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Assessments of Profitability of Low Land Rice Production in Katcha Local Government Area of Niger State

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Abstract: *The research was carried out to assess the profitability of lowland rice production in Katcha Local Government Area of Niger State, Nigeria. Two districts where rice production is mostly predominant were purposively selected out of which ten villages were randomly selected and 200 rice producers were randomly selected based on the proportion of rice farmers in each selected village. Descriptive statistics andfarm budgetary model [FMB] were used to analyse the data. The result of descriptive statistics indicated that 86% of lowland rice farmers were between the ages of 20-50 years. Majority of the farmers were literate with long experience of rice production .Farm Budgetary Model [FBM] shows that the average total revenue is greater than total cost of lowland rice production which indicates profit from lowland rice farmers . The average total revenue was ₦44400 while average total cost was ₦21765.7. The major problem encountered by the farmers include flooding immediately after transplanting the seedlings from river Gbako which is the main source of water to the rice farms.*

Keywords: *Rice, Production, profitability,*

I. Introduction

Nigeria economy is mainly an agrarian economy with over 70 percent of the country's 120 million people engage in agriculture and agricultural activities (CBN, 1996). Based on this, development of the country's agricultural sector is synonymous to achieving economic development. However, the contribution of agriculture to Nigeria's Gross Domestic product (G.D.P) is an indication that more still need to be done to resuscitate the sector (Ogundari,2006). The contribution of agriculture to GDP was put at 41.3% in 2002 (CBN,2003).The poor growth recorded in the sector is a reflection of food crisis currently experienced in the country in which the rate of population growth exceed the rate of food production. Food growth rate has been put at 2.5 percent and population growth at 3.5 percent leaving a food deficit at 1%. According to RIFAN (2006), Nigeria with the population of over 140 million people has variety of factors that favor rice production. National cereal Research Institute, through RIFAN has revealed that, Nigeria has approximately 5 million hectares of land suited for rice production. However, despites the large expanse of land for production of rice in Nigeria per capita consumption is very low, because Nigeria needs 5 million metric tons of milled rice per year and production was estimated to be about 3 million metric tons of milled rice leaving a short fall of 2 million metric tons which is augmented by importation (RIFAN, 2006). Statistic shows that self-sufficient rating for rice was 84% in 1998 and 2 million metric tons importation out of 5 million metric tons was estimated to cost about 300 million U.S. dollars [FAO,2002]. This dampens the hope of possible improvement in the level of domestic rice production, in addition the Central Bank of Nigeria informed participants at RIFAN/CBN organised seminar that 578 million U.S dollars worth of rice was imported in 2002 [RIFA,2006]. Rice is the world most expensively cultivated crop and forms the staple food for over 50% of the world population . Rice is one of major food crop commodity that is of considerable importance for food security, expenditures and incomes of households, the demand for rice have been increasing at a much faster rate in Nigeria than in other West African countries (Akande, 2002). Domestic demand for rice is projected to rise to 7.5 million tons by 2013, on the assumption that demand rises at the level of 10% per annum, with demand for local rice growing at half the rate of imported rice (NRDS, 2009). The Nigeria rice industry is currently not competitive because it faces the following constraints: macroeconomic conditions under which Nigeria rice is produce is partly responsible for the sector's lack of competitiveness due to high cost of inputs and problem of policy instability (Daramola. 2005).

The demand for this crop in the study area is increasing because of its importance as a source of food and income. In view of the risk and uncertainty in which agricultural production takes place especially in developing countries, farmer's profitability need to be considered in such a way as to produce maximum output (Yahaya, 2007). Considering the above, the following objectives were formulated for the study: describe the socio-economic characteristics of the respondents; determine the profitability of low land rice production in the study area and identify the major problems faced in the production of rice in the study area.

