



Cost and Return Analysis of Rice Production in Song Local Government Area of Adamawa State, Nigeria

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Abstract: The study analysed cost and return of rice production in Song local government area of Adamawa state, Nigeria. Primary data for 2016/17 rice production were randomly collected from 130 respondents using pre-tested schedule. The Commission on Agricultural Cost and Price (CACP) was adopted to analyse the data. Findings revealed that rice production is a profitable venture in the study area. The net income over cost C3 was found to be ₦45,176.15 per hectare while the input-output ratio had Cost A1 (1:2.65) as the highest ratio and cost C3 (1:1.67) as the lowest ratio. The cost of production in naira per hectare was also worked out with cost A1 ₦2,497.229 as the lowest cost while cost C3 ₦3,960.226 as the highest cost. The study suggests that government should provide modern farm machineries to ease the cost of farm labour and introduce district wise distribution of fertilizers and agro-chemicals to rice farmers in the study area.

Keywords: Adamawa state, Cost and return, Naira, Net income, Rice.

Introduction

Nigeria is the largest producer of rice in West Africa. The demand for this product in Nigeria still continues to grow. Although government is making efforts to promote rice production to meet the demand of the growing population and discourage importation. However, rice production in Nigeria is dominated by small-scale farmers who use traditional methods and simple farm implements in production. Without capital to mechanise, rice production will continue to be ineffective and on a small scale. According to the United Nations Food and Agricultural Organisation (FAO, 2017) the country imported 2.3 million tonnes in 2016, about half of the country's estimated requirements.

The main rice producing states in the northern part of the country include: Benue, Borno, Kaduna others include Kano, Niger and Taraba while Enugu, Cross river and Ebonyi are in the south. Previous researches had shown that farmers were making reasonable return from rice production in Adamawa state and Nigeria in general. Girei *et al.* (2016) reported an average



total cost of ₦270,864 was incurred per annum by the rice farmers while gross revenue of ₦740,000 was recorded; and concluded that rice production in Fufore Local Government Area of Adamawa state is economically rewarding, profitable and sustainable with high propensity to achieving self-sufficiency in food security and poverty reduction. Nwalieji (2016) also found that rice production enterprises to be profitable and lucrative ventures as farmers in Anambara state made gross margin and net profit of ₦59,105 and ₦55,355 from paddy scale using transplanting and broadcasting methods, respectively while the benefit/cost ratio per 0.5 ha of paddy production were 1.83 and 1.85 for transplanting and broadcasting methods, respectively. In Ebonyi state farmers made net profit of ₦53,800 and ₦48,100 from transplanting and broadcasting methods in 0.5 ha respectively while the BCR per 0.5 ha of paddy production were 1.56 and 1.73 for transplanting and broadcasting methods, respectively. Abakaliki rice production was found to be profitable with average gross margin, net profit and return per naira invested of ₦141,607.22/ha, ₦126,056.33/ha and 3.54 respectively (Egbodion and Ahmad, 2015). Similarly, Raufu (2014) reported that rice production in Kwara state under Sawah system is profitable going by the cost and return analysis. The expense structure ratio is 0.924, while the gross ratio is 0.149 indicating that for every ₦0.149 expended there is a return of ₦1.00.

Considering the foregoing issues and how important and profitable rice production is in Song (LGA) and Nigeria, the analysis of its cost and return will not be out of place. This will go a long way in encouraging farmers to expand their rice production to better their standard of living and meet the demand of the people.

Methodology

Study area

The study was carried out in Song Local Government Area (LGA) of Adamawa state, Nigeria. Song is one of the 21 LGAs blessed with a land size of 4,362.48 km² and population of 195,188 ranking 3rd and 4th respectively in the state (NPC, 2006). Song LGA is located in the central agricultural zone of the state, with a moderate mean rain fall of about 900mm and ideal for the production of rice (Sajo and Kadams, 1999).

Nature and source of data

The population for the study was rice farmers in Song LGA. Primary data for 2016/17 rice cultivation were collected through personal interview using pre-tested schedule from the respondents. Six out of eleven wards of Song LGA were purposively selected based on their level of rice production. Twelve villages two from each of the selected wards were purposively



selected for the study. Thereafter, 130 rice farmers were randomly selected and used for the study.

