Economic Analysis of Rainfed Rice Production in Gassol Local Government Area of Taraba State, Nigeria.

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ABSTRACT

The study analyzed the economics of rainfed rice production in Gassol Local Government Area of Taraba State, Nigeria. The specific objectives were to describe the socio-economic characteristics of rainfed rice farmers, estimate the cost and returns of rice production and identify the constraints to rice production in the study area. Primary data were collected from 88 rice farmers using purposive and random sampling techniques and were analyzed using descriptive statistics and gross margin analysis. The results revealed that 76.14% of the respondents were below 41 years of age, majority (80.68%) were males, 70.45% were married and most (85.23%) were formally educated. Also 72.73% of the farmers had farming experience for more than five years and majority (79.54%) had farm size of less than five hectares of farmland. The findings on the Gross Margin analysis indicated that rainfed rice farmers incurred a total cost of ₦49,00% per hectare of rice production and had an average yield per hectare of 1300kg which were sold at an average market price of ₦60/kg. The result further shows that the Gross income, gross margin, net farm income and return on Naira invested were: ₦78,000, ₦36,000, ₦28,992 and ₦0.59k respectively. The constraints to rainfed rice production were identified as: inadequate fund, high cost of labour, high cost of farm inputs, price fluctuation, poor marketing outlet, pests and diseases, poor storage facilities and insecurity. Rainfed rice farmers are encouraged to form or join cooperative society to enable them get financial supports from Government and financial institutions. Government should also subsidize the prices of farm inputs to make them accessible and affordable to farmers. Also improve varieties of seeds should be supplied to rice farmers which yields more and is less vulnerable to diseases, insects and rodents attack.

Keywords: Economic Analysis, Rainfed Rice, Production and Gassol.

Introduction

Rice (*Oryza sativa*) is the world's only crop that was planted by emperors, offered to the gods and eaten by both the wealthiest and the poor (Odoemenem and Inakwu, 2011). Rice is an annual crop and most important staple food crop in tropical countries. Commercially, it is the most important cereal after wheat. It is widely consumed and there is hardly country in the world where it is not utilized in one form or the other. In Nigeria, rice is one of the food items whose consumption has no cultural, religious, ethnic or geographical boundary. Rice has contributed to the socio-economic wellbeing of Nigeria both as a major element in the nation's food security calculations and as a commodity for internal commercial transactions (FAO, 2003). Rice is a basic food for most people in Sub-Saharan African and West Africa in particular. In Nigeria, the demand for rice has been increasing since mid-1970s (Yuguda, 2003). It has moved from being a luxury food which it was in the 1960s, to a major source of calories for most Nigerians. The average Nigerian now consumes about 24.8kg of rice per year representing 9% of the total calories intake (Omotesho *et al*, 2010). In spite of the contribution of rice to the food requirement of the Nigerian population its production in the county is put at about 3.2 Million tones (Babafada, 2013). This has been shown to be far below the national requirement as over 8600 million worth of rice is annually being imported into the county (Adeoye, 2003). Nigeria is endowed ecologically to produce enough rice to satisfy domestic demand and has the potential to export to other countries considering its vest agricultural land and suitable climatic conditions (Baba fada, 2003 in Omotesho *et al,* 2010) rice is grown virtually in all the agro-ecological zones of Nigeria. Rice is one of the major staple food items in Taraba State. Taraba State is one of the major rice producing States in Nigeria; it is blessed with abundant resources in terms of land mass, rice soil and climatic condition suitable for rice production. This might be the reason why Taraba State Government decided to engage in Private Partnership with Dominion Farms Company to invest in rice production in Gassol Local Government Area of Taraba State (Taraba State Agricultural Development Programme, 2011). Previous administrations in Nigeria made similar effort to stimulate and encourage rice production in the country with focus on direct investment in programmes and institutions which were meant to increase rice production but rather its production keeps dwindling. It is also observed that most of these policies did not adequately address problems associated with production in the areas of costs and returns to rice enterprise.

This study therefore, becomes imperative to analyze the economics of rice production in the study area. It is specifically aimed at:

i.   Describing the socio-economic characteristics of rainfed rice farmers
ii.   Estimating cost and returns of rainfed rice production and
iii. Identifying the major constraints to rainfed rice production in the study area.

