

ECONOMIC ANALYSIS OF COCOA SEEDLINGS PRODUCTION PROGRAMME IN OYO STATE, NIGERIA

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ABSTRACT

This study analyses the economics of cocoa seedling production in Oyo state. Adequate seedling supply is essential for enhancing cocoa production in Nigeria. The study examines the economic viability and social benefits of the production of cocoa seedlings undertaken by the Oyo state government with a view to attract private investors to complement government efforts. Primary data were collected from tree crops development unit, Oyo state and private nursery operators in the state. Data were analyzed with descriptive statistics, Benefit Cost Ratio (BCR) and Rate of Return Ratio (RRR). Findings show that cost of seed and seedling were N1.33 and N200:00 respectively while BCR and RRR were 2.75 and 1.75 respectively. The study identifies increased yield, cocoa tree development, economic utilization of seeds, intensive care of seedlings and selection of healthy and vigorous seedlings for planting as the social benefits of the business. Findings also showed that pests, low patronage, high cost of agro-chemicals and poor management are the constraints in cocoa seedlings production venture. The study therefore recommends provision of extension services and credit facilities to motivate private investors into the production of cocoa seedlings in the country.

Key words: cocoa, economic, investment, production, seedling.

INTRODUCTION

1.1 Background to the Study

Cocoa is a major cash crop in Nigeria with a life span of three to fifty years (Komolafe et al, 1981). Cocoa used to be the highest foreign exchange earner and bedrock of the Nigerian economy before the oil boom of the 70s. Since then, the oil sector has

continued to dominate the nation's economy while the role of cocoa has declined. Despite the leading role of oil in the nation's economy, cocoa remains the second highest source of foreign exchange and also the highest contributor to the gross domestic product (GDP) in Nigeria (UNECA, 2013). According to Oguntade

(2009), cocoa is currently the most important export crop in Nigeria in terms of monetary export value.

A major problem in the production of cocoa in Nigeria is the domination of majority of cocoa plantation in the country with old, pest susceptible and poorly productive trees (CRIN, 2003). In order to increase cocoa production in Nigeria, there is need to rehabilitate the old plantations and establish new farms with improved and highly productive seedlings. This is necessary for enhancing the economy of the farmers and realization of the economic transformation agenda in the country.

The various Research and Development (R&D) efforts on cocoa in Nigeria led to the production of improved seeds. The improved seeds are nurtured to seedlings mostly by the government agencies in the country before planting in the permanent sites to ensure economy of seeds and intensive care among other benefits.

The Ministry of Agriculture and Rural Development (MA&RD), Oyo State, Nigeria has been producing cocoa seedlings since 1971 to boost cocoa production in the state. The Ministry is saddled with the responsibilities of establishment of seed gardens; multiplication and distribution of improved and highly productive cocoa seedlings at subsidized rate and provision of technical advice to farmers on various stages of cocoa production. This study analyses the economic viability and social benefits of the production of cocoa seedlings in Oyo State.

1.2 Research problem

Cocoa is a major export commodity in Nigeria with significant contribution to the nation's GDP but adequate attention has not been given to its production. Cocoa- a versatile, renewable and highest source of foreign exchange earner has been relegated to the second place due to oil discovery in the 70s while Nigeria is still lagging behind other major producing countries.

Cocoa production in Nigeria is hindered by tree-ageing, lack of credit facilities to the farmers, extinction of wild trees for breeding purposes, pest and disease infestation and high cost of chemicals. Studies have confirmed that cocoa plantations in Nigeria are dominated by old trees with declining productivity (Fasina *et al*, 2001). The research and development (R&D) efforts of the Cocoa Research Institute of Nigeria (CRIN) which led to the production of improved seeds is yet to enhanced cocoa production in the country.

An improved and sustainable production of cocoa is guaranteed by adequate and timely supply of seedlings to the farmers. Empirical studies (Yahaya *et al*, 2011 and Alamu, 2013) have however shown that there is inadequate supply of seedling for the production of cocoa in Nigeria, leading to decline in the production of cocoa in the country.

The production of cocoa seedlings are undertaking mostly by government agencies while very few private investors are interested in the business. The weak role of the private investors in the production of cocoa seedlings may be an

indicator of poor economic efficiency of the business.

1.3 Research Questions

This study addresses the following research questions:

- How profitable is the cocoa seedlings production programme of Oyo state government?
- What are the social benefits of the production of cocoa seedlings in the study area?
- What are the challenges in cocoa seedling production in the state?
- How can cocoa seedling production be enhanced in the state?

1.4 Research Objectives

The broad objective of the study is to examine the economic and social benefits of the cocoa seedling production programme in Oyo State, Nigeria. The specific objectives of the study are to:

- Determine the economic viability of the cocoa seedling production by Oyo State government;
- Examine the social benefits of the cocoa seedling production programme; and
- Proffer measures for enhancing cocoa seedlings production in the state.

