

Assessment of Farm Outputs and Rural Income Generation of School-to-Land Agricultural Programme (STLAP) in Rivers State, Nigeria.

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ABSTRACT

Earnings and farm outputs have remained the basis for assessing agricultural performance all over the world. Rivers State School-to-Land Agricultural Programme was initiated to improve the lives of rural dwellers. This study comparatively assessed the income and farm outputs of participating and non-participating farmers to School-to-Land Programme. A total of 84 samples were used for the analysis. A multi-stage proportionate stratified random sampling technique was adopted in selecting 73 participating farmers while cluster sampling technique was adopted in selecting 38 non-participating farmers. The major method used for data collection was the use of questionnaire and focus group discussion which included direct field observations. Descriptive statistics such as frequency count, percentages and mean were used for demographic characteristics while t-statistics tested at 0.05 per cent level of significance was used to establish that participating farmer's performed better than non-participating farmers. It was recommended that government should supply inputs to farmers, involve farmers in agricultural policy decisions and provide financial facilities to cooperatives to enable members easily access soft revolving loans.

Key words: Rural Income, farm outputs, Agricultural Programme, Assessment

1. Introduction

Agriculture is a major sector of the economy that provides employment for about 90 percent of the population. The sector contributed 41.84 percent of Nigeria's GDP in 2009 and employed about 70 percent of the work force, (The Nigeria's Business Trade and Investment Guide, 2010/2011). Most of the 20 million hectares covered by forest and woodland are believed to have agricultural potential (Olomola, 2007). Agriculture has been embraced as the pivot for rural development. In the developing countries, it promotes the economy by releasing labour for industries, increases availability of food and expands domestic market for industrial goods. Apart from supplying of food, it is an essential condition for economic growth and development. This understanding constitutes the basis for various efforts made by both federal and state governments as well as private sector in the planning of agricultural programmes to ensure sustainability and growth in the sector. Apart from various roles played by agriculture in sustaining the economy, it is a veritable tool for combating poverty (Cookey and Ohale, 2003).

The dominant role of agriculture stems from among other impacts, increased farm outputs and rural income generation which ameliorates the effects of hunger, starvation, food scarcity, increased food prices and social problems of unemployment. Rural dwellers are no doubt the supposed first stakeholder beneficiaries of government agricultural projects. On the other hand, rural development relates not only to increase in the level of farm productivity but improvement in rural income generation and sustained wellbeing of rural dwellers. Danso et al, 2002 argued that rural development priority should not be based on the amount of crops that could be harvested. They however, maintained that attainment of specific agricultural goals encompasses provision of adequate food, fibre, and industrial raw materials.

Rivers State government initiated School-to-Land Agricultural Programme (STLAP) in 1985 as a follow-up to federal government policy on agriculture with the overall aim of ameliorating the sufferings of the rural poor through the provision of agricultural produce, employment creation among others. This programme which was established twenty seven (27) years ago has witnessed sharp decline in its activities. The programme initially had 12 sites, now has two (2) functional sites. It is pathetic that with the enormous potential resources that can be

generated in terms of farm outputs income, the programme has been allowed the go almost moribund. It is therefore apparent that measures should be put in place to halt such hug resources from being lost. Hence, this study was undertaken to examine farm output, income, personal characteristics and challenges to participating farmers. The main objective of this study is to examine the personal characteristics farmers, farm outputs and rural income generation by government school-to-land agricultural project in rivers state.

The specific objectives of the study are:

- i. To examine the extent of personal characteristics of farmers to government school-to-land agricultural project in rivers state.
- ii. To identify the contributions of agricultural projects to increase in rural farm outputs in Rivers State.
- iii. To ascertain the impact of government agricultural projects on increase in rural income generation in Rivers State.

Research Questions

The following questions are addressed by the study;

- i. To what extent have personal characteristics existed among farmers to government School-to-Land Agricultural Programme in Rivers State?
- ii. To what extent have government School-to-Land Agricultural Programme contributed to increase in rural farm outputs in Rivers State?
- iii. To what extent have government school-to-land agricultural programme contributed increase in farm income generation in Rivers State?

