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EFFECT OF CREDIT ACCESS ON LAND PRODUCTIVITY OF RICE FARMERS IN NIGER STATE, NIGERIA

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ABSTRACT
The study examined the effect of credit access on land productivity of rice farmers in Niger State, Nigeria. Cross sectional survey was used to collect data from 175 rice farmers selected through a systematic sampling procedure. Data were analysed using descriptive statistics, and linear regression. The results showed that the mean output/ha, farm size and age were 3275 kg/ha, 1.75ha and 45 years, respectively. The amount of credit obtained was about ₦16,718. The regression analysis revealed that 60% of the variation in the yield was as a result of the variables included in the model. Also, Seed ($p<0.01$), fertilizer ($p<0.05$) and pesticides ($p<0.10$) had significant and positive effect on land productivity while credit, extension contact and education had negative effect on land productivity. The study concluded that seeds, fertilizers and pesticides were the main factors that could increase land productivity in the study area and thus recommends timely supply of these inputs.

Keywords: Credit, Land, Niger, Productivity, Rice.

INTRODUCTION
The agricultural sector is the most reliable in terms of economic growth and welfare of citizens in the developing countries (Ibrahim and Bauer, 2013). However, food production is still in the hands of peasant farmers who are financially constrained. Peasant farmers often plough back their profit (if any) or rely on informal village money lenders for finance which in turn is used to purchase productive factors during the course of farming activities (Ibrahim and Aliero 2012). According to Food and Agriculture Organization (FAO), African is still far behind in terms of productivity, technology utilization and adoption, access to credit and insurance facilities (FAO, 2015).

Rice is one of the main cereal crop cultivated and Nigeria and Nigeria is the major rice producer in West African producing about 4.2 million tonnes in 2016 (Daramola, 2005, NAERLS and FMARD, 2012; RICESTAT, 2014; WRS, 2017). Even though Nigeria is one of the highest producers of rice in West African, the level of productivity is low when compared to neighbouring countries. (Cadoni and Angelucci, 2013). For instance, the productivity of Nigeria for year 2016 was 1.71 tonnes/ha, Ivory Coast 2.02 tonnes/ha while that of Ghana was 2.85 tonnes/ha even though they produced the lowest quantity of rice (603000 tonnes) when compared to the other countries. The poor performance of the agricultural sector in Nigeria has been attributed to one of the following factors; neglect of the sector, poor access to modern inputs and technology, and lack of optimum credit supply (Enyim *et al.,* 2013).

Productivity can either be partial which relates output to a single input (e.g. land productivity, labour productivity, etc.) or Total Factor Productivity (TFP) which relates an index of output to a composite index of inputs (Murray and Sharpe 2016). However, productivity measures are often used to estimate the economic performance of a country. Land productivity is used by national policy makers to evaluate agricultural production intended to

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meet national food security needs (Urgessa, 2015). Credit is an important instrument for compensating income fluctuations and improving the welfare of the poor directly through consumption smoothening (Odoh *et al.,* 2009; Chauke *et al.,* 2013). Farmers need credit both before (ex-ante) and after (ex-post). Credit accessed before production is of importance because it is used to purchase inputs (seed, agrochemical, labour, fertilizer) that are required during the course of production. On the other hand, ex-post access to credit is necessary because of poor insurance which is often a characteristic of peasant farming economies (Awotide *et al.,* 2015). In order to increase farm level productivity of the peasant farmers, there is a need to boost the financial capacity of these rural farmers and agricultural credit access has been cited as a means to resolve the problem of finance among rural farmers. (Ashaolu *et al*., 2011). In view of the above, the main objective of this study was to assess the effect of credit on partial factor productivity (land productivity of rice farmers in Niger state.

