SOCIO-ECONOMIC FACTORS AFFECTING RICE PRODUCTION IN LAKE GERIO, YOLA NORTH LOCAL GOVERNMENT AREA, ADAMAWA STATE, NIGERIA

Usman, I. S.
Department of Agricultural Economics and Extension, Federal University of Technology
P.M.B. 2076, Yola –Nigeria.
Ibrojimeta1@yahoo.com (07067952643)

Abstract
The study examined the socio-economics factors affecting rice production in Lake Gerio, Yola-North Local Government Area, Adamawa State, Nigeria. Primary data were collected were obtained through the use of structured questionnaires, administered to 94 respondents. A random sampling technique was used to select the respondents from the list of the registered farmers. Both descriptive and inferential statistical tools were used for the data analysis. Results indicated that majority (52.0%) of the respondents were between the ages of 30–39 years and only 19.0% were above 49 years of age, 58.5% were males and 56.0% were married. About 62.0% of the respondents had between 0 – 9 years of farming experience, 77.0% had attended formal education and have farm size of between 0.1 – 1 hectare respectively while only 10% earned more than N50,000 per planting season. The net farm income analysis revealed that rice production in the study area was profitable considering the net return of ₦59, 823.58/ha. The multiple regression analysis gave an R^2 of 73% and also reveals that farming experience, farm size, extension contact and access to credit were found to be statistically significant at 1% while education was significant at 5% level. Inadequate credit facilities and water supply to irrigation fields by the organization, Birds and Insects infestation and inadequate farm land were among the major problems faced by the respondents. It was recommended that farmers should form cooperative societies so as have collective bargaining in input/output prices and credit facilities, aerial spray against birds and insect infestation by the government should be intensified and government should also develop the remaining undeveloped land belonging to the irrigation project.

Key Words: Socio-Economic, Rice, Production, Lake Gerio and Factors

Introduction

Rice is an annual cereal crop belonging to the family poaceae (formally Gramineae) with over 50,000 varieties of the crop available. Hynes (2009), reported that rice is the most important crop for half of the world population. The two species that are mostly cultivated are *Oryza sativa* which is grown worldwide and *Oryza glabberima* which is grown mostly in Africa. China is the leading world producer of rice, followed by India, and in Africa, Nigeria and Egypt are the leading producers with 3.93 and 3.15 million metric tones in 2005, respectively (IRRI, 2005).

According to Awotide and Adejobi (2004), rice is the fast growing and widely consumed staple cereal in Nigeria today, with consumption cutting along all socio-economic classes. This is due to increasing population growth, increased income level, rapid urbanization and associated changes in family occupational structure. Consequently, it has become an important part of the food security objectives of the Federal Government of Nigeria. Local rice production has increased from 3.5 million

metric tones in 1995 to 4.6 million metric tones in 2006 respectively (Central Bank of Nigeria, 2007).

The average individual rice consumption during the 1980s and 1990s was put at 18kg and 22kg respectively. The average consumption stood at 24.5kg in 2004, which was about 9.6% of the caloric intake (Ibrahim *et al*, 2006). However, the production increase was insufficient to match the demand because production is far below the national requirement (Pilaku, 2008). Thus, there is a need to bridge the gap between domestic demand and supply.

Various successive governments have adopted many strategies to increase local rice production. Some of these programs include Agricultural Development Programs (ADPs) in 1975, River Basin Development Authorities (RBDAs) of 1976, Directorate of Food, Roads and Rural Infrastructure (DFRRI) of 1987, among others. These were all aimed at mobilizing farmers to increase productivity, especially food crops like rice through provision of inputs, land and production techniques. This seems to have yielded positive result in terms of productivity. Baike (1995), reported a general increase in rice production in the country as a result of various programs of the government aimed at increasing agricultural production. Ayodele (2009) reported a positive relationship between number of extension contacts and access to agricultural loan by farmers with rice output. Farming experience and farmers educational level were also found to be positively related to output in rice production (Adebayo, 2010). Dawaki (2011), reported an average net income of N60,000.00 from respondents engaged rice farming using irrigation in Kadawa irrigation project Kano. He went further to report that majority (98%) of respondents were male. Even though there is increase in rice production as a result of various programs of the government, much need to be done to reduce the gap between the demand and supply of rice in the country (Ibrahim *et al*, 2004). Therefore, this study was aimed to answer the following questions:

i. what are the socio-economic characteristics of the respondents?;
ii. how profitable is rice production?;
iii. what are the significant relationship between the socio-economic characteristics and income from rice production? and
iv. what are the factors that constrained effective rice production in the study area?

The broad objective of the study was to assess the socio-economic characteristics affecting rice production in Lake Gerio Irrigation Project, Yola-North Local Government Area of Adamawa State. However the specific objectives were to:

i. examine the socio-economic characteristics of the respondents;
ii. determine the profitability of rice production in the study area;
iii. determine the relationship between socio-economic characteristics and income from rice production and
iv. identify the constraints to rice production in the study area.