Table 1: Distribution of Sampled Farmers' in Song Local Government Area

Name of Wards	Villages	No. of respondents
1. Song Woje	1. Gidago	12
	2. Galaba	9
2. Kilange Funa	1. Wuro De	10
	2. Pakin	12
3. Kilange Hirna	1. Wuro Daudu	13
	2. Geling	9
4. Gudu Mboi	1. Gudu	11
	2. Hada	10
5. Dirma	1. Dirma	12
	2. Semba	9
6. Suktu	1. Jimbo	10
	2. kupta	13
Total	06	12
		130

Analytical Tool

To analysed the cost and return of rice production in Song (LGA), the cost concept developed by the Commission on Agricultural Cost and Price (CACP) was adopted. The different costs were calculated as:

Cost A1 = All actual expenses in cash and kind incurred in production by owner.

These include: cost of seed, cost incurred on manures and fertilizers, plant protection chemicals, land revenue, wages of hired human labour, hired labour charges of implements and machinery, charges for bullock labour, depreciation on fixed assets, excluding family labour.

Cost A2 = Cost A1 + rent paid for leased-in land.

Cost A2+ FL = Cost A2 + imputed value of family labour.

Cost B1 = Cost A1 + interest on value of owned fixed capital assets (excluding land).

Cost B2 = Cost B1 + rental value of owned land (net of land revenue) and rent paid for leased-in land.



Cost C1 = Cost B1 + imputed value of family labour.

Cost C2 = Cost B2 + imputed value of family labour.

Cost C3 = Cost C2 + 10 per cent of cost C2 on account of managerial functions performed by the farmers (Narayanamoorthy, 2013).

Result and Discussions

Cost of cultivation of Rice in Song local government area of Adamawa state, Nigeria

Table 2 revealed the per hectare average variable costs for rice cultivation of ₦47,853.05 accounting for 71.08 per cent of the average total cost of cultivation (₦67,323.85). There were wide variations in variable costs in the study area. The cost of hired labour, agro-chemicals and fertilizer were 11.99, 11.14 and 9.73 per cent of the total cost and constituted the major variables used in cultivation. This implies that farmers in the study area used fertilizer and agro-chemicals intensively. Girei *et al.* (2016) and Egbodion and Ahmad (2015) also reported labour, fertilizer and agro-chemicals as the major variables cost in rice production. The total fixed costs was 19.83 per cent of the total cost, where rental value of own land claimed a significant portion of 11.88 per cent in the study area. Similarly, rental value of own land occupied 42.14% of the total cost of producing rice in Ihialia local government area of Anambra state, Nigeria (Egbodion and Ahmad, 2015).

Cost and Return of Rice Production in Song (LGA) of Adamawa state, Nigeria

Table 3 shows the per hectare yield of 17 bags for the main product and 10 kg for by-product of rice in the study area. The gross income and margin observed was ₦112,500 and ₦64,646.95 respectively. The finding corroborates the reports earlier made by previous researchers (Girei *et al.* 2016; Nwalieji 2016; Odoemenem and Inakwu 2011) that rice production is a lucrative business. It is apparent from table 3 that the net income over cost A1 which is the direct cost involved in rain-fed maize production was ₦70,047.11 per hectare; while over cost C3 which is the total cost of cultivation was found to be ₦45,176.15 per hectare. This is contrary with what Narayanamoorthy (2013) reported that farmers were unable to recover the cost of cultivation from the value of output of paddy in five out of seven time points in Andhra Pradesh, India. The input-output ratio analysis was worked out on the basis of cost A1 to C3. Cost A1 has the highest ratio of 1:2.65 while cost C3 has the lowest ratio of 1:1.67 respectively. Similarly the cost of production in naira per hectare was also worked out with cost A1 ₦2,497.229 as the lowest cost while cost C3 ₦3,960.226 as the highest cost.



Table 2: Cost of Cultivation of Rice in Song

Particulars		
Operational Cost	Amount (₦)	% to total cost (C3)
Seed	4,150.15	6.16
Family Labour	6,200.25	9.21
Hired Labour	8,070.59	11.99
Machine Labour	4,100.12	6.09
Bullock	1500.00	2.23
Fertilizer	6,550.33	9.73
Chemicals	7,500.12	11.14
Farm yard Manure	250.31	0.37
Storage	3711.68	5.51
Transportation	3500.55	5.20
Repair of Farm House	589.32	0.88
Total working capital	46,123.42	68.51
Interest on working Capital	1729.63	2.57
Sub Total	47,853.05	71.08
Fixed Cost		
Depreciation	800.09	1.19
Rent paid for leased land	4,000.00	5.94
Rent value for own Land	8,000.00	11.88
Interest on fixed capital excluding Land	550.36	0.82
Sub total	13,350.45	19.83
10% Managerial Cost	6120.35	9.09
Cost Of Cultivation		
Cost A1	42452.89	63.06
Cost A2	46,452.89	68.99
Cost A2+ FL	52,653.14	78.21
Cost B1	43,003.25	63.88
Cost B2	55,003.25	81.70
Cost C1	49,203.50	73.08
Cost C2	61,203.50	90.91
Cost C3	67,323.85	100