MATERIALS AND METHODS

The Study Area

The study was carried out in Niger State, Nigeria. Niger State is located between Latitude 8º22'N and 11º30'N and Longitude 3º30'N and 7º20'E and it covers about 86,000 sq. km (about 8.6 million hectares), representing 9.3% of the total land area of the country (Niger State GIS, 2007). The mean annual rainfall varies 1100mm in the north to 1600mm in the south while the mean minimum and maximum temperature is 26^0C and 36^0C, respectively. The 2006 census, puts the population at 3.950 million people with a projection of about 5.214 million people in year 2016 based on the 3.2% growth rate (NPC, 2011) and a population density of 284 persons per square km. Several ethnic groups are found in the State.

Sampling Technique

The respondents were selected through a multi-stage sampling technique. In the first stage 2 zones (zones 1 and 3) were randomly selected out of the 3 agricultural zones in Niger state. In the second stage, 5 Local Government Areas (Bida, Gbako, Katcha, Lavun, Mokwa) were selected from zone 1 (given that it is the major rice producing zone in the State), and 1 Local Government Area (Wushishi) from zone 3 in Niger state. In the third stage, 5 villages were randomly selected in Bida, Lavun, Katcha, Gbako and Mokwa LGAs) while 10 villages were selected from Wushishi LGA through simple random sampling technique as well. In the fourth stage, 5 respondents were selected through systematic sampling technique from each of the selected villages giving a total of 175 respondents. However only data obtained from 167 respondents was used for the final analysis.

Method of Data Collection

Primary data was collected from rice farmers in Niger state. Questionnaire was used to elicit information on farmers' socio-economic characteristics, involvement in rice production activities, input and output from rice production especially rice yield, land area under cultivation (ha), It also includes questions on sources of credit and amount of credit obtained.

Method of Data Analysis

In the study, both descriptive and inferential statistics were used. The descriptive statistics used includes mean, standard error and tables to describe the socio-economic factors of the respondents as well as production factors.

The inferential statistics used is linear regression model. The linear production function analysis considered is stated as:

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$$Y = \beta_0 + \beta_1 L + \beta_2 F + \beta_3 P \quad \ldots (1)$$

where;
Y = output (kg)
S = Seed (kg)
L = Labour (mandays)
F = Fertilizer (kg)
P = Pesticides (g/a.i)

The land productivity was computed by dividing both sides of the equation by the total land area cultivated in hectares (H) and it is expressed as;

$$\frac{Y}{H} = \beta_0 + \beta_1 \frac{S}{H} + \beta_2 \frac{L}{H} + \beta_3 \frac{F}{H} + \beta_4 \frac{P}{H}) \quad \ldots (2)$$

However, in the case of several determinants of land productivity, other socio-economic variables were included in the model following Urgessa (2015) and the model is expressed as:

$$\frac{Y}{H} = \beta_0 + \beta_1 \frac{S}{H} + \beta_2 \frac{L}{H} + \beta_3 \frac{F}{H} + \beta_4 \frac{P}{H} + \beta_5 X_1 + \beta_6 X_2 + \beta_7 X_3 + \beta_8 X_4 + \beta_9 X_5 + \beta_{10} X_6 + \beta_{11} X_7 \quad \ldots (3)$$

where;
X_1 = Age (years)
X_2 = Education (years)
X_3 = Sex (1= male and 0 =female)
X_4 = Household size (number of persons)
X_5 = Distance from home to farm (km)
X_6 = Number of extension visits
X_7 = credit (₦)

RESULTS AND DISCUSSION

The main objective of this study was to assess the effect of credit on land productivity and the result is presented in this section. Table 1 shows the description of the variables in the model. As shown the mean yield was 3275.70 kg. Also, an average farmer cultivated about 1.73ha of land which affirms the fact that farming is carried out by small scale farmers. Also, the quantity of fertilizer utilized was about 142 kg/ha and this is less than the recommended rate/ha which is about 200 kg/ha for rice farms. The amount of credit obtained was about ₦16, 000 and this is bare enough for a household with about 5 persons.

