viz: credit guidelines by the CBN, concessional interest rates, rural banking scheme, agricultural credit guarantee scheme and

specialized financial institutions. Policy packages and programmes such as the World Bank-assisted Agricultural Development Project (ADP), National FADAMA Development Programme, Family Economic Advancement Programme (FEAP), National Poverty Eradication Programme (NAPEP), Refinancing and Rediscounting Facility (RRF), Agricultural Credit Support Scheme (ACSS) and Large Scale Agricultural Credit Scheme (LASACS) were also established. All these did not make any significant impact in increasing food production, output and hence, improved GDP but only created awareness on the need for increased food production (Obadan, 1990; Abayomi, 2006; Enoma, 2010; Oke, 2014; Umaru, Ogbedengbe & Omobowale, 2010). Following the failure of these institutions, schemes and programmes, the Nigerian Agricultural Co-operative and Rural Development Bank (NACRDB), now called Bank of Agriculture (BOA) was formed from the merger of Nigerian Agricultural and Co-operative Bank (NACB), the People's Bank of Nigeria (PBN) and the Family Economic Advancement Programme (FEAP).

Statistical evidences has shown that Benue State recorded increased disbursement in the total value of BOA loan from ₦11,070,000 in 2012 to ₦30,316,000 and ₦21,484,000 in 2013 and 2014 respectively (BOA Report, 2016). Both large and small scale farmers have been enjoying the services of the Bank of Agriculture, and other institutional lending agencies, in terms of loan disbursement, to help them increase their farm output. It is instructive therefore to examine the effect of institutional credit on farmers' output in Benue state using Bank of Agriculture (BOA) as a case study.

## CONCEPTUAL

### CLARIFICATION

#### **Agricultural Output/Farmers' Output**

Agricultural output can be defined as the sum yield from agricultural activities of an individual, group of individuals, State or Nation (CBN, 2006). It also refers to the total amount of agricultural produce by a farmer, in a given period of time (Johnston, 2004). OECD (1999) argued that agricultural output measures the value of agricultural products which, free of intra-branch consumption, is produced during the accounting period and, before processing, is available for export

and/or consumption. Farmers' output is therefore seen as the monetary value, or sum yield of farmers' produce such as: crops, livestock, forestry and fishery.

### **Determinants of Agricultural Output/Productivity**

The term agricultural productivity has been defined by various authors. Johnston (2004) defines agricultural productivity as the term given to the output of agriculture in terms of the inputs such as capital and labour. Therefore, as a fairly general comment, this could be defined as the efficiency of the farm. To Liverpool-Tesie, Kuku, and Ajibola (2011), agricultural productivity refers to the output produced by a given level of inputs in the agricultural sector of a given economy. More formally, it can be defined as "the ratio of the value of total farm outputs to the value of total inputs used in farm production". According to Rungsuriyawiboon and Lissita (2005), growth in agricultural productivity is agricultural outputs to a sufficiently rapid rate to meet the growth for food and raw materials arising out of steady population growth.

According to Sinha (2016), the general factors determining

agricultural productivity are, pressure of population on agriculture, rural environment, role of non-farm services, size of holdings and pattern of land tenure while the technological factors that are also responsible for high/low productivity are; the general use of traditional implements in developing countries in contrast to the improved implements used in developed countries such as tractors, steel ploughs, sugarcane crushers, pumping sets, etc. He also asserted that poor technique is one of the most important causes of low productivity in agriculture and lack of capital for the development of irrigation facilities which is heavily impaired in developing countries. Chang and Zepeda (2009) also identified technological change, agricultural research and extension, human capital development, policy reform and prices, international trade through opening of an economy which does not come without risks, particularly where macro-economic, financial and lending policies are not well in place and availability of Natural Resource.

### **Institutional Credit**

Institutional credit is a financial facility granted to beneficiaries or

farmers or ranch operators, among others, to assist in production by formal institutions. Ogunfowora, *et al.*, (1972) attributed most of the short comings of institutional credit in Nigeria to factors such as: ineffective supervision or monitoring; insufficient funds; political interference; cumbersome and time-consuming loan processing, and general absence of financial projection.