Hypotheses of the Study

The following hypotheses were tested:

Ho₁: There is no significant difference in farm outputs between participating farmers (PFM) and non-participating farmers (NPF) of government School-to-Land Agricultural Project in Rivers State.

Ho₂: There is no significant difference in farm income generation between participating farmers (PFM) and non-participating farmers (NPF) of government School-to-Land Agricultural Project in Rivers State.

2. Theoretical Framework and Literature Review

This study is predicated on the High Input Pay-off Model formulated by Schutz, (1964). Apart from assigning a strategic role to new high yielding input variety and educated labour, it also explains why traditional agriculture is characterised by low productivity and low income despite its highly competitive structure. According to Schutz, “farmers in traditional agriculture are seen as rational and positive in response to price incentives”. In addition, they are efficient resource allocators under the constraint imposed by static technology and existing factor endowments. In spite of all the available incentives, farmers in traditional agriculture remain poor because they have exhausted all of the profitable opportunities to invest in the factors at their disposal.

To be worthwhile, government agricultural programmes/projects must include a percentage of high yielding and profitable new inputs on which farmers can operate considering the fact that operation of diminishing returns in a situation of static technology ensures that hard work and drift do not bring high rates of return. Given the positive price response exhibited by farmers, Schutz argued that agricultural modernisation strategy must also emphasize on price policy which lowers input prices and raises those of output in an effort to obtain favourable price ratio.

It is essential to comprehend the objectives of government agricultural projects which include farm output and income generation among others factors considered as appropriate in assessing the potentials of agriculture. Such assessment measures the welfare of agricultural households. Government policies on agriculture are undergoing fundamental changes. Insight into the driving force behind development is not only necessary but relevant from the public point of view. The key factor is the supply of variety of inputs and training of rural farmers on the new approaches to farming as to improve their productivity.

Agricultural output has historically constituted one of Africa's major economic resources in terms of the livelihoods of the rural population, but has remained relegated to the background in terms of its contribution to trade and export. This is because agricultural productivity has largely resisted transfer from the traditional sector to modern production method, especially in West Africa (Atinmo and Akinyele, 1983). Food crop production is also an instrument to socio-economic change to sustain food supply, improve income and quality of life. In Nigeria, livestock provide about 36.5 per cent of total protein intake (NISER/CBN, 1991). Agriculture increased China's GDP by 10 per cent against 3 per cent for Africa between 1980 and 2008, and increased Bangladesh's GDP to 21.77 per cent (Mondel, 2008; Shengan et al, 2010). Historically, agricultural income is a more stable indicator of welfare analysis of rural households. It has a transitory character through the process of earning and consumption since after harvest, the households may receive large income from sales of farm produce, but smaller or no income during rest of the year thereby increasing the level of poverty (Benson et al, 2004). Invariably, expenditure on agriculture has a relative impact on output and farm income. Akpokodjie and Nwosu (1993) in their study stressed that government allocation to agriculture is relatively low and that actual expenditure falls short of budgeting expenditure and the rate of under spending is usually higher for agriculture than for other economic sectors. Omanukwue (2005) reported that a large proportion of the funds allocated to agriculture do not go directly to farmers.

The result of the unstable expenditure in the agricultural sector by the government over the years was the dismal performance of the sector. Every expenditure in certainly do not yield immediate result. Impact may be quite different in the long-term relative to the short-term. For example, a short-run impact of improving rural roads may be higher prices to producers, as transport costs decline, production zones become more accessible to traders, and competition for available commodity surpluses bids up prices. In the medium term, producers are likely to respond to more attractive prices by producing larger surpluses, which expand supply and dampen price increases (assuming demand conditions do not change significantly).

The performance of agricultural output could be measured by its contribution to Gross Domestic Products (GDP), until the Nigerian civil war of 1967-70, agriculture dominated Nigerian's economy contributing some 53 percent to GDP in 1965. By 1984 it percentage share had almost halved, Iganiga and Unemhilin (2011). This supported the works of 1949; Pudasaini 1983; Aheam et al. 1998; Weir, 1999 : Querioz and Gaultam 1992; Gopinath and Roe 1997; Yee et al. 2000 which explained identified several factors such as lack of credit facilities, improved inputs modern agricultural technologies, infrastructure and many more as constraints growth in the agricultural sector. This explains the reason for the large existence of subsistence small holder farmers in Nigeria.

