

ASSESSMENT OF ECONOMICS OF FADAMA LAND RICE (*Oryza sativa* L.)
PRODUCTION IN KATCHA LOCAL GOVERNMENT AREA OF NIGER
STATE, NIGERIA.

BY

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Abstract

The study assessed the economics of low land rice production in Katcha Local Government Area of Niger state. For the purpose of achieving the study objectives 90 respondents were sampled randomly from 10 villages in two districts. Input- output data were collected in 2009 production season using interview schedules. Data were analyzed using descriptive statistics and farm budgetary techniques. The study revealed that majority of the respondents i.e 63.4% were within the age range of 21- 40 years. Majority of the respondents i.e 60% has family size between 6- 15 persons. More so, majority of the respondents i.e 97.8% acquired Quranic education only. The analysis of the sources used revealed that fewer hectares of land were used. The common method of land tenure was through inheritance. The family labour were mostly used. The result of the farm budget analysis revealed that the average total cost of low land rice production was N12,356.0 per ha. Variable costs accounted for 98.3% of the average total cost. The fixed cost accounted for only 1.69% of the total average cost of the production. The production of low land rice is profitable in the study area. The gross ratio was 0.53. The major problem faced by respondents were problem of high cost of fertilizer and quelea bird. It was recommended that government should subsidize the cost of fertilizer, respondents should endeavour to send their children to the rice field as early as 6:00am to send the bird away from rice farm particularly when rice is at milking stage.

Key words: Quelea Bird and Paddy rice.

INTRODUCTION

Rice is botanically called *Oryza sativa*. It is a widely cultivated crop with number of varieties that have been developed through varietal improvement and genetic resource conservation, evaluation and utilization programmes Food and Agricultural Organization, (FAO, 2009). Most of the rice varieties cultivated today belongs to the species, *Oryza sativa* L. The other rice species grown for food is *Oryza glaberrima steud*, reported to be grown in the central part of West Africa. Nigeria, with a population of over 140 million people, has a variety of factors that favour production. National Cereal Research Institute (NCRI), the

nation's premier rice and other research institutes revealed that, Nigeria has approximately 5 million hectares of land suited for rice production, Rice Farmers Association of Nigeria (RIFAN, 2006). The pattern which has been in existence before now is fast changing as it can be seen in improved agronomic practices and increased farmers awareness regarding economic benefits inherent in rice production. The use of these new improved rice varieties and application of the modern inputs by local rice farmers has raised the yield to 4-5 tons per ha (RIFAN, 2006). Today, rice is the staple food of more than half of mankind, and its importance to national food security has increased even in countries where it has not been the traditional staple food (FAO, 2009).

Katcha Local Government is an area that is well known for rice production especially Badeggi District Area. 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 this there is a need to determine the profitability of its production. The broad objective of this study is to assess economics of *fadama* land rice (low land) production in Katcha Local Government Area of Niger State. The specific objectives are to;

1. describe the socio-economic characteristics of the rice producers in the study area.
2. examine inputs-output relationship in paddy rice production
3. determine the profitability of rice production
4. identify the major problems faced by the respondents.

Methodology

The study was conducted in Katcha Local Government Area in Niger State. The mean temperature is 29.15°C with the latitude of 8°-10¹ North and longitude of 3°-8¹ East. The area is characterized by annual rainfall of 1100mm-1600mm. They are predominantly Nupes and "Non- literate" their production is largely dependent on unimproved technologies. The vegetation is predominantly shrubs with scattered trees, the soil is luvisols, (FAO, 2009). To achieve the objectives of the study, the method of random sampling technique was employed to get the required sample size. The names of the villages that were randomly selected are: Kambari, Bororo, Goyi-dzuwa, Nyan-kpako, Nda-kotu, Che-che, Nagenu, Mayaki, Etsusidi and Ebba. A total of 90 respondents were sampled

randomly, the number of respondents selected from village depend on their relative size in proportion to the total. Primary data were collected during a field survey. This was complemented by Secondary data sourced from Published literatures. The data collected were analyzed using descriptive statistics and Farm Budget Model

$$NFI = GFI - (VC + FC) \dots\dots\dots(1)$$

Where NFI = Net Farm Income

GFI = Gross Farm Income.

VC = Variable Cost.

FC = Fixed Cost.

Results and discussions

Socio- economic profile of respondents.