#### **THEORETICAL FRAMEWORK**

The interventionist theory is of the belief that government should try to influence what is happening within its domain, through fiscal and/or monetary theories and policies rather than depending solely on the market mechanism. Thus, the intervention of government through establishment of financial institutions such as BOA is injection into the economy, and that government's role in influencing farm markets or farm income and food industry would help in restructuring the output of agriculture in the economy.

More so, the financial repressioinists emphasized the financial liberalization in the form of an appropriate rate of return on real cash balances as a vehicle of promoting economic growth. This

is because the consequences of high rate of interest on agricultural loans by commercial banks would discourage the use of the borrowed funds for agricultural production and may make the loans less competitive and vice versa.

The essence of the credit facilities is that capital is required by the farmers for agricultural production. However, available literature has shown that the financial resources are grossly insufficient necessitating the need for alternative credit sources. The relevance of capital is also explained by the Cobb-Douglas production function as he assumed a linear homogenous production function of degree one which takes into account two inputs: labour and capital for the entire output.

#### **EMPIRICAL REVIEW**

Balakrishnama, Siva and Surya (2013) examined the impact of agricultural credit on agricultural production and productivity in India using ordinary least square method. The study reveals that agricultural credit is one of the main factors for the production and productivity of agricultural commodities. The study therefore recommended food safety net for

the present and future population which requires enhanced agricultural production and productivity. They argued that the timely availability of credit is most essential for the small and marginal farmers for their agricultural activity.

Obilor (2013) analysed the impact of commercial bank's credit to agriculture on agricultural development in Nigeria while using the Ordinary Least Square (OLS) and Augmented Dickey-Fuller (ADF) test as methodology. He found that Agricultural Credit Guarantee Scheme Fund and Government fund allocation to agriculture produced a significant positive effect on agricultural productivity, while the other variables produced a significant negative effect. The study recommended that farmers should be encouraged to be applying for loans from the participating banks to enhance their agricultural activities and productivity. On the other hand, Kehinde (2012) assessed the impact of Agricultural Credit Guarantee Scheme Fund (ACGSF) on food security in Nigeria, using the t-test, paired t-test and granger causality and found that credit to the agricultural sector has dwindled and continues to dwindle in

percentages term as the statistics showed that the negative relationship is significant. He recommended that there should increase in credit to the sector as it will in turn increase in farmers' output that would guarantee food security.

Aliyu (2012) also examined the relationship between agricultural production and formal credit supply in Nigeria. The study employed three simple regression models relating agricultural output with formal credit while holding other explanatory variables constant. Findings from the study indicate that formal credit is positively and significantly related to the productivity of the crop, livestock and fishing sectors of Nigerian agriculture. Based on the findings, the study recommended that government should continue to encourage the expansion of formal credit sources to reach as much farmers as possible.

Maqbool, Massod and Muhammed (2011) examined the role of institutional credit on agricultural production using time series data for the analysis. The study using Ordinary least Square (OLS) regression found that agricultural credit, availability of

water, cropping intensity and agricultural labor force are positively and significantly related to agricultural production. The study recommended the enlargement of the agricultural credit disbursement particularly to small farmers.

Saima and Hussain (2011) in carrying out a study on the impact of institutional credit and production efficiency of farming sector in Pakistan, while using the Stochastic Frontier Analysis (SFA) as its methodology, found that farming experience, education, access to farming credits and herd size have a constructive and significant effect on farmers technical efficiency. The study therefore recommended that the government should enhance the accessibility of small and marginal farmers to formal agricultural credit.

Bernard (2009) also carried out an empirical analysis of credit supply and agricultural output in Nigeria, using a multiple regression log-linear Model based on the theoretical framework of Cobb-Douglas production function. The study found a significant positive relationship between the variables studied which led to increase in farmers' output. It was recommended that the Nigerian

government should monitor credit meant for agriculture purpose to facilitate the efficient utilization of the credit.