Park et al, (1998, p. 7) posits that poverty alleviation Programmes in Less Developed Countries (LDCs) link their effectiveness to government agricultural policies and the income of rural farmers. A cross-country study of African countries by Terlin, (2003) found that monthly income generated in over 18 countries adopting modernized agricultural practices was 40 per cent more than those practicing traditional methods of farming. Therefore, improvement in income was an encouragement to further adoption of government introduced modern agricultural methods of farming. Ezeh and Nwachukwu, (2007) examined " The Impact of Selected Rural Development Programmes on Poverty Alleviation in Ikwuano Local Government Area, Abia State, Nigeria", revealed that the participating farmers performed better in terms of income and output compared to their counterparts.

There is a relationship between farm output and farm income. The more outputs produced, the higher the income generated by the farmer. In the same vein, higher income depicts higher profit which is expected to be ploughed back into agriculture by the farmer, by way of purchase of additional inputs for the next planting season. Overtime, subsistence farming transforms to commercial agriculture and employment generation sustained productivity is noticed. On the other hand, better yield results to low price of farm produce in absence of monopolistic behavior. This explains the importance of agricultural sector.

3. Brief History of School-to-Land Programme

School-to-Land Agricultural Programme (STLAP) was established by Edict No. 4 of 1985 by the Rivers State Government and formally launched the same year. It was one of the measures taken by the Rivers State Government to help check the rising trend of unemployment amongst the youths. It is an Agricultural Training Institute charged among others with the responsibility of intensive on-the-job-training of:

- (i) Young secondary school leavers of Rivers origin in modern agricultural practices.
- (ii) Encourage the young school leavers to take to agriculture as a viable profession.
- (iii) Train the young farmers in processing of grains.
- (iv) Production of food crops and livestock for local consumption.

The goals are:

- (i) To train a new breed of small-scale farmers and thus create opportunities for, and encourage self-employment of young secondary school leavers in agriculture, particularly in the areas of crops, fisheries and livestock production.
- (ii) To operate and promote modern agricultural practices thus contribute to increased production of food and fibre
- (iii) To provide essential inputs and support services as a loan package to eligible young farmers after their training.

The project had its sites in Bunu-Tai, Iriebe, Kpaa, Egbeke/Nwuba, Bori New town, Kpaa, Agbate, OkordiaSagbama, Ogbia and Buguma (Tamuno, 2009). Between 1994 and 1995 the interest of most participating farmers began to dwindle mostly as a result of government attitude towards provision of inputs to farm inputs to farmers, lack of provision of soft loans to participating farmers. It was obvious that the farmers began to experience low crop yield. From 1996 most of the farms lands became fallow as farmers abandoned their portions in search of white-collar jobs. The revolution finally reduced the operational farms to three (Wiiyaakara, Kpaa with Rumuodomaya head office as pilot farm). (ADP, 2009). However, in 2008, Rivers State Sustainable Development Agency (RSSDA) acquired Egbeke/Nwuba and Bunu Tai School-to-Land farms while School-to-Land's head office is relocated from No. 35 Port Harcourt Aba road to ADP farm at Rumuodomaya in Obio/Akpor Local Government Area.

4. Methodology

This study was carried out in Rivers State with the state capital at Port Harcourt. It has a total land mass of 11,077 Sqkm and is located on latitudes 40 32' and 50 53' North and longitudes 70 25' and 80 25' east of the equator. It is bounded on the South by the Atlantic Ocean, to the North by Imo and Abia States, to the East by Akwa Ibom State and to the West by Bayelsa and Delta and states. The inland part of Rivers state consists of tropical rainforest; towards the coast the typical Niger Delta environment features many mangrove swamps. Temperature range is between 23-31°C and vegetations found in the State include the saline water swamp, Mangrove swamp and the rain forest. Major seasons are the dry (November-February) and wet seasons (October – March). The climatic and soil condition of the study area favour the extensive production of various food crops such as yam, cassava, maize, vegetables plantains and cocoyam. (RSADP, 2009). Rivers state was part of the Oil Rivers Protectorate from 1885 till 1893, when it became part of the Niger Coast Protectorate. In 1900 the region was merged with the chartered territories of the Royal Niger Company to form the colony of Southern Nigeria. The state was formed in 1967 with the split of the Eastern Region of Nigeria.