The socio- economic variables analyzed include the age, marital status, family size, educational level acquired occupation and farming experience. Majority, i.e 63.4% of the respondents was within the age group of 21-40 years; this means that rice production are done by energetic individuals who could withstand the stress of the work. The distribution of farmers according to marital status indicated that majority, i.e 94.4% of the respondents were married. This is in line with findings of Ojo and Moh'd (2008) who in the study of Resource used efficiency in maize production among small scale farmers reported that, more than 96% of their respondents were married. Similarly, majority, i.e 88.9% of the respondents had family size of between 6- 15 persons given them the opportunity of having more rice farms. Large family size might not give added advantage since the larger the family size, the greater the expenditure on feeding. Furthermore all respondents were literate in one way or the other but only (2.2%) had western education this is in line with the finding of Ndanitsa (2005) and Tsoho (2005), who in their separate studies reported that rural people are characterized by low level of literacy. The results show that, majority, i.e 94.4% of the respondents had farming experience of 11 years and above, this will lead to efficient resource allocation thereby cut down the production cost. Only about (11.1%) were civil servants and business men others were full-time rice farmers.

Table 1: Socio-economic distribution of the respondents (n=90)

Variables	Frequency	Percentage
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Age		
21-30	33	36.7
31-40	24	26.7
41-50	23	25.6
51-60	10	11.0
Marital status		
Married	85	94.4
Single	5	5.6
Family size		
1-5	3	3.3
6-10	60	66.7
11-15	20	22.2
16-20	7	7.8
Educational level		
Qur'anic education	88	97.8
Western Education	2	2.2
Farming experience		
1-10	5	5.6
11-20	50	55.6
21-30	25	27.8
31-40	10	11.0
Occupation		
Farming	80	88.9
Civil Servant	6	6.7
Bussiness	4	4.4
Total	90	100.0

Source: Field survey, 2010

Input-output measurements

Land, labour, capital

According to Olukosi and Erhabor (2005), land is defined as the original and indestructible property of the earth. For the purpose of this study, land is the unit area where rice production takes place. Labour is defined as work done which could be provided by human beings, machines or animals as operator, family, full-time, part-time, hired or seasonal labour. Capital is anything produced which is used to increase the effectiveness of current productive activity that is not immediately consumed. (Olukosi, 2005). It is also the means of production or stored up wealth used to produce further wealth (Yahaya, 2007).

Resources use in rice production in the study area.

The physical resources use in rice production includes land, labour, and capital. These resources were combined with the help of management to produce the output rice. Labour was use for land preparation and other operations.

Land: The distribution of respondents based on the number of hectares of land operated revealed that, majority i.e 96.7% of the respondents had from one to four hectares. This agreed with the findings of Iwene (2002) who confirmed that, majority of rural farmers has small and few farm plots. The study revealed that respondents has fragmented and scattered plots. This may be the reasons why rice farm sizes are small, since most farmers operated about 1-4 hectares

Labour: Labour is very vital in rice production. The sources of labour used by the respondents were family labour and hired labour. The study revealed that most of the rice producers depend solely on family labor. The study shows that, majority i.e 97.8% of the respondents used 20- 40 man days in their farm operations. The study also indicated that rice production is still at subsistence level; hence they used more of family labor than hired labour. The study revealed that, majority i.e 94.5% of the respondents used hired labour of 20- 40 man days.

Capital: Capital resources were classified into fixed and consumable. Consumable Capitals were those that were used up in one production cycle. These include seed materials, chemicals, pesticides and fertilizers etc. On the other hand fixed capital was the capital inputs that goes more than one cycle of production. In this research, they were tools like sickle cutlasses and hoes.

Seed material: The quantity of seed planted by the respondents was also determined and found that 88.8% of the respondents used 50-100kg/ha of seed materials. The study revealed that seed materials were not economized since seed planted directly on the field, so more seed were used when compared with nursery planting of rice. This disagreed with the work of Ojo and Mohammed (2008) who said, majority of farmers in their study area used 41 to 50 kg rice seed per hectare.

Fertilizer Application: Fertilizer is very important especially in the production of cereal crops. The study shows that, majority i.e 77.8% of the respondents used 101- 200kg of Nitroge Phosphorus Potassium (NPK) fertilizer. The table shows that, less of fertilizer was used by the respondents.

Fixed Capital: Fixed capital used were sickles, hoes and cutlasses. The study shows that, majority i.e 88.9% of the respondents used ₦301- 500 of fixed capitals. The study area is an area with low income and traditional ways of crop production.

Table 2: Distribution of the respondents by Inputs used.

Items	Frequency	Percentages
Numbers of hectares		
1-2	37	41.1
3-4	50	55.6
5-6	3	3.3
Family labour (man days)		
20	28	31.1
21-40	60	66.7
41-60	2	2.2
Hired labour (man days)		
20	85	94.5
21-40	3	3.3
41-60	2	2.2
Seed material (kg/ha)		
50-100	80	88.8
101-150	10	11.1
Fertilizers used (kg/ha)		
50-100	5	5.6
101-150	70	77.8
151-200	15	16.7
Fixed capital used (#)		
200-300	10	11.1
301-400	70	77.8
401-500	10	11.1
Total	90	100.0

Source: Field Survey; 2010.

