Journal of Agricultural Research Advances

Research Article
Open Access

Economic analysis of forest tree seedlings production enterprise in Ibadan, Oyo State, Nigeria

[1]Falana AR, [1]Oyewo IO, [1]Ugege BH and [2]Oladipupo-Alade EO
[1]Federal College of Forestry, Ibadan, (FRIN), Nigeria
[2]Forestry Research Institute of Nigeria, Jericho Hill Ibadan, Nigeria

Corresponding author: ojerry2@gmail.com

Received on: 10/05/2020 Accepted on: 04/06/2020 Published on: 14/06/2020

ABSTRACT

Aim: The study was carried out to investigate the financial feasibility for young graduates to engage in production so as to reduce unemployment rate in Ibadan metropolis.

Materials and Methods: It was adopted survey method to generate data. Four wards were randomly selected within the metropolis, in each of the wards, five nurseries were randomly selected; in each nursery, questionnaires was administered to at least four workers. Eighty well-structured questionnaires were administered in all. Descriptive statistics were utilized to analyse the socio-economic variables, while Gross Income (GI), and Net Income (NI), were adopted for economic analysis.

Results: The result showed that seedling nurseries business was a means of self-employment opportunities which generates income with relatively low investment expenditure in the study area. Most of the nursery operators were within the ages of 18 and 35 years which composed of youths and few adults; implying that commercial nursery business in the study area was greatly improved upon, since it was concentrated mostly in the hands of the young and agile individuals. The gross margin was ₦83856.25 and benefit cost rate (BCR) of ₦1.74; implicating that for every one naira invested in Forest tree seedlings production, an additional ₦0.74 kobo was realized. Furthermore, at 5% level of significance, farm size value was positive and significant influence on profit.

Conclusion: It was concluded that inadequate funds and government policies were the major constraints to seedlings production; therefore, there is need for Government and NGOs to assist nursery operators with loans to start up or expand the existing nursery business. It is needed for adoption of this enterprise in order to reduce poverty and unemployment rate in the study area.

Keywords: Economic analysis, Employment opportunity, Production, Tree seedlings.

How to cite this article: Falana AR, Oyewo IO, Ugege BH and Oladipupo-Alade EO (2020). Economic analysis of forest tree seedlings production enterprise in Ibadan, Oyo State, Nigeria. J. Agri. Res. Adv. 02(02): 01-08.

Introduction

Nurseries have the common goal of producing plant material for improving sites. They are established to produce seedlings, grown under favourable conditions at germination and early growth stage before transplanting to the field for planting purpose. Plant nurseries can be an informal, small- scaled arrangement or a large commercial enterprise that vary in size, facilities (supplies, tools, equipment, etc.), types of seedlings produced, and operations (Larinde and Ruth, 2014). High quality seedlings are fundamental to the successful establishment of orchards and plantations, both for timber production and reforestation of degraded land/environments.

People are increasingly realizing the need for planting trees, shrubs and grasses for different purposes, especially in the urban and metropolises. Plant seedling nurseries provide employment opportunity for the urban youths. The job including skilled-labour such as green-house and nursery managers and jobs for individuals involved in the cultivation and marketing of the ornamental plants (Fakayode *et al.*, 2008). Unless an activity is specifically prohibited by law, no line of business is closed to an owner (Holden,1995).Forest tree seedlings production business is a form of self-employment opportunity that generates income with relatively low investment expenditure. A lot of unemployed youths have found employment in small scale enterprises. The entrepreneurs (in these small-scale enterprises) have in turn provided jobs for other Nigerians who serve as support, technical and administrative staff for