II. Methodology

The study was carried out in Katcha Local government area of Niger state, Nigeria. The study area is well known for rice production especially Badeggi. The study area lies within latitude of 8^0-10^0 North and longitude 3^0 - 8^0 East with a mean temperature of 29.15^{0}C. The study area enjoys tropical climate with two distinct seasons. These are rainy (April to October) and dry (November to March) seasons with an annual rainfall of between 1000mm – 1200mm (Misari, 2002). The Local Government was purposively selected because of the preponderance of rice farmers in the area .For this study two districts were purposively selected from 8 districts of the local government area because of their proximity to Gbako River where they practice low land rice cultivation and hence high concentration of low land rice farmers in the area. The selected districts are Badeggi and Sidisaba. Simple random sampling technique was used to select five villages from each of the selected districts. A total of 200 low land rice farmers were randomly selected based on the proportional size of low land rice farmers in each selected village. Primary data for the study was collected with aid of well-structured questionnaires. The information obtained include: socio-economic characteristics, number of plots owned, quantity of herbicides used in liters, quantity of fertilizer used in kilogram, farm tools used. Others include seed planted, farming operations and returns from the rice farm. Descriptive statistics was used to determine socio economic characteristics of low land rice while farm budget model was used to find profitability of lowland rice farmers as stated below.

Farm budget model

Farm budget is a detailed physical and financial plan for the operation of a farm for a certain period. The aim of a farm budget is to compare the profit levels of different kinds of enterprises (Olukosi et al., 2005).

$$NFI = GFI - (VC + FC) \quad \text{---------- (1)}$$

Where:

NFI = Net Farm Income

GFI = Gross Farm Income.

VC = Variable Cost.

FC = Fixed Cost

Table 1: Socio-economic characteristics of respondents in the study area (n = 200)

Age (Years)	Frequency	Percentage
21-30	70	35
31-40	54	27
41-50	49	24.5
Above 50	27	13.5
Education acquired		
Qur'an	105	52.5
Western education	9	4.5
Qur'an and western	86	43
Farming experience (Years)		
<10	27	13.5
11-20	95	47.5
21-30	69	34.5
Above 31	9	4.5
Number of farm plots (hectares)		
<0.5-1	78	39
1-2	79	39.5
2-3	43	21.5

Source: Field survey, 2013.

Age plays an important role in the farming activities as it determines the effectiveness and competence of labor availability for rice production. The result in Table 1 shows that Majority (86.5%) of the respondents were within the prime age group of 21- 50 years, this implies that, rice cultivation is done by young adult farmers within this age bracket. This agrees with the findings of Adeola et al. (2008) and Sani et al. (2010) who said 76.67% of the farmers are within the age bracket of 30-49years of age. This is because these categories of farmers are still strong, have the ability to supply the require labor in agricultural activities to boost production and also increase resource use efficiency .The result on Table 1 further revealed that all the farmers are literate in one way or the other. This could lead to increase in awareness and adoption of rice production technology and better standard of living of the farmers in the study area. This is because literate individual accept new technique easily and manage better than illiterates. The result in Table 1 also shows that majority (86.5%) of the respondents in the study area had cultivation experience of 11 years and above. The years of farming experience in low land rice cultivation is expected to increase individuals' experience of better farm management practices

and resource use efficiency there by reducing the cost and increasing the output .The Table also revealed that 39% and 39.9% of the respondents respectively have 0.5-1 and 1-2 hectares of low rice farm land respectively while only 21.5% of the respondents have 2-3hectares of low rice farm land. The small, fragmented and scattered plots of the farm lands may be explained by the method of land acquisition which is through inheritance. The mode of low land rice farm land acquisition is through inheritance indicating scattered and fragmented farm plots here and there. This study also agrees with Alimi (2001) who from his clear studies revealed that land acquisition through inheritance still remains a popular mode in Nigeria because he obtained 85% respondents as his result.

Table 2: Distribution of respondents base on the level of yield (kg/ha) realized in the study area

Paddy rice (kg/ ha)	frequency	percentage
600-700	29	14.5
701-800	82	41
801-900	79	39.5
901-1000	8	4
Total	200	100

Source: Field Survey, 2013.

The average yield of paddy rice harvested was about 771.95kg/ ha. The table shows that the land for low land rice production is still very fertile despite low fertilizer application, since the output is as high as 771.95kg/ha. This table also shows that the farmers in the study area were subsistence producers with low income.