## **METHODOLOGY**

The study used both descriptive and the test of mean differences in analyzing the effect of institutional credit on farmers' output in Benue state. The target population of the study comprises of farmers who have had access to or have benefited from the Bank of Agriculture credit in Benue State at least for a year. A multi-stage random sampling procedure was used in this study. It was chosen because it allows for effective and equal representation of all the units within the study area. The three senatorial zones in Benue state formed the basic stratification segment in stage 1. In stage 2, one local government was selected purposively from each of the zones, and in stage three, a proportionate random sample of 362 loan beneficiaries was drawn from the selected local government areas. The loan beneficiaries in this study are those involved in food crops, livestock and fisheries. The study used Taro Yamane (1967) formula in determining the sample size. Hence, the data for this study was basically primary data.

## **RESULTS AND DISCUSSIONS**

### **Socio-economic Characteristics of the Respondents**

It was unveiled from the study that majority of the BOA beneficiaries were male (74percent). This explains the view of Ajayi (1995) who asserted that farming is predominantly a male activity in Nigeria and indeed, most of African societies, and conforms to the cultural inclination of the people in the study area that men represent the interest of their families. The study found that majority of the sampled beneficiaries of BOA loan were married (60.2percent). This implies that much labour force may be supplied and commitment is expected of the married families as security for future generation. This is evidenced by the maturity level of the sampled respondents from whom majority (52.2percent) of them were aged between 36 years to 45 years. The study further revealed that majority (58.6percent) of the sampled respondents obtained basic education which comprises of primary and junior secondary education. This however, contributes to loan awareness, processing and utilization of the loan. The study also revealed that 81.2 percent of the beneficiaries were holding farming as their

main occupation with more than 15 years of farming experience.

### **The Effect of BOA Credit On Annual Average Cost**

Data on the annual cost of farmers' production incurred on the various categories of farming activities before the BOA loan are depicted on Figure 1. It reveals that most of the sampled respondents incurred cost between ₦50,001 and ₦100,000 in the production of crops, livestock and Fishery while, 51.7percent of the sampled respondents that were involved in forestry incurred cost between ₦20,000 and ₦50,000. This implies that much cost is incurred in the production of crops, livestock and fishery but less in forestry.

Data on the annual cost of farmers' production incurred on the various categories of farming activities after obtaining BOA loan are depicted on Figure 2. The results reveal that majority of the sampled respondents incurred a cost, which is high in the production of crop, livestock and fishery but recorded relatively lower in the forestry as evidenced by 41.7percent, 45.2 percent and 51.3percent for crop, livestock and fishery production respectively. This may not be unconnected with the expansion in the scale of



agricultural production as a result of the loan obtained.

The average cost incurred by the sampled respondents before and after the benefit from BOA Loan in the study area are compiled and presented in Table 2. The results show that much cost is incurred in the production of livestock and crop production before the BOA loan indicating average cost of ₦74,838.17 and ₦63,955.80 respectively. However, due to the expansion in the size of agricultural activity as a result of the BOA loan, the average cost of crop production and livestock production increased to ₦76,746.96 and ₦87,560.66 respectively recording respective 20percent and 17percent change in the total cost as a result of the loan. The result also indicated a total cost of ₦47,824,500 and ₦56,520,100 before and after obtaining BOA loan with average cost of ₦54,248.34 and ₦64,154.48 respectively, recording 18percent change in the total cost of the sampled respondents in the study area. The proportion of the cost of the various activities to the total cost incurred by the sampled respondents before and after BOA loan shows 48.4percent and 37.7percent for crop production and livestock respectively before

the BOA loan and 49.2percent and 37.3percent for crop production and livestock respectively. This shows that much cost is incurred in the production of crop and livestock, which may not be unconnected to the dominance of farmers in such activities.

### **On Annual Average Output/Income**

The distribution of respondents based on average annual income by the categories of the activities in agricultural production are compiled and presented in Table 3. It reveals that most of the sampled respondents obtained annual income between ₦50,000 to ₦100,000 from the production of crops, livestock and fishery, while 49.4percent of the sampled respondents that were involved in forestry obtained annual income between ₦20,000 and ₦50,000. This implies that much annual income was obtained from the activities relative to the cost incurred in these activities.