them. Small-scale enterprise has stimulated rural development and the achievement of a meaningful level of broad economic and rural development. Babalola (2008) observed that small-scale enterprises have significant potentials of providing reliable job opportunities for young graduates and other people in the society. Ayozie and Latinwo (2010) highlighted some of the roles of small-scale enterprise in economic development as follows: The provision of employment, marketing for goods and services which are offered for sales. A lot of youths, retired workers and out of school graduates are gainfully employed, thereby reducing the unemployment rate and its attendant's social complications such as armed robbery and white collar crimes. It helps to bring about new goods and services and supply the needs of large enterprises and (or industries), which have to rely on small-scale operators for business success. The much talked about urban migration is reduced by the introduction of small-scale enterprises in rural area. The activities of small enterprise firms have resulted in the mobilization of the resources of the environment and thereby improving on the standard of living of the population and it has provided productive self-employment to a number of educated and less educated young men and women coming out of schools, colleges, polytechnics, and universities (Ayozie and Latinwo, 2010). Entrepreneur organizes, and utilizes the various factors of production and finally sets productive machinery in action towards overall economic development; consequently, the availability of the small-scale enterprise is therefore the undisputed precondition for economic growth. The contribution of small-scale private plant nursery enterprise (which is a self-employment business) in economic development both to the individuals and to the nation's economy cannot be overemphasized (Babalola, 2008). Small-scale nursery establishments are a highly profitable business venture in Nigeria due to the short time between production and sale of most of the plants involved (Aiyeloja and Larinde, 2006). Hence, if adequately exploited, small-scale private nursery enterprises have the prospect of yielding economic returns to the operators, while also providing environmental benefits. Business operations in Ibadan revealed that small-scale business enterprise dominates. This then showed the vital role of small-scale business enterprises play on the economy of Ibadan. The contribution of small-scale private nursery enterprise is not exempted. Consequently, seedling production centres or nurseries have been receiving increasing attention and patronage as more people plant trees (Ajewole, 2001). Nursery establishments can generally be grouped into private and public depending on the mode of ownership, size, and ultimate goal of their establishment (Adebanjo *et al.,* 1996). One major distinction between the private and the public nursery is the priority on profit maximization (Mailumo *et al.,* 2006). The motive and goal of any private business enterprise is to make as much profit as possible while the public enterprise has the ultimate motive of catering for the welfare of the masses. In either case, commercial nursery establishments are where plants of various species are raised for the purpose of selling to the people. For the past decade, there has been an emerging interest in small-scale (or smallholder) forestry, including in Nigeria where small-scale enterprises have come to importance in the forestry sector. To the nurserymen, gone are the days when forestry was seen as a business with a long gestation period between the time of investment and the time of dividend. Small-scale nursery establishments are highly profitable business ventures in Nigeria due to the short time between the production and sale of most of the plants involved (Aiyeloja and Larinde, 2006). Despite the considerable support of the government and apparent available technologies on tree seedling establishment, the kick-start of small-scale forestry in Nigeria is still very low (Mailumo *et al.,* 2006). The nurseries are sited alongside major roads, streams and rivers for easy supply of water. This study is therefore conducted to assess the characteristics of small-scale private nursery enterprises in Ibadan with respect to major factors of production, services rendered by the nurserymen, and products sold, as well as factors affecting unit price of seedlings, with the purpose of identifying policy options that could further enhance development of the enterprise. The importance of having plants both inside and outside living areas is relatively on the increase and particularly during this era of climate change (Olutayo and Loto, 1990).

Consequently, commercial seedlings production centers have been gaining more attention and patronage. People have increasingly realized the need to plant trees,

shrubs and grasses around their buildings, farms and gardens. These are expected to serve the purposes of protection against environmental hazards, energy production and beautification of the environment among others (Joshi, 1999; Ajewole, 2001). Seedling production enterprises, depending on the mode of establishment, are grouped into private and public enterprises. According to Lipsey and Chystal (1999), the main goal of any private business enterprise is to maximize profit at the least production cost, while public enterprises place more emphases on the welfare of the people. Ornamental business enterprises are beneficial because of the inherent financial gains, and the ecological benefits they confer. Ornamental plants provide revenue and income to Government and the people. Ecologically, they minimize disasters like soil erosion, environmental degradation, wind effects, and watershed obstructions (Holden, 1995; Lipsey and Chystal, 1999).

Forestry graduates who have prospect in producing seedlings in nurseries as a private business have been unable to carry this out successfully because of little or no information about the profitability of seedling production business. The contribution of small scale private business enterprise such as ornamental enterprises to the development of an economy cannot be over emphasized (Hylton, 1990). Like any other business, these enterprises exist to produce and distribute goods and services needed to satisfy human wants at a profit. The private commercial forest/ornamental nurseries have operated in Oyo for long and as such, their economic and environmental impacts on the people are expected. Amidst the prevailing unemployment situation in the area and the need to improve the environmental outlook of the metropolis, there is need to harness available opportunities to address the problems on ground. This can only be achieved if basic information on available opportunities is provided.

Materials and Methods

The study was conducted in Ibadan, the capital city of Oyo State, and Nigeria. Ibadan is located on Latitude 7^0 23′ 47″ N and Longitude 3^0 55′ 0″ E. It is situated in the South Eastern part of Oyo State; about 120 km east of the border with the Republic of Benin in the forest zone, close to the boundary between the forest and the Savannah. The city ranges in elevation from 150 m in the valley area, to 275 m above sea level on the major North-South ridge which crosses the central part of the city. The city's total area is 3,080 square kilometres (1,190 sq mi). Ibadan has a tropical wet and dry climate, with a lengthy wet season which runs from March to October and relatively constant temperatures throughout the course of the year. The mean total rainfall for Ibadan is 1420.06 mm, falling in approximately 109 days with two peaks for rainfall, June and September. The temperature ranges from 21.42^0C and 26.46^0C the relative humidity is 74.55%.