Sources of Data:

A well structured questionnaire and focused group discussion were used to gather information from the selected farmers in School-to-Land Project (Primary data). The secondary data for the study was restricted to the official documents of the State ministry of agriculture, text books, journals, proceedings, and internet.

Pre-testing for Reliability and Validity:

The draft questionnaire to be administered to participating farmers was reviewed by the agricultural extension experts (face validity) to ascertain the content validity. The instrument was also subjected to pre-test with forty respondents (participating farmers). Consequently, analysis of internal consistency was carried out using split-half method and a reliability coefficient of 0.737 was obtained.

Data Analysis Procedure:

This study is survey and comparative design. This study was conducted in Rivers State. School-to-Land Agricultural Project is functional in Wiiyaakara and Kpaa communities all in Khana Local Government Area. The participating farmers formed Farmers Corporative Association. In order to conduct this analysis, samples were selected among the project beneficiaries who are also participating in the project and non-beneficiaries farmers residing in the communities where the project is sited. As a comparative design, this was appropriate as the respondents were considered to be in a better position to give adequate information. Multi-stage proportionate stratified random sampling technique was adopted in selecting 73 participating farmers (PFM) while Cluster sampling technique was adopted in selecting 38 non-participating farmers (NPF). All the groups captured the required socio-economic characteristics such as; male and female with their family sizes including age and educational Levels.

Data Analysis

Statistical Package for Social Science (SPSS) version 17.0.1 computer software analysis was used for the analysis. This was found better having been used by scholars in related studies (Ezeh and Nwachukwu, 2007; Bature, et al 2013). Descriptive statistics such as frequency count, percentages, mean were used for demographic characteristics and t-statistics tested at 0.05 per cent level of significance was used to test the hypothesis.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1 - 1} + \frac{S_2^2}{n_2 - 1}}}$$

where;

= mean of the 1st group (Participating Farmers)

= mean of the 2nd group (Non-Participating Farmers)

S₁ = standard deviation of the 1st group (Participating Farmers)

S₂ = standard deviation of the 2nd group (Non-Participating Farmers)

n₁ = sample size of the 1st group (Participating Farmers)

n₂ = sample size of the 2nd group (Non-Participating Farmers)

5. RESULTS AND DISCUSSION

Socio-economic characteristic of the respondents

The findings on personal characteristics of respondents are shown in table 1.

Age – for participating farmers (PFM) about 6.6% were within 20-29 years of age, 53.3 per cent were 30-39 years, 26.6 per cent were within 40-49 while those within 50 years and above were 13.3 per cent. For non-participating farmers (NPF), about 12.5% of the respondents fell within 20-29 years, 33.3 per cent were within 30-39 years, and 37.5 per cent were 40-49 while respondents within 50 years and above were 16.6 per cent. This shows that participation from both registered and non-registered farmers cut across all age groups.

Sex – participated farmers in the government School-to-Land Agricultural Programme were 68.3 per cent for males and 31.6 per cent females. For non-participating farmers (NPF), 66.6 per cent were male while 33.3 per cent were female. These findings revealed that male were more into farming occupation than female. This is contrary to what is obtainable in Rivers State where farming is a major traditional occupation of the people. The sex participation differential may be attributed to government attitude to managing the programme.

Educational level – findings showed that participating/registered farmers with primary education were 30.0 per cent while those that with secondary education were about 16.6 per cent had tertiary education and respondents with none formal education were 6.6 per cent. However, 8.3 per cent were with primary education, 41.6 per cent with secondary education and 33.3 per cent were those with tertiary education 16.6 per cent were farmers without formal education.