Materials and Methods

The Study Area

The study was conducted in Lake Gerio Irrigation Project Jimeta, Yola-North Local Government Area of Adamawa State. Jimeta is located between latitude 9° 23'to 9° 38'N and longitude 12° 17' to 12 38'°E. It lies

within the Benue Valley and has an altitude of 185 meters above sea level. The area has a population of 198,217 persons (NPC, 2007).

Lake Gerio Irrigation Project is situated along the bank of river Benue. Rice is the major crop grown there and it occupies about 75% of the total cultivated project area. The project has a potential land area of 1200 hecters with 547 hecters developed. The project remains one of the most valuable and viable irrigation project in the country which maintained a high status with over three decades of continuous rice production (Bashar, 2008).

Sampling Technique

The list of the registered farmers was obtained from the project office and used as sampling frame. Random sampling technique was employed to select 100 respondents who were served with structured questionnaire. Ninety four questionnaires were returned and were used for the data analysis.

Data Analysis

Both descriptive and inferential statistics were used for the data analyses. Descriptive statistical tool were employed to analyze the socio-economic characteristics of the respondents, constraints confronting the respondents and net income from rice production.

The inferential statistical tool used was the multiple regression analysis. It was employed to determine the relationship between the income from rice production and socio-economic characteristics of the respondents. The model is implicitly expressed as:

$Y = f(X_{1,} X_2 ..... X_n + U_i)$ ……(1)

Where;

Y = Income from rice production (N)

X_1 = Farming experience (years)

X_2 = Age (years)

X_3 = Sex (proxy by dummy male = 1, female = 0)

X_4 = House hold size (number)

X_5 = Extension contact (number of visit per month)

X_6 = Amount of credit obtained (N)

X_7 = Education level (number of years spend in school)

U_i = Error term

However, the explicit form of the model was expressed as:

$Y= b_0+b_1X_1+b_2X_2+b_3X_3+b_nX_n+U_i$ ..... (2)

Where;

Y = Income from rice production (N)

X_1 = Farming experience (years)

X_2 = Age (years)

X_3 = Sex (proxy by dummy male = 1, female = 0)

X_4 = House hold size (number)

X_5 = Extension contact (number of visit per month)

X_6 = Amount of credit obtained (N)

X_7 = Education level (number of years spend in school)

U_i = Error term

Net Income Analysis

The net income obtained by the respondents was computed as;

NI = GR – (TVC + TFC) ……. (3)

Where;

NI = Net income

GR = Gross return

TVC = Total variable costs

TFC = Total fixed costs

Results and Discussions

Data in Table 1 shows that rice production in the study area was mainly dominated by the respondents within the age of 30–39 years (52.0%), 29.0% within the age of 40-49 years and only 19.0% are

above 49 years of age. This indicates that youths formed the bulk of the rice producers; therefore, their youthful strength can be effectively utilized in the production. Majority (58.5%) of the respondents were males. The and 48.0% have family size of 5-9 people, while 17.0% had between 10-14 persons families with many household members may perform better in terms of labor requirements for timely execution of important farm activities such as planting, weeding, harvesting etc.

Table 1 also reveals that 62.0% of the respondents had between 0 – 9 years of farming experience, while only 5.0% had between 20 – 29 years of farming experience. Seventy seven percent (77.0%) of the respondents had attended formal education (primary education 17.0%, secondary education 34.0% and 26.0% had tertiary education) with only 23.0% who had no formal education. The preponderance of educated rice farmers coupled with long term farming experience indicates that they might have specialized in growing rice and their education may influenced them in adopting new technologies thereby increasing their production. Thirty five (35.0%) of the respondents have farm size of between 0.1 – 0.5 hectare, 44.0% of the respondents have farm size of between 0.6 – 1.0 hectare, while 17% have between 1.1-1.5 hectare and only 4.0% have between 1.6 - 2.0 hecters, hence all the farmers were engaged in small scale farming. The result also shows that 47.0% of the respondents sourced their money for production from personal savings, while 46.0% took loan from micro finance banks and 7.0% borrowed from their relatives. Result on income from rice production by the respondents shows that 42% earned less than N20,000 per planting session from the rice, 15% between N31,000- N40,000 and 10% earned more than N50,000. The corroborates the findings of Dawaki (2011), he reported an average net income N60,000.00 from respondents engaged in rice farming under irrigation in Kadawa irrigation project Kano.