1.5 Rationale for the Study

The importance of cocoa in the global economic development led to various research and development (R&D) efforts on its production. For example, Ndubuaku and Asogwa (2006) carried out a study on strategies for the control of pests and diseases for sustainable cocoa production

in Nigeria while Nkang et al (2009) investigated investment in cocoa production in Nigeria. Adeoti and Olubamiwa (2008) also look at the innovation system in the Nigerian cocoa industry. None of these studies focus on the economic analysis of cocoa seedling production, hence this study becomes important. It is essential to examine the economics of cocoa seedlings production in order to proffer necessary policy guides that will enhance it.

The profitability of cocoa seedlings production is expected to enhance the supply of cocoa seedlings to the farmers. It is obvious that adequate seedling supply to the farmers will enhance rehabilitation and expansion of cocoa plantations in the country and contribute positively to the realization of cocoa re-birth objective in Nigeria.

More so, this study aims at encouraging government institutions to intensify efforts in the production of cocoa seedlings. Findings of the study also encourage prospective investors, most especially, the unemployed youths into the production of cocoa seedlings to ensure adequate availability of seedlings for planting.

CONCEPTUAL FRAMEWORK

The conceptual framework of this paper hinges on the various agricultural development programmes of the government at both Federal and State levels for enhancing cocoa production in Nigeria. According to Titilola (1997), the oil boom of the 70s triggered fundamental changes in the Nigerian economy, most especially in agricultural sector. The

monolithic oil economy led to reduction in the competitiveness of the nation's agriculture. In order to revive agriculture, various policies and programmes were put in place during the National Development Plans (NDPs) in Nigeria to revitalise the production of tree and food crops.

During 1962 and 1968 agricultural plan periods, the development of tree crops like cocoa, oil palm and rubber received government's attention. Efforts were made during this period to rehabilitate cocoa plantations through gradual replacement of old trees with improved stock through subsidy. In addition, farm settlement schemes were also set up to address lingering problems associated with land tenure, access to sources of capital and new technology. Government also provided infrastructural facilities like road and furnished houses.

Again, the 1970 and 1974 National Agricultural Policy (NAP) also favoured the production of tree crops. Both the federal and state governments were guided by the objectives of rehabilitating cocoa and oil palm plantations by replacing the old trees with high yielding and improved varieties. Increased production of tree crops was also encouraged by subsidising the prices of inputs and provision of extension services to small scale farmers. Government also embarked on expansion in the production of export crops for foreign exchange earnings; creation of rural employment opportunities and establishment of appropriate institutional and administrative apparatus to facilitate agricultural development in the country. Other component of the government agricultural policy initiatives in the 70s was

the launching of Agricultural Credit Guaranteed Scheme (ACGS) when the Nigerian Agricultural and Cooperative Bank (NACB) was established in 1973 to provide credit facilities to small scale farmers in the country.

Provision of price and tax incentives was the major policy thrust of the government during the third National Plan period (1975-1980). The agricultural promotional activities included the use of fiscal measures and tax relief to induce private companies into agricultural production, subsidising essential inputs and provision of extension services. During this period, the World Bank assisted small scale tree crop farmers to engage in massive replanting of old trees with improved seedlings.

The return of civilian administration in 1999 ushered in a good fortune for cocoa production in Nigeria due to the introduction of new policy and programme to cocoa industry in the country. The FGN established the National Cocoa Development Committee (NCDC) in 2000 at both Federal and State levels. The Committee was charged with the responsibility of reviving the nation's cocoa industry through rehabilitation and expansion of cocoa plantations. The Federal Government of Nigeria (FGN) also launched the **cocoa re-birth programme** in 2005. The policy thrust of the programme was to promote the production of cocoa to meet the needs of an expanding industrial sector and export market (FGN, 2006). The targets of the policy are to improve the farmers' income and increase cocoa production in the country while the strategies for achieving the objectives include:

- Supply of cocoa seedlings to the farmers at subsidized rate for planting new and old cocoa farms;
- Intensification of applied research by strengthening the Agricultural Research Council of Nigeria and other agricultural research institutions.
- Sensitization and training of cocoa farmers to bring out the best in varieties planted, cocoa tree management, good quality formation and soil management;
- Rehabilitation and regeneration of old moribund cocoa trees/ plantations to arrest dwindling harvests/output;
- Youth attraction into cocoa farming to ensure adequate replacement of the current ageing generation of farmers.

METHODOLOGY

The study was carried out in Oyo State, Nigeria. The State is located in South-western Nigeria with a land area of 28,454 square kilometers. It is bounded in the North by Kwara State, in the East by Osun state, in the South by Ogun state and partially in the West by Ogun State and the Republic of Benin. It has a population of 6.6 million people with a density of 200 per square kilometer comprising mostly of Yorubas and other ethnic groups in Nigeria. The State has daily average temperatures of between 25°C and 35°C almost throughout the year with agriculture as the mainstay of the economy.