Family size – investigation revealed that participating farmers with family size of 0-4 persons were 28.3 per cent, those with 5-9 persons (family size) were 66.6 per cent while respondents with family size of 10 persons and above were 5.0 per cent. For non-participating farmers (NPF), those with family size 0-4 were 33.3 per cent. Respondents with 5-9 persons were 58.3 per cent while those with 10 persons and above were 8.3 per cent for non-participating farmers. In the rural context, a man's labour force is usually derived from the size of his household. It was expected that farmers whose family size fell within 10 and above would have been more of the participants in the programme as a result of large family size which is a source of labour supply especially in the rural setting where mechanised farming is not practiced due to lack of equipment.

Table 1: Distribution based on respondents demographic characteristics

<u>Participating Farmers (PFM)</u>		<u>Non-Participating Farmers (NPF)</u>		
<u>Sex</u>	<u>Frequency</u>	<u>Percentage</u>	<u>Frequency</u>	<u>Percentage</u>
Male	41		68.3	66.6
Female	19		31.6	33.3
Total	60		100	100
<u>Educational Level</u>				
Primary	18		30.0	8.3
Secondary School	28		46.6	41.6
Tertiary	10		16.6	33.3
None	4		6.6	16.6
Total	60		100	100
<u>Age (years)</u>				
20 – 29 years	4		6.6	12.5
30 – 39 years	32		53.3	33.3
40 – 49 years	16		26.6	37.5
50 and above	8		13.3	16.6
Total	60		100	100
<u>Family Size</u>				
0 – 4	17		28.3	33.3
5 – 9	40		66.6	58.3
10 and above	3		5.0	8.3
Total	60		100	100

N/B - out of 100 questionnaires administered, 84 were retrieved.

Source: Computed field data, 2012.

Answer to research question 2: To what extent have government School-to-Land Agricultural Programme contributed to increase in rural farm outputs in Rivers State?

Table 2: The result showed a mean farm output of 3.80 for participating farmers and an average mean farm output of 4.08 for non-participating farmers. A mean difference of 0.28 tonnes was also revealed in favour of non-participating farmers. On the average, non-participating farmers had better farm output (productivity) when compared to their participating counterparts. This explains government non-response to farmers needs in terms of input supplies and training hence the better farm output that was produced by non-participating farmers. Sustained food crop production enhances income generation, reduces hunger, starvation and food prices. It increases GDP growth and foreign exchange earnings through exports,

Table 2: Mean Farm Outputs by Government STLAP Agricultural Programme (n=84)

	Mean output in tonnes (\bar{X})		
	STLAP		
Farm outputs in tonnes	PFM	NPF	Mean difference
	N=60	N=24	
	3.80	4.08	0.28

PFM= Participating Farmer/Beneficiaries, NPF=Non-Participating Farmer/Non-Beneficiaries. STLAP= School-to-land Agricultural Project. (NOTE: Maximum tonne per month = 8 tonnes.)

Source: Computed from field data. 2012.

Answer to research question 3: To what extent have government School-to-Land Agricultural Programme contributed to increase in rural farm outputs in Rivers State?

Table 3: Investigation revealed that the least income was generated by participating farmers to the tune of ₦39, 016 while the highest income was generated by non-participating of government School-to-Land Programme. On the average, non-participating farmers generated more income than participating farmers when compared to their participating counterparts. Income from agriculture is a more stable indicator for welfare analysis of households since output level is directly related to stocking density and rise in farm income which subsequently reduces poverty.

Table 3: Mean Income Generation to Rural Farmers by Government STLAP Agricultural Programme (n=84)

	Mean(\bar{X}) income in naira (₦)			
	STLAP			
Monthly Income in naira (₦)	PFM	NPF	Mean difference	
		N=60	N=24	
		39,016	46,458	6,542

PFM= Participating Farmer/Beneficiaries, NPF=Non-Participating Farmer/Non-Beneficiaries. STLAP= School-to-land Agricultural Project. (NOTE: Maximum tonne per month = 8 tonnes.)