Table 1: Socio-economic Characteristics of the Respondents (N = 94)

Variable	**Frequency**	Percentage
Age (years)		
20 – 29	13	14.0
30 – 39	36	38.0
40 – 49	27	29.0
>49	18	19.0
Sex		
Male	55	58.5
Female	39	41.5
House hold size(Number)		
1 – 5	26	28.0
6 – 10	45	48.0
11 – 15	16	17.0
>15	07	7.0
Farming experience (year)	58	62.0
0 – 9	31	33.0
10 – 19	05	5.0
20 – 29		
Farm size (ha)		
0.1 – 0.5	33	35.0
0.6 – 1.0	41	44.0
1.1 – 1.5	16	17.0
1.6 – 2.0	04	4.0
Education level		
Non – formal	22	23.0
Primary	16	17.0
Secondary	32	34.0
Tertiary	24	26.0
Source of capital		
Personal saving	44	47.0
Bank loan	25	19.0
Private money lenders	18	27.0
Co-operative society	07	07.0
Income from Rice (N)	40	42.0
Less than 20,000	14	15.0
21,000 – 30,000	31	33.0
31,000 – 40,000	09	10.0
41,000 – 50,000		
>50,000		

Source: Field survey, 2010

Net Farm Income Analysis

Data in Table 2 reveals that the variable cost per hectare of the respondents was ₦48, 418.98 and accounted for 95.9% of the total production costs. The average fixed cost was ₦1, 267.00 (4.1% of the total cost of production). Thus the total cost of production per hectare was ₦49, 685.98. The Gross Return (GR), Gross Margin (GM) and Net Farm Income (NI) per hectare were ₦109, 509.56, ₦61, 090.58 and ₦59, 823.58 respectively.

Table 2: Average Costs and Return (per Hectare)

ITEM	VALUE (N)
Variable Costs	
Seed	3,958.98
Fertilizer	15,760
Labor	13,500
Agro-chemicals	7,000
Farm Machine Services	4,400
Transport	2,000
Others (Bags etc)	2,800
Total Variable Cost	**49,418.98**
Fixed Costs	
Rent on Land	467
Hoe, Cutlass, Rake	800
Total Fixed Cost	**1,267**
Gross return	**109,509.56**
Gross margin	**61,090.58**
Net income	**59,823.58**

Source: Field Survey, 2010

Relationship between Socio-economic Factors and Income from Rice Production

Data in Table 3 shows that Farming experience(X_1) was significant at 1% level. This implies that as level of experience in farming increases so also output from rice production increases. The result conforms to findings of Adebayo (2010), who reported a significant relationship between farming experience and rice output. Farm Size (X_4) was also found to be statistically significant at 1%.

The results also show that there exist significant relationship at 1% level between contact with extension agents (X_5) and income from rice production. Extension contact determines the type of innovations that will be available for a farmer to use which may translate to higher output. This is in line with the findings of Ayodele (2009), that participation in extension programs positively influences production output.

Access to credit (X_6) was also significant at 1% level. The result also shows that education (X_7) was significant at 5% level. This indicates that, the higher the level of respondent's education, the higher would be the level of his income from rice production. This could be as a result of adoption of innovations and techniques which may not be difficult among the educated respondents as they are more likely to learn with ease and disseminate the new innovations. The result corroborates with the findings of Adebayo (2010).

Table3: Relationship between Socio-economic Factors and Income from Rice Production

Variable	Coefficient	Standard error	T-value
Farming Experience X_1	6528.2	999.0	6.53*
Age X_2	-148.2	309.8	-0.48^{NS}
Sex X_3	4220.1	2670.7	1.58^{NS}
Farm Size X_4	11257.6	1652.0	6.81^{*}
Extension Contact X_5	2410.4	635.9	3.79*
Access to credit X_6	1908.2	3096.5	3.07*
Education Level X_7	499.7	218.1	2.29**
Constant	6735.0		
R^2	0.73		
Adjusted R^2	0.71		
F-ratio	38.9		

Source: Field Survey, 2010

* = Significant at 1% ** = Significant =at 5% NS= Not significant

Constraints to Rice Production

Data in Table 4 reveals that 38.0% of the respondents complained that there was inadequate Bank credit facilities, 12.1% complained of high cost of inputs, 12.7% complained of inadequate supply of irrigation water by the organization to the cultivated fields, while 8.5% complained of the respondents complained of birds and insects infestation. Nineteen (19%) of the respondents complained of inadequate farm land. This could be due to large number of farmers that registered with the projects.

Table 4: ***Constraints to Rice Production***

Constraints	*Frequency	Percentage
Inadequate credit	126	38.0
Inadequate farm land	63	19.0
High cost of inputs	40	12.0
Inadequate irrigation water	42	12.7
Birds and Insects infestation	28	8.5
Seasonal variation of prices	32	9.7
Total	**331**	**100**

Source: Field survey, 2010

*Multiple responses exist, hence frequency more than 94

Conclusion

Based on the findings of the study, rice production in the study area was found to be profitable considering the net profit (₦59, 823.58) per hectare. Also Socio-economic factors positively affect rice output.

It was recommended that farmers should form cooperative societies so as have collective bargaining in input/output prices and credit facilities, aerial spray against birds and insect infestation by the government should be intensified and government should also develop the remaining undeveloped land belonging to the irrigation project.

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