Methodology

The Study Area

The study was carried out in Gassol Local Government Area of Taraba State. Gassol L.G.A is located between latitude 7° 32N to 8° 40'N and longitude 10°25' to 11° 15'E. The LGA has a landmass of 5982km^2 and a population of 244,749 (125,293 male and 119,456 females) (NPC, 2006). It consisted of two large administrative chiefdoms, namely Gassol and Mutum-biyu chiefdoms. There are six approved district areas in each of the chiefdoms. About three quarter of the populations are crop farmers, while others are cattle rearers and fishermen (Oruonye and Abbas, 2011). Important crops cultivated in the area include: rice, groundnut, maize, yam, cassava, millet, guinea corn, melon etc. Most of the farmers cultivate small plots of land. Farming activities usually starts around March with clearing of lands. The soil in the area consists of rich sandy loam soil. The mean annual rainfall is between 1000mm to 2200mm, the climate is tropical in nature with mean temperature if between 15°C to 25°C throughout the year. The major tribes in the local government area are: Fulani, Jukun, Tiv, Hausa, Wurkum, Jenjo, Kuteb, and Mumuye among others.

Sampling Technique

Multi-stage purposive and simple random sampling techniques were used during this study. In the first stage, 5 wards out of the twelve (12) wards were selected viz: Sabon-gida, Mutum-biyu, Gunduma, Namnai, Wuro-jam and Tutare. In the second stage, two (2) villages were purposively selected from each ward which comprised of farmers that are primarily engaged in rainfed rice production. Then, ten (10) rice farmers were randomly chosen from each village to form a sample size of 120 which questionnaires were administered for the study, out of which 88 were retrieved and used for data analysis.

Method of Data Analysis

Descriptive statistics such as percentage and frequency were used to analyze the socio-economic characteristics of rainfed rice farmers and the constraints to rice production. Also, Gross Margin Analysis was used to estimate the costs and returns of rainfed rice production in the study area.

Gross Margin Analysis

The Gross Margin Analysis involved the evaluation of the costs and returns to production. It was used to determine the profitability of rainfed rice production per hectare. Since the fixed capital constituted a negligible portion of the total costs of production (Olukosi and Erhabor, 2005). The model is expressed below:

Gm= GI – TVC
Gm= Gross Margin (₦/ha)
GI=Gross Income (₦/ha)
TVC= Total Variable Costs (₦/ha)

The profit level as measured by Alabi and Adebayo (2008) is specified as:
NFI = Gm – TFC
Where
NFI = Net Farm Income (₦/ha)
Gm= Gross Margin (₦/ha)
TFC= Total Fixed Cost (₦/ha)

Results and Discussion

Socio-Economic Characteristics of Rainfed Rice Farmers

Table 1 show the majorities (76.14%) of the farmers were below 41 years of age. This implies that most of the rice farmers were young and in their productive years to carry out farming activities. This result agreed with the findings of Umoh (2006) and Idiong *et al;* (2006) where swamp and upland rice farmers were found to be relatively young in age. Also, majority (80.65%) of rice farmers were male whereas female constituted only 19.32%. This implies that rice farmers in study area are predominated by males. The male domination might be attributed to high demand of time and efforts required to work in rice enterprise. The result in Table I further indicated that majority (70.45%) of the farmers were married. The preponderance of the married in rice production might be due to their more responsibilities in catering for their families. Most (85.23%) of the farmers were formally educated at varying levels ranging from primary to tertiary levels. Education has been found to be vital component in technology adoption in agriculture (Alabi and Aruna, 2006). This could positively influence farmer's level of productivity. Similarly, majority (72.73%) of the farmers had years of farming experience between 6 years and above. This implies that, most of the farmers are well experienced in rice production a situation which could result to increased output. Experience in farming activities plays a vital role in decision making relating to output increase and risk management (Mohammed *et al*, 2009). In the same vein, most (79.54%) had farm

size of less than five 95) hectares of farmland. By implication, rice farmers in the study area were predominantly small-holder farmers. This result agreed with the findings of Mohammed (2011) who found out those rice farmers under upper Benue River Basin Development Authority Scheme, Dadinkowa Gombe, State were small-scale operators who need to increase their farmlands to tap the benefit of economics of scale.