Source: Computed from field data. 2012.

Hypotheses tested

Analysis of H_{01} : there is no Significant Difference in Farm Outputs between Participating Farmers (PFM) and Non-Participating Farmers (NPF) of Government School-to-Land Agricultural Project.

The result shows that there is no significant difference in Farm Outputs between Participating Farmers (PFM) and Non-Participating Farmers (NPF) of Government School-to-Land Agricultural Project in Rivers State ($t_{82, 0.025} = -1.087, p > .05$). This means that productivity by participating farmers is not better when compared to their non-participating counterparts irrespective of incentives from the government due to inconsistency of government in providing the incentives such as soft loans, high yielding inputs, fertilizer, training etc. overall mean difference of 0.28 was in favour of non-participating farmers. It further showed that non-participating farmers to government School-to-Land agricultural programme had better income compared to their participating counterparts.

Table 4: t-test on the difference in the mean rural farm outputs (in tonnes) between the PFM and NPF of Government School-to-Land Agricultural Project.

Project	Farmer	N	\bar{X}	SD	df	t-cal.	t-crit.	Decision at $p > .05$
STLAP	PFM	60	3.80	.97	82	-1.087	1.960	p=0.280 NS, $p > .05$
	NPF	24	4.08	1.32				

Decision rule: from our probability value, if $p < .05$ reject H_0 , else retain H_0 .
 (NOTE: S= Significant, $p < .05$ NS= Not Significant $p > .05$).

Source: Computed from field data, 2012.

H_{02} : There is no significant difference in farm income generation between participating Farmers (PFM) and non-participating farmers (NPF) of government School-to-Land Agricultural Project in Rivers State.

Table 5: result of analysis of second hypothesis show that there is no significant difference in farm income generation between participating farmers (PFM) and non-participating farmers (NPF) of government School-to-Land Agricultural Project in Rivers State ($t_{82, 0.025} = -1.570, p > .05$). The result suggests that the parity in farm income generation between the two groups (participating and non-participating farmers) is as a result of

difficulties in adopting new planting innovations, irregular supply of new inputs to the participating farmers. It further suggests effect of continues cultivation on a particular land due to over reliance on fertilizer application hence low productivity as opposed to shifting cultivation. The soil becomes exhausted. The soil needs to be allowed to replenish through the decay of forest leaves and woods.

Table 5: t-test on the difference in the mean rural income in naira (₦) between the PFM and NPF of Government School-to-Land Agricultural Project.

Project	Farmer	N	\bar{X}	SD	df	t-cal.	t-crit.	Decision at $p>.05$
STLAP	PFM	60	39,016.67	19601.53	82	-1.570	1.960	p=0.120 NS, $p>.05$
	NPF	24	46,458.33	19668.95				

Decision rule: if $p<.05$ reject, else retain H_0 , NS= Not Significant $p>.05$

Source: Computed from field data, 2012.

6. Conclusion and Recommendations

The study revealed that non-participating farmers generated more income and had better farm output than Participating farmers. Participating farmers are engaged in the activities of government school-to-land agricultural programme to make a living. These farmers face a lot of challenges leading to inability of the programme to meet up its obligations. This shows that participation from both registered and non-registered farmers cut across all age groups. Result showed that participating farmers cut across all age groups. Male were more into farming occupation than the female. Participants with secondary education were more into the programme. Respondents with 5-9 person family size were more in the programme with 66.6 per cent. Non-Participating farmers had better farm outputs and generated more income than participating farmers. Such disparity was attributed to lack of awareness about the programme, late supply of farm inputs and non-proper training by to farmers by extension agents. Therefore, it is recommended that:

- i. Government should take continuously educate to farmers on the techniques of planting new improved high yielding crops. This will help farmers to improve their planting knowledge.
- ii. Soft loans should be given to the farmers at low interest rate to encourage expansion of their farms.
- iii. Farmers should be included in the procurement and supply of fertilizers. The reason is that farmers are in a better position to know when the planting season is approaching. It will go a long way in assisting the farmers than supplying fertilizer to farmers when crops are about to be harvested.

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