The results in Table 4 reveals that much revenue was obtained from crop production before and after the BOA loan by the sampled respondent's relative to the total cost and average cost incurred by them. The results show that ₦119,364.64, ₦135,178.42 and ₦138,

984.13 was obtained from crop production, livestock and fishery respectively with their respective 40percent, 30.1percent and 24.3percent contribution to the aggregate revenue generated by the sampled respondents before BOA loan likewise 41.7percent, 29.8percent and 24.6percent contribution of crop production, livestock and fishery to total revenue after the BOA loan. These recorded percentage change of 67percent, 58percent and 62percent, percentage change in the total revenue of crop production, livestock and fishery respectively due to the benefits from the BOA loan. Less change (improvement) was recorded in forestry. Going by the aggregate change in the annual income of the sampled respondents, the results indicate that about ₦108, 104,000 was generated by the respondents before the BOA loan with an average annual income of ₦122,706.02. But much annual income of about ₦172, 961,860 was generated with an average of ₦196,324.47 for the sampled respondents after the benefits from BOA loan. This has recorded 59 percentage improvements in the total revenue as a result of the BOA loan. This implies that BOA loan brings about half of the monies or revenue obtained by the

rural farmers in their farming activities. This clearly shows that BOA loan has a great impact or improvement on the annual income of the beneficiaries.

### **Test of the Mean Difference**

The results of the mean differences in income before and after BOA are presented in Table 5. The results show that both the t-test and Welch F-test are significant at 5 percent critical level. This implies that there is a significant difference in the means of the income of the respondent in the sample. Since the income after BOA loan is greater than that of before, it implies that BOA loan has impacted positively on the income of beneficiaries in the study area. This is because; the improvement in the average income after BOA loan was statistically different from the average income of beneficiaries before the BOA loan.

The study also revealed that the number of hectares of land cultivated by the sampled beneficiaries, annual cost, annual output, and annual income changed drastically and favourably. This is because, the number of hectares of land cultivated by the sampled beneficiaries, annual cost, annual

output and annual income were relatively low as compared to when the respondents benefited from the BOA loan. This implies that BOA loan significantly increased the size of land or hectares cultivated by farmers, the annual cost, output and income of farmers. This implies that increase in credit availability and accessibility may increase farmers' level of cultivation in terms of the number of hectares cultivated, the annual output and annual income of the farmers and generally, the increase in agricultural output in Benue state.

There are some problems or challenges in accessing these loans by the sampled respondents in the state. Data on the major challenges faced by the farmers in accessing BOA loan are presented in Table 6. The result reveals five (5) major challenges hindering the assessment of BOA loan by the sampled respondents in a hierarchical order. The last column shows the proportion of the respondents who have mentioned the challenges. The result implies that, lack of awareness was the major challenge in obtaining BOA loan due to lack of proper publicity. Other challenges revealed were the procedure or requirements by

BOA loan in obtaining the loan; attitudes of BOA personnel in disbursing the credit facility, among others.

## CONCLUSION/RECOMMENDATION

The role of banks and other financial institutions in financing the agricultural sector in Nigeria, and Benue State in particular, is still limited. Despite the positive and significant effect of institutional credit on farmers' output in the State, the survey reports that majority of farmers have inadequate credit facilities as required in revamping the agricultural production in the State. The following recommendations can further enhance the relationship between institutional credit and farmers' output

- i. Government/BOA should create more awareness about the existence of formal agricultural credits for agricultural production among the farmers especially in the rural areas and should put in place deliberate policy to ensure that rural farmers have access to adequate credit facilities.
- ii. Government should employ and deploy more extension agents to the rural areas so that more rural farmers can be reached by extension workers. This is

important since it will ensure that many rural farmers are offered extension services in their critical areas of need.