Table 3: Cost and Return in Rice Production

Particulars	Total cost
Crop Yield	
Grain/Main Product (Bags/Ha)	17
By Product (kg/Ha)	10
Market Price (₹)	
Grain/Main Product	6,500
By Product	200
Gross Income (₹/Ha)	112,500
Gross Margin (₹/Ha)	64,646.95
Net Income Over	
Cost A1	70,047.11
Cost A2	66,047.11
Cost A2+ FL	59,846.86
Cost B1	69,496.75
Cost B2	57,496.75
Cost C1	63,296.5
Cost C2	51,296.5
Cost C3	45,176.15
Input-Output Ratio Over	
Cost A1	1 :2.65
Cost A2	1 :2.42
Cost A2+ FL	1 :2.14
Cost B1	1 :2.62
Cost B2	1 :2.05
Cost C1	1 :2.29
Cost C2	1 :1.84
Cost C3	1 :1.67
Cost of Production (₹/Ha)	
Cost A1	2,497.229
Cost A2	2,732.523
Cost A2+ FL	3,097.244
Cost B1	2,529.603
Cost B2	3,235.485
Cost C1	2,894.324
Cost C2	3,600.206
Cost C3	3,960.226



Table 4: Share of Different Costs in Rice Production

S.No.	Cost components	Percentage share of the total cost
1	Variable cost	56.92
2	Fixed cost	28.92
3	Others	14.16
	Total	100.00

The share of different cost in rice production in Song LGA of Adamawa state

Figure four shows the pattern of expenditure where variable costs had the highest cost followed by fixed costs then other costs for the percentage share of total cost (C3) incurred by rice farmers indicating that they spend more on variable cost than fixed cost in the study area.

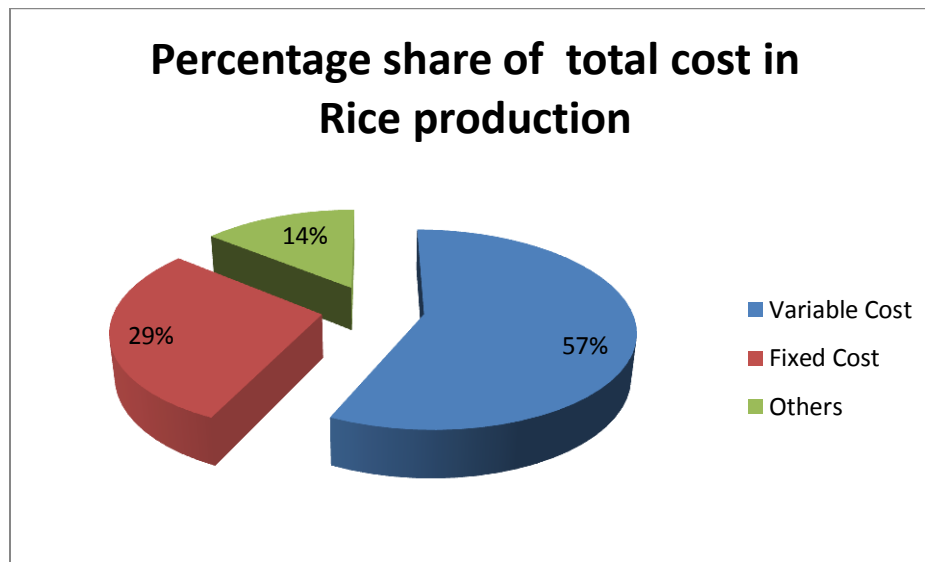


Figure 1: Percentage share of total cost (C3) in rice production



Conclusion and Recommendations

This study gave insight into the activities of cost and return in rice production. Evidence from the study had shown that rice production is a profitable venture in the study area. Farmers made gross income and margin of ₦112,500 and ₦64,646.95 respectively; while the cost of production in naira per hectare was also worked out with cots A1 ₦ 2,497.229 as the lowest cost while cost C3 ₦3,960.226 as the highest cost. The study suggests that government should provide modern farm machineries to ease the cost of farm labour and introduce district wise distribution of fertilizers and agro-chemicals to rice farmers in the study area.

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