Primary data were collected from cocoa nursery sites in Oyo state and from

the Officials of the State Tree Crops Development Unit (TCDU) and the private nurseries while secondary data were obtained from various published materials on cocoa production. Accidental Sampling Technique (AST) was used in selecting the cocoa farmers with private seedling nurseries for the study. A total of eighty (80) cocoa farmers were selected for the study. Data collected were analysed with descriptive statistics (percentages, mean median and mode), cost and returns as well as cost-benefit analysis.

Model Specifications

The model specifications for the paper include the Cost and Returns and Benefit-Cost Ratio (BCR) for determining the profitability and economic viability respectively of the cocoa seedling production.

Mathematical: $\pi = TR - TC$(i)

Where π = Profit

TR= Total Revenue (Total monetary value of sales of seedlings)

TC= Total Cost (Sum total of both variable and fixed cost)

$TC = TVC + TFC$(ii)

When $TR > TC$, there is profit, when $TR < TC$, there is loss and when $TR = TC$, there is break-even point in production.

Benefit-Cost Ratio (BCR) = $\frac{\text{Total Revenue}}{\text{Total Cost}}$ (iii)

4.0 RESULTS AND DISCUSSIONS

4.1 Cost of Cocoa Pods and Prices of Seedlings

The cost of obtaining cocoa pods (source of seeds) from the Cocoa Research Institute of Nigeria (CRIN) and price of seedling in the production programme of the state are shown in Table 1. The Table

shows that Tree Crops Development Unit (TCU) bought seed at the rate of N1:33 while it sold a seedling for twenty Naira (N20:00) only.

Table 1: Cost of Seed and Price of Seedlings

Cocoa Item	Unit Cost (N)
Seeds	1:33
Seedlings	20.00

Source: Field survey 2013

4.2 Cost and Returns on Cocoa Seedling Production

Table 2 shows the cost and returns analysis of cocoa seedling production by the Oyo state government. According to the Table, fixed costs were lower than the variable costs indicating the profitability of seedling production in the state. The Table also showed that return to the management was N11488.33 per full capacity nursery during a six month period.

Table 2: Analysis of Costs and Returns on Cocoa Seedlings Multiplication in Full Capacity

Items	Amount (N)	Amount (N)
Output 19,522 Seedlings		
Unit price N20/seedling		
Total revenue / full capacity nursery		390,440:00
Variable Costs		
(a) Labour	34,000:00	
(b) Polythene pots	60,000:00	
(c) Agro-chemicals	5,000:00	
(d) Seeds	26,600:00	
(e) Transportation cost of cocoa pods	5000:00	
(f) Shading materials	10,000:00	
Total Variable cost per full capacity nursery	140,600:00	
Fixed Cost (depreciation)		
(a) Watering can	50:00	
(b) Water drum	250:00	
(c) Spraying pump	350:00	
(d) Iron file	50:00	
(e) Spade	70:00	
(f) Head pan	80:00	
(g) Hoe	50:00	
(h) Wheel barrow	250:00	
(i) Wire-netting	300:00	
Total fixed cost per full capacity nursery	1, 450:00	
Total cost per full capacity nursery		<u>142, 050:00</u>
Profit per average size nursery		<u>248, 390:00</u>

Source: Field survey, 2013

4.3 The Benefit-Cost Analysis of Cocoa Seedlings Production

The economic aspect of a project focuses on the worthiness, contribution to economic development process and justification for committing scarce resources into its establishment. The economic appraisal of any project can be done with Cost-benefit analysis using the following parameters:

- (i) Seedling buyers' saving;
- (ii) Induced benefits;
- (iii) Nursery establishment cost and;
- (iv) Nursery maintenance cost

$$\text{Benefit-Cost Ratio (BCR)} = \frac{\text{Total Revenue}}{\text{Total Cost}}$$

$$\text{BCR for Cocoa seedling production} = \frac{390,440}{142,050} = 2.75$$

The Benefit-Cost Ratio (BCR) of cocoa production is greater than 1, which indicates the viability, worthiness and profitability of the business.

$$\text{Rate of Return Ratio (RRR)} = \frac{\text{Net Revenue}}{\text{Total Cost}}$$

$$\text{Net Revenue (NR)} = \text{Total Revenue (TR)} - \text{Total Cost (TC)} = \text{N}390,000 - \text{N}142,050 = \text{N}248,390$$

$$\text{RRR for Cocoa} = \frac{247,950}{142,050} = 1.75$$

This shows that government's investment in the production of cocoa seedling yields 1.75 percent returns per life cycle of 16 months production. With this scenario, a private investor stands a better chance to make a greater return due to its efficient management practices.