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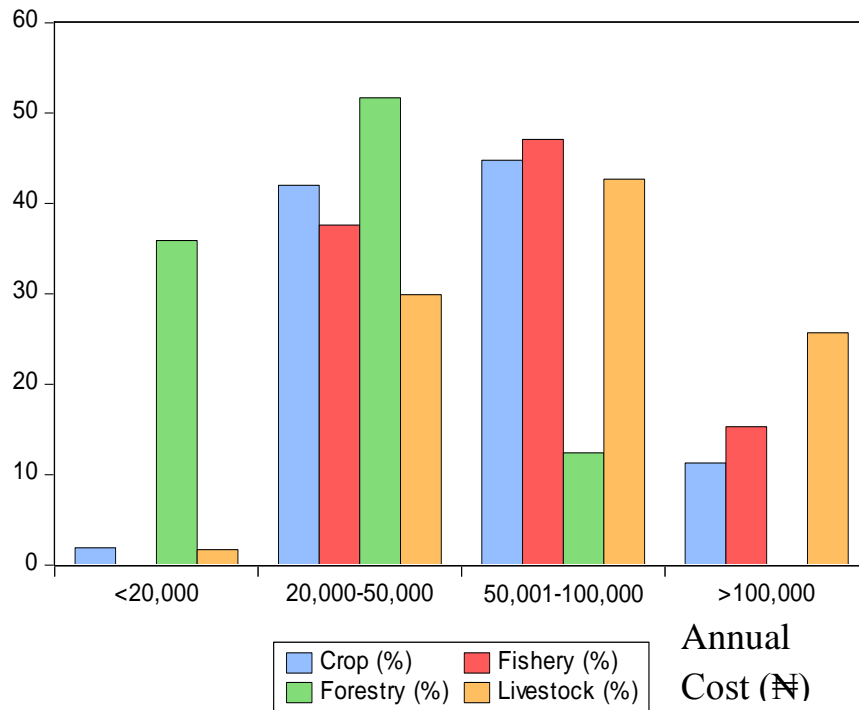


Figure 1: Bar Chart Showing Annual Cost Incurred in Production before BOA Loan

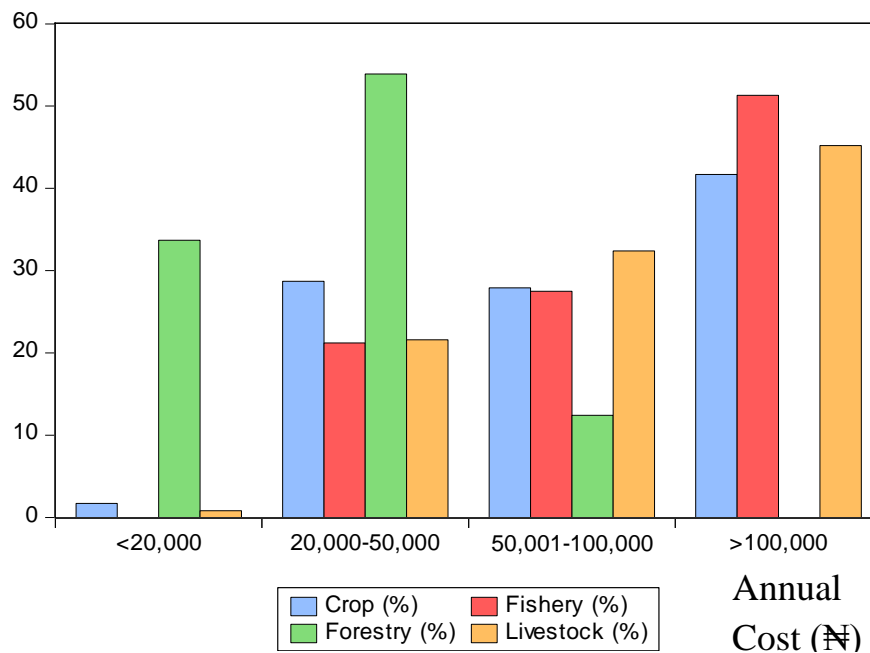


Figure 2: Bar Chart Showing the Annual Cost Incurred in Agricultural Production after BOA Loan