The selected study areas in Ibadan were Ido Local Government Area of the Ibadan metropolis of Oyo State, Nigeria was home to Eleyele, Ijokodo and Apete, located on a Longitude of 7.50678^0N and latitude of 3.9165^0E. University of Ibadan which was in Ibadan North Local government and is located on longitude 7.4102^0N and latitude 3.9165^0E. Akinyele Local Government of Ibadan metropolis lied on longitude 7.5309^0N and latitude 3.9110^0E while FRIN and FCF lies on latitude 7^o26′N and $7^0$54′N and longitude $3^0$34′Eand $3^0$36′E above sea level.

Data Collection

Data was collected from primary and secondary sources. Primary source of data was from questionnaire and key informant interviews while secondary sources include business records, published and unpublished materials.

Sampling Procedure

The study employed the use of a well-structured questionnaire designed in line with the objectives of the study. List of registered forest tree seedlings Nurseries was collected from the department of Forestry, Ministry of Agriculture, Secretariat, Ibadan, Oyo state. In this, major nurseries were identified; they are Popoola Farm, Sethee, Wina, Forest unit, B and G, Success Nursery, Jatta nursery and Horticulture, Rarfmag Agriculture Venture, Ige Nursery. Twenty (20) questionnaires were administered in Ido, 35 in Akinyele, 15 in Ibadan North and 10 in Ibadan Northwest making a total of 80 respondents.

Data Analysis

The analysis was subjected to descriptive analysis in form of Charts and tables, and Logit regression.

Results and Discussion

The socio economic characteristics of the respondent were showed (Table 1). It was

revealed that 70% of forest tree seedling producers are males, this indicates that forest seedling production is not gender exclusive but is mostly carried out by the males folk, and this might be due to the fact that forest tree seedlings farming might be too tedious for females especially land preparation. The age range of the farmers varied, 90.6% of the respondents fall between 20-49 years of age, implying that, in the study area forest tree seedling production is practiced by energetic people in the middle ages of production. The conforms to the findings of Okunade (2005) that forest tree seedlings farmers in Surulere Local Government of Lagos were between 36 and 56 years of age. The result of the marital status showed that the majority of the respondents (77.5%) were married. These findings were in agreement with a study by Jibowo (2000) that a high percentage of populations that are married. This was because majority of the famers have a lot of responsibilities to carry out in their families which will in one way or the other affects the cost of production. Majority (97.55%) of the forest tree seedling farmers in the study area had Tertiary education certificates which showed famer's literacy. According to Swanson and Mbate (2008), education enables farmers to make informal decision as regards production and marketing of their produce.

Table 1: Socio economic characteristics of respondents

Variables	Frequency	Percentage
Sex		
Male	56	70
Female	24	30
Total	80	**100**
Age		
20 – 29 yrs	41	51.3
30 – 39	21	26.3
40 – 49	10	12.4
50 and above	8	10
Total	**80**	**100**
Marital status		
Single	17	21.3
Married	62	77.5
Divorced	1	1.2
Widow	0	0
Total	**80**	**100**
Educational Background		
No Formal Education	0	0
Primary School Holder	0	0
Secondary School Holder	2	2.5
Tertiary Education	78	97.5
Total	**80**	**100**

Source: Field Survey, 2019

It showed the initial Capital of respondents to start Tree seedling businesss (Table 2). The initial capital to start a nursery enterprise and the average price unit per seedling is presented in Table 2 above. The least (N50, 000) and maximum (N150, 000) initial capital of Nursery famers before commencement of business were 10% (8 respondents) and 70% (56 respondents) respectively. The average price unit per seedling sold in the nurseries within the study area showed that ₦200.00 above was the least price unit per seedling while #100.00 was the highest price unit, this study revealed that nurseries operation within Ibadan metropolis is really a source of income to those that engages in the operation. For land requirement, the lands used for the establishment of most of the seedling nurseries were rented at the cost of ₦5, 000 monthly, given a total of N60, 000 annually. Most of the nurseries owners used less than a plot (100 x 100 feet) for nurseries set up and the water sourced was mostly free (i.e. could be from stream, tap or well)

It showed the average costs and revenue per hectare of forest tree seedlings production (Table 3). The costs that were considered here include cost incurred from variable inputs like labour, planting materials, transportation and other costs. The result of Gross margin analysis is presented in Table 4.3. From the table, labour accounted for about 70.4% of the total production cost, while analysis of other variables shows that the percentages share of planting materials and other costs are 15.8 and 13.8%, respectively. Labour therefore took the highest percentage of Total Variable Cost (TVC). This agrees with the study conducted by Ebukiba (2010) and Okon *et al.*, (2009) that labour constitutes the highest production cost in their works. The Costs and returns analysis shows gross profit margin of 74%per ha. This when divided by a year gives a monthly income of ₦6988.02. The Benefit-Cost Ratio shows a figure of ₦1.74; implicating that for every one naira invested in Forest tree seedlings production, an additional ₦0.74 kobo will be realized.