Table 1: Description of Variables in the Model

Variable	Mean	Standard Error
Output (kg/ha)	3275.70	198.42
Labour(mandays/ha)	30.48	2.52
Farm size(ha)	1.73	0.08
Fertilizer(kg/h)	142.45	12.92
Pesticides(l/ha)	4.42	0.29
Seedkg/ha	55.40	3.62
Age	45.00	0.80
Household size	5.00	0.20
Distance	3.41	0.34
Extension Visit	13.00	0.89
Credit (₦)	16718.56	3793.16

Source: Field Survey 2016

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Determinants of Land Productivity

The result of the factors that influenced land productivity is presented in Table 2. The F- ratio was significant indicating that the model is of good fit. In addition the value of the R-square implies that 60% of the variation in the yield is as a result of the variables included in the model. The coefficients of seed ($p<0.01$), fertilizer ($p<0.05$) and pesticides ($p<0.10$) were significant and positive. This implies that a unit increase in these factors of production will lead to an increase in land productivity in the study area. That is to say, these factors are highly necessary in order to improve the level of productivity of rice farmers in Niger state. This finding corroborates the findings of Awotide and Agbola (2010); Adesiyan (2015) who reported these factors influence productivity. Cultivation of distant lands from the farmers home had positive influence on land productivity as the coefficient of farm distance was significant ($p<0.05$). The search of fertile lands is one of the reasons while farmers have their farms located far from their homes and this has paid off positively. More so, farmers who have their farms located far away from homes often build farm steads and they live in this farm steads during the course of the production season. This act helps them to reduce the cost of transportation associated with distant farms. In addition, farmers that have their farmers located in the same area pool their resources together to help them cushion the effect of transport. Kassali *et al.* (2009) also reported a positive relationship between farm distance and productivity.

Credit is supposed to enhance the level of productivity. However, in this study the coefficient of credit was significant and negative. This is an indication that the amount of credit obtained ($p<0.01$) had negative effect of on land productivity of the rice farmers in the study area. This could be interpreted based on the premise that the amount of credit given to the rice farmers may be inadequate or rice farmers channelled the credit to other uses order than production. This implies that credit in cash may not be the best way to solve the problem of agricultural financial constraint. This is in line with Nosiru (2010) who reported that beneficiaries of agricultural microcredit in Ogun state were not as productive as they ought to. Education ($p<0.05$) and extension contact ($p<0.01$) also had significant but negative effect on land productivity in the study area. The negative effect education had on land productivity could be because an average rice farmer in the study area had only primary education. Also, rice farmers with higher education may have divided attention as most operate farms as secondary source of income.

CONCLUSION AND RECOMMENDATIONS

The study concluded that seeds, fertilizers and pesticides were the main factors that influenced land productivity in the study area. It also concluded that the amount of credit received had negative effect on agricultural land productivity. Therefore, the study recommends timely supply of inputs such as fertilizer, pesticides and seeds. This could be done through agricultural input loan such that; agreements are reached with input supply companies to enable rice farmers obtain input from these companies and pay for the inputs after produce harvest and sales.

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Table 2: Determinants of Land Productivity in the Study Area

Variables	Coefficient	Std-error	t-value	p-value
Seed	0.4276***	0.0413	10.35	0.000
Labour	0.0295	0.0812	0.36	0.717
Fertilizer	0.0489**	0.0174	2.82	0.005
Pesticides	1.3679*	0.7012	1.95	0.053
Age	-0.2264	0.3055	-0.74	0.460
Education	-1.0259**	0.4063	-2.53	0.013
Sex	8.3330	10.9818	0.76	0.449
Household Size	0.5881	1.2044	0.49	0.626
Distance	1.0987**	0.5523	1.99	0.048
Extension Contact	-1.2283***	0.2267	-5.42	0.000
Credit	-0.0002***	0.0001	-2.73	0.007
F-ratio	22.84***			0.000
R-Squared	0.62			
Adj R-Squared	0.59			

Source: Field Survey, 2016

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