The cost of procuring seedlings from government and private ends as well as the benefit of procuring seedlings from government is shown in Table 3. The cost of seedlings from the private producers is higher than government because every entrepreneur is profit oriented. In addition, the objective of government's involvement in cocoa seedlings production is to provide farmers with quality seedlings at reduced prices for enhancing cocoa production in the country.

Table 3: Buyers' Saving for Buying Seedlings from the Government

Nursery Ownership	Item	Cocoa (N)
Government	Price per seedling	20:00
	Price per full capacity	400,000:00
	Price per 1ha seedlings	22,220:00
Private	Price per seedling	50:00
	Price per full nursery	1000,000:00
	Price per 1ha seedling	55,550:00
Savings	Price per seedling	30:00
	Price per full nursery	600,000:00
	Price per 1ha seedling	33,330:00

Source: Field survey, 2013

THE SOCIAL BENEFITS OF COCOA SEEDLINGS PRODUCTION VENTURE

The result of data analysis on the social benefits of cocoa seedling multiplication business is shown in Table 4. According to the Table, 95% of respondents also reported that cocoa seedling production has high economic returns while the rate of return ratio also indicated that improved cocoa seedlings business has 175 percent. This result corroborates with the finding of Adegeye (2005) who

reported that over 100 percent increase in yield from hybrid cocoa but concluded that the increase are more generally more in the vicinity of 40 to 50 percent in recent years. The result of data analysis also indicated that government involvement in the multiplication of improved cocoa seedlings has stimulated many farmers to increase their size of existing plantations through rehabilitation and establishing new ones as reported by 98 percent of the respondents.

Table 4: Social Benefits of Cocoa Seedlings Production

S/N	Types of Benefit	% of Respondents
1	Increase in Yield of Cocoa	95
2	Tree Crops Development	98
3	Economic Utilisation of Seeds	86
4	Intensive care and maintenance of seedlings	85
5	Selection of Vigorous and healthy seedlings	75

Source: Field survey, 2013

Cocoa seedling production also stimulates economic utilization of seeds. This is because fewer seeds are required for raising seedlings in the nursery than sowing directly on the field as claimed by 86 percent of the respondents. The result of data analysis showed that 1,111 cocoa seedlings are needed for plating one hectare of cocoa plantation while in-situ would require double of the number (2,222), which amounts to 100 percent increase in the cost of seeds. Eighty-five (85) percent of the respondents reported that cocoa seedling production business ensures intensive care and maintenance of seedlings. The tree crops seedlings raised in the nursery normally receive more intensive care and maintenance such as regular watering, roughing, protection

from pest attack than those established through seed planting, thus enhances quick establishment. The cocoa seedling production venture also allows for the selection of vigorous and healthy seedlings for planting on the field as reported by 75 percent of the respondents. Seedling production also allows for the selection of healthy and vigorous seedlings for planting because only vigorous and healthy seedlings can withstand unfavourable weather condition and able to resist pest attack when planted in the permanent site.

CONSTRAINTS IN SEEDLING PRODUCTION BUSINESS

Table 5 shows the results of data analysis on the major challenges in the production of cocoa seedlings as reported by the respondents. Ninety (90) percent of the respondents reported that pest is a major challenge in cocoa seedling production while 85 percent identified low patronage and poor seedling adoption by cocoa farmers as a major constraint in the

business. In addition, 78 percent of the respondents also opined that high cost of agro-chemicals is also another impediment in seedling production. This may increase the cost of production and reduce the profit. Poor management was reported by 70 percent of the respondents as crucial for ensuring production efficiency and economic performance in seedling production business.

Table 5: Challenges in the Cocoa Seedlings Production

S/N	Types of Constraints	% of Respondents
1	Pests: Cane Rats, giant rats, termites, grasshoppers, birds, nematodes, fungi etc	90
2	Low patronage and poor adoption of improved seedlings by the cocoa farmers	85
3	High cost of agrochemicals	78
4	Poor Management capability of private investors	70

Source: Field Survey, 2013

CONCLUSION

Cocoa seedling multiplication is a rewarding and worthwhile business, with a multiplier effects on cocoa production, foreign exchange earnings and income generation among other notable benefits if given the necessary supports.

RECOMMENDATIONS

There is need for proper education of would-be investors in cocoa seedling multiplication business to ensure efficient utilization of available resources. Government needs to

strengthen extension services in cocoa seedling production. Government also needs to intensify efforts on biotechnology research in the production of cocoa seeds. More importantly, private investment in cocoa seedling multiplication should be encouraged through the provision of credit facilities. This will facilitate easier access to finance from planting to marketing operations. Good pest management strategy (chemicals, cultural control and preventive) is essential in the production of cocoa seedlings.

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