**Table 1: Distribution of Respondents by their Economic and Demographic Characteristics**

<b>Socio-Economic and Demographic Characteristics</b>	<b>Number of Respondents (Frequency)</b>	<b>Percentage (percent)</b>
<b><u>Sex</u></b>		
a) Male	268	74.0
b) Female	94	26.0
Total	<b>362</b>	<b>100</b>
<b><u>Marital Status</u></b>		
a) Married	218	60.2
b) Single	87	24.0
c) Divorced/Widow/Separated	57	15.7
Total	<b>362</b>	<b>99.9</b>
<b><u>Age</u></b>		
a) 18-35 years	95	26.2
b) 36-45 years	189	52.2
c) 46-55 years	62	17.1
d) 56 and above	16	4.4
Total	<b>362</b>	<b>99.9</b>
<b><u>Level of Education</u></b>		
a) No Formal Education	49	13.5
b) Basic Education	212	58.6
c) Higher Education	101	27.9
Total	<b>362</b>	<b>100</b>
<b><u>Household Size</u></b>		
a) < 5	10	2.8
b) 5-10	32	8.8
c) 11-15	84	23.2
d) > 15	236	65.2
Total	<b>362</b>	<b>100</b>
<b><u>Main Occupation</u></b>		
a) Farming	294	81.2
b) Trading	22	6.1
c) Civil Service	41	11.3
d) Banking	5	1.4
Total	<b>362</b>	<b>100</b>
<b><u>Years of Farming Experience</u></b>		
a) < 5 years	42	11.6
b) 6-15 years	83	22.9
c) > 15 years	237	65.5
Total	<b>362</b>	<b>100</b>

**Source: Field Survey**

**Table 2: Average Cost Incurred by the Sampled Respondents**

Category of Agricultural Activity	Cost Before BOA Loan				Cost After BOA Loan			
	Total Cost (₦'000)	Average Cost (₦)	Proportion of the Cost (percent)	Total Cost (₦'000)	Average Cost (₦)	Proportion of the Cost (₦)	percent Change in Cost	
Crop Production	23,152	63,955.80	48.4	27,782.4	76,746.96	49.2	20	
Livestock	18,036	74,838.17	37.7	21,102.12	87,560.66	37.3	17	
Forestry	2,380.5	26,747.19	5.0	2,570.94	28,886.97	4.5	8	
Fishery	4,256	22,518.52	8.9	5,064.64	26,797.04	9.0	19	
Total	47,824.5	54,248.34	100	56,520.1	64,154.48	100	18	

**Source: Field Survey****Table 3: Annual Income Obtained from Agricultural Production and BOA Loan**

Categories of Agricultural Production				
Annual Income (₦)	Crop (percent)	Livestock (percent)	Forestry (percent)	Fishery (percent)
<20,000	0 (0)	1 (0.4)	12 (13.5)	0 (0)
20,000-50,000	42 (11.6)	30 (12.4)	44 (49.4)	32 (16.9)
51,000-100,000	189 (52.2)	112 (46.5)	21 (23.6)	95 (50.3)
>100,000	131 (36.2)	98 (40.7)	12 (13.5)	62 (32.8)
Total	362 (100)	241 (100)	89 (100)	189 (100)

**Source: Field Survey****Table 4: Annual Income Obtained from Agricultural Production after BOA Loan**

Category of Agric Activity	Before BOA Loan			After BOA Loan			
	Total Revenue (₦'000)	Average Revenue (₦)	Proportion of Revenue (percent)	Total Revenue (₦'000)	Average Revenue (₦)	Proportion of the Revenue (percent)	percent Change in Revenue (percent)
Crop	43,210	119,364.64	40.0	72,160.7	199,338.95	41.7	67
Livestock	32,578	135,178.42	30.1	51,473.24	213,581.91	29.8	58
Forestry	6,048	67,955.06	5.6	6,773.76	76,109.66	3.9	12
Fishery	26,268	138,984.13	24.3	42,554.16	225,154.29	24.6	62
Total	108,104	122,706.02	100	172,961.86	196,324.47	100	59

**Source: Field Survey**

**Table 5: The mean Difference in Income of Beneficiaries Before and After BOA loan**

Variable	Mean	N	T-test		ANOVA F-test		Welch F-test	
			Value	Prob	Value	Prob	Value	Prob
Before BOA Loan	102646.4	362	-	0.0000	3228.785	0.0000	3228.785	0.0000
After BOA Loan	187071.8	362	56.82240					

**Source: Author's computation**

**Table 6: Major Challenges in Accessing BOA Loan by the Rural Farmers**

Challenges	Number of Respondents	Percentage (%)
1. Lack of Awareness	342	94.48
2. Procedure/Requirements	303	83.7
3. Attitudes of BOA Personnel	294	81.21
4. Level of Interest Rate	202	55.8
5. Short Repayment Period	194	53.59

**Source: Field Survey**