Costs and return of paddy rice production in the study area

The average total cost of paddy rice production in the study area was ₦21765.7 for the rice farmers per hectare. The average total cost of paddy rice production is made up of variable cost and fixed cost. Variable cost include cost of input like land preparation, weeding, harvesting, transplanting, threshing, winnowing, transportation spraying cost, fertilizer application cost .

Table 3: Average costs and revenue structure of paddy rice hectares in the study area.

Items	Average/mdys	Amount	man/ hrs	Percentage
Land preparation	8.5	4250*	42.5	17.19
Transplanting	6.0	2400**	30.0	9.71
Weeding	5.0	2000**	25	8.09
Harvesting	5.0	2500*	25	10.11
Winnowing	6.5	2600**	32.5	10.52
Transportation	3	1500*	15	6.06
Seed planting	2	1000*	10	4.04
Chemical application	2	1000*	10	4.04
Fertilize application	2	1000*	10	4.04
Cost of seed		1000		4.04
Cost of fertilizer		2100		8.49
Fixed cost		415.7		1.69
Total variable cost		21350		98.3
Total cost		21765.		99.99
Total revenue		44400		
GM/ ha		23050		
NFI/ ha		22634.		
GM/ Manday		1284.3		
Gross ratio		0.49		

Source: Field survey, 2013

Key: 3
* ₦500
** ₦ 400

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Table 3 shows that expenditure on variable inputs dominated the production cost, accounting for 98.3% of the average total production cost. The table also shows that land preparation and winnowing took the highest proportion of the variable cost accounting for 17.19 and 10.52% respectively. Depreciation for fixed inputs accounted for only 1.6 of the average total production cost. Depreciation was the least contribution to the production cost. This study is in line with the finding of Baba et al. (1998) reported that variable cost was higher (97.9%) in the production of rice. Gross farm income or total revenue is determined by multiplying the total out puts by the unit prize. Table 3 also shows the average gross revenue of ₦44400. According to Olukosi and Erhabor (2005) gross margin analysis is highly used for subsistence system of farming, involving small capital component, and in a giving farm.

The net farm income is the total gross margin minus the fixed cost. The average net farm income was N22634.3 per ha while gross margin man days in monetary value is 1284.3 The gross ratio measured the overall financial success of a farm. The gross ratio is 0.49; meaning 49% of total cost goes to production. The lower the ratio, the higher the return per naira invested

Table 3 also indicated that the production of rice in the study area was profitable. This is because, the gross margin per hectare is N23,050.00 and Net farm income is N22,634.30. The gross margin man day is N1,284.3k. This indicated that 1 person when employed earned N1284.3 in a day. The table also shows gross ratio of 0.49 indicating that cost of production is 49%.

Problems of low land rice production in the study area.

The analysis of the problems encountered by most of the low land rice farmers in the study area was more of climatic and biotic influences. These include heavy flood which washed the whole farm lands and the planted rice. Biotic influence includes quillea birds that cause a lot of damages to rice at milking stage leadings to low yield. Any attempt to control the birds cost farmers more money and energy. There was also financial constraint faced by the farmers, together with high cost of fertilizer and agro chemicals which are very vital in the production of low land rice.

Table 4: Distribution of rice farmers based on the problems face by the farmers

Problems	Number of respondents	Percentage
Quillea birds	90*	26.7
Flooding off farm land	120*	35.2
High cost of fertilizer	60*	17.6
High cost of agro chemical	70*	20.5
Total	340	100

Source Field Survey, 2013

*= multiple responses

The table revealed that low land rice farmers in the study area (35.2%) are faced with the problems of flooding immediately after transplanting their seedlings from river Gbako which is the main source of water to the rice farms. The astaric indicated multiple proble

ms this is to say all the rice farmers have more than one problem during the production. **Conclusion**

The study examined economics of low land rice production in Katcha local government area of Niger state. It was empirically deduced that rice production in Katcha LGA is a profitable investment or undertaking. Most farmers are however operating under the substance system of farming. Hence, it is recommended that Government should introduce policies that will favour commercial rice production through granting of agricultural loans with low intrest rates to farmers in the study area.

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