The Estimated Costs and Returns per Hectare of Rainfed Rice Production
Table 2 shows that the average variable cost per hectare of rice production was ₦41, 800, representing 85.29% of the total cost of rice production (₦49,008). The average yield per hectare was estimated as: 1300kgs and sold at an average market price of N60/kg. The result further revealed that, the Gross Income, Gross Margin, Net Farm Income and Return on Naira Invested were: ₦78,000, ₦36,000, ₦28,922 and ₦0.59k respectively. The implication of this result is that rainfed rice farmer realized a return of ₦0.59k for every one (1) Naira Invested in rice production, which indicated that rainfed rice production is a profitable venture in the study area. This result is in agreement with the findings of Omotesho *et al*, (2010) and Odoemenem and Inakwu (2011) who reported in their studies that rainfed production is a lucrative/profitable enterprise.

Constraints to Rainfed Rice Production
Table 3 shows that the major constraints to rainfed rice production in the study area were: inadequate funds (98.86%), this might not be unconnected to the reason why most of the farmers cultivated due to inadequate funds to purchase farm inputs and expand their farms. also high cost of labour accounted for 92.05%, this might be attributed to the over dependence on manual labour rather than use of tractors and herbicides which covers large area with relatively cheaper costs. Other constraints identified were high cost of farm inputs such as fertilizer, chemicals, improved seeds (94.32%), poor marketing outlet (93.18%), price fluctuation (95.45%) this is very common especially during festive periods due to increase in the demand for rice. Also, problem of pest and diseases (88.64%), poor storage facilities (86.64%), variability in climatic conditions (87.50%) and insecurity (90.91%). Some of these constraints are in agreement with the findings of Odoemenem and Inakwu (2011).

Conclusion and Recommendations
The findings of this study indicated that rainfed rice production is a profitable venture in the study area. Therefore, it is worth investing it. Rice production in the study area is confronted with problems such as inadequate funds, high cost

of farm inputs, price fluctuation, poor storage facilities and insecurity among others. Majority of the rice farmers are young, married, educated, had many years of farming experience and are small-holder farmers. Based on the result of this study, recommendations are made that rice farmers should form or join cooperative society so as to get financial supports from Government and other financial institutions. The prices of farm inputs should be subsidized by Government and made accessible and affordable to rice farmers to boost rice production in the area. Also, Government should intervene in the regulations of the price of rice by fixing a minimum guaranteed price for the product. Adequate security arrangement should be provided in the study area by security agencies so as to forestall unrest and curtail the incessant ethno-religious crisis in the study area which made many farmers fled the area for safety of their lives and property.

Table 1: Socio-Economic Characteristics of the Rainfed Rice Farmers (n=88)

Variable	Frequency	Percentage (%)
Age (years)		
<20-35	11	12.50
26-30	20	22.73
31-40	36	40.91
41 and above	21	23.86
Gender		
Male	71	80.68
Female	17	19.32
Marital Status		
Married	62	70.45
Single	14	15.91
Divorced	08	9.09
Widow(er)	04	4.50
Educational Level		
Non-formal education	13	14.77
Primary education	22	25.00
Secondary education	38	43.18
Tertiary education	15	17.05
Years of farming experience		
1-5	24	27.27
6-10	36	40.91
11 and above	28	31.82
Farm size (Hectares)		
<1-2	38	43.18
3-4	32	36.36
5 and above	18	20.46

Source: Field Survey, 2014.

Table 2: Average Costs and Returns per Hectare of Rainfed Rice Production

Production variables		Value₦/ha	Percentage (%)
(a)	**Variable cost**		
	Seed	6000	12.24
	Herbicides	3,000	6.12
	Fertilizer	9000	18.36
	Labour	22,500	45.91
	Transportation	1,300	2.65
	Total variable costs (TVC)	41,800	85.29
(b)	**Fixed costs**		
	Depreciation on fixed assets	2,208	4.51
	Rent on land	5,000	10.20
	Total fixed costs (TFC)	7,208	14.71
	Total cost of production(A+B)	49,008	100
(c)	**Returns**		
	Gross Income (GI)	78,000	
	Gross Margin (GI-TVC)	36,000	
	Net Farm Income (Gm-TFC)	28,992	
	Return on Naira Invested (NFI/TC)	0.59k	

Source: Field Survey, 2014.

Table 3: Constraints to Sugarcane Production (n=102)

Constraints	Frequency *	Percentage (%)
Inadequate funds	87	98.86
High cost of farm labour	81	92.05
High cost of farm input	77	94.32
Poor marketing outlet	82	93.18
Pest and diseases	78	88.64
Poor storage facilities	76	86.36
Variability in climatic conditions	77	87.50
Insecurity	80	90.91

Source: Field Survey, 2014.

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