Output from rice production

The products of harvested rice includes rice straw and paddy rice. The useful output is the paddy rice in the study area. The table shows that, majority i.e 88.9% harvested two (2) tons (2000kg) /ha.

Table 3: Distribution of the respondents based on the level of the yield realized tons/ha

Paddy rice (tons/ha)	Frequency	Percentage
1	5	5.6
2	80	88.9
3	5	5.6
Total	90	100

Source: Field Survey; 2010.

Cost and returns of paddy rice production in the study area

The average total cost of paddy rice production in the study area was N 12,356.0/ha for the respondents. The average total cost of paddy rice production were made up of variable costs and fixed costs. The average variable costs and fixed costs are shown below in Table 3 below.

Table 3: Average costs and revenue structure of respondents

Items	Total/mdys	Average/mdys	Man/hrs	amount	Percentage
Lnd prprt.	1916.25	4.25	21.25	2125	17.19
Planting	1352.7	3.0	15.0	1200	9.71
Weeding	1127.25	2.5	12.5	1000	8.09
Harvesting	112.75	2.5	12.5	1250	10.11
Winnowing	1465.4	3.25	16.25	1300	10.52
Transportation	676.35	1.5	7.5	750	6.04
Seed planting	450.9	1	5.0	500	4.04
Chemical app.	450.9	1	5.0	500	4.04
Fertilizer app.	450.9	1	5.0	500	4.04
Cost of seed				500	4.04
Cost of fert.				1050	8.49
Fixed cost				207.85	1.69
TVC				12148.15	98.3
TC/ha				12356.00	99.99
TR/ha				23137.50	
GM/ha.				10989.35	
NFI/ha.				10781.50	
GM/man days				242.45	
Gross ratio				0.53	

Source: Field survey: 2010.

Table 3 shows that expenditure on variable inputs dominated the production cost, amounting to 98.3% of the average total production costs. The table also shows that land preparation and winnowing took the highest proportion of the variable costs amounting to 17.19 and

10.52% respectively. Fixed inputs accounted for only 1.6% of the average total production costs. This study is in line with the finding of Baba *et al.* (1998) who reported that variable cost was higher i. 97.9% in fadama farming. Study revealed gross margin of N10,989.35. According to Olukosi and Erhabor (2005) gross margin analysis is highly used for subsistence system of farming, involving small fixed capital component. The average net farm income was N10,781.5 per ha while gross margin man days in monetary value is 242.45. The gross ratio measured the overall financial success of a farm. The ratio was 0.53 indicating 53% of the total farm costs of the gross income.

Test of Hypothesis

Table 3 indicated that the production of rice in the study area is profitable. This is because, the gross margin per hectare is N10,986.35 and Net farm income is N10,781.50. The gross margin man day is N242.45. This indicated that 1 person when employed earn N242.45k in a day. The table also shows gross ratio of 0.53.

Problems faced by the respondents in the study area.

The analysis of the problems encountered by most of respondents were more of biotic and financial influences. Biotic influence includes Quelea birds that cause a lot of damages to rice at milking stage leadings to low yield. There was also financial constraint faced by the farmers, together with high costs of fertilizer and agro chemicals which are very vital in the production of low land rice. Study revealed that, majority i.e 155.6% of the respondents complained of quelea birds and only few (22.2%) of the respondents complained of flooding.

Table 4: Distribution of the respondents based on the problems faced. n=90

Problems	Frequency*	Percentages
Flooding off farm land	20	22.2
High cost of fertilizers	85	94.4
High cost of agrchemcls	40	44.4
Quelea birds	87	96.7

Source: Field Survey; 2009.

*Multiple responses

NB: agrchmcls= Agrochemicals.

Conclusions

The study assessed economics of low land rice production in Katcha Local Government Area of Niger State. The following conclusions were made based on the findings of the study.

1. Low land rice production is profitable. The average total revenue is greater than the average total cost of production.
2. The respondents operated at subsistence level with little amount of fixed cost

Recommendations

1. Knowing fully that low land cultivation in the study area was profitable, producers should keep on growing low land rice, and government should motivate the respondent by subsidizing the price of fertilizer and agrochemicals.
2. The study revealed that low land rice farmers were mostly operating at subsistence level; therefore they should increase their level of production by increasing the input to earn profit
3. It is advocated that the respondents should send their children to the rice field to send away Qualea birds most especially when the rice is at milking stage.

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