It showed the profit function analysis of tree seedlings business (Table 4). Out of the three functional forms tried, Cobb-Douglass production function was chosen as the lead equation because it is the most fitted which satisfied the economic, statistical and econometric conditions.

Table 2: Initial Capital before Starting Nursery Business and Price Unit per Seedlings

Variables	Categories(₦)	Frequency	Percentage (%)
Initial capital before starting the business	< 50,000.00	0	0
	50, 000.00	8	10
	100,000.00	16	20
	150,000.00	56	70
	Total	**80**	**100**
Least unit price per selling	100	43	53.8
	150	27	33.8
	200	7	8.7
	> 200	3	3.8
	Total	**80**	**100**

Source: Field Survey, 2019

Table 3. Cost and returns from forest tree seedlings production per hectare

Items	Cost (₦)	(%)
Bush clearing	11,250	(9.7)
Packaging and burning	2,812.5	(2.3)
Planting material/seeds/polyethylene.	13,250	(11.5)
Planting	5,000	(4.3)
Water supply	50,000	(43.8)
Chemicals	9,000	(7.9)
Packing and loading/transportation	12,000	(10.5)
Sub-total	103,312.5	
Contingency	10,331.25	(10%)
Total cost	113,643.75	100
Returns		
Average seedlings/ha	1316.7	
Selling price	197500.00	
Benefits cost ratio	1.74	
Gross margin	83856.25	

Source: Field survey, 2019.

(GPM)=GP ÷ TR = 83856.25÷ 113,643.75× 100 = 0.74, 74%

Table 4: Profit function analysis

Parameter	Coefficient	Standard error	T-value	p-value
Intercept b_0	9.568	2241.03	1.0912	0.2212
Farm size X_1	0.107	0.3.11	9.1693	0.000**
Cost of land X_2	0.318	0.4451	-8.5317	0.000**
Labour X_3	0.324	1.8630	-1.3235	0.001**
Fertilizer X_4	0.003	0.1353	-20.8348	0.000**
Pesticide X_5	0.440	0.3651	-1.2664	0.020**
Herbicide X_6	0.455	0.5034	-1.0021	0.2641
Transportation cost X_7	0.054	0.0708	-1.8738	0.000**
$R^2$0.981				
Adjusted $R^2$0.896				

Source: Field Survey, 2019. **significant at p<0.01*significant at 0.05

Level of significance at 5%, hypothesis that the specified explanatory variables have no significant influence on profit is rejected by F-test, suggesting that there was a significant cause-effect relationship between profit and the explanatory variables. Coefficient of determination (R2) was 0.981, suggesting that the model has a high goodness of fit this indicates that 98.1% variation in profit is accounted for by variations in the selected explanatory variables. Furthermore, the result of the study showed that at 5% level of significant, farm size value has positive and significant influence on profit, suggesting that the higher the farm size the higher the profit of the respondents. On the other hand, labour cost, fertilizer, pesticide, herbicide, land cost and transportation has negative and significant influence on profit of the respondents, suggesting that as the cost of labour increases profit of the respondent's decreases. Similarly, as the cost of transportation increases, the profit of the respondents decreases. This result on seedling nurseries establishment were highly profitable business ventures in Nigeria due to the short time between production and sale of most of the plants involved (Aiyeloja and Larinde, 2006).

It showed constraints to seedlings production in the study area (Table 5). Problems encountered in the business by the various nurseries operator include: inadequate finance (92.8%), Bush burning (92.2%), Weed problem (98.9%), Farm input (88.9%),High cost of manure(75.9%) transportation (88.3%), pest and diseases (98.3%), Poor price (99.5%) and Government policies (98.9%). Although from the economic evaluation n, nursery business seemed viable as all nurseries within the study area reported inadequate finance problems as one of the major constraints followed by transportation of seedlings to customers and this poses a major setback due to lack of vehicles especially when large quantities of seedlings were demanded for. The result is in accordance with Fakayode *et al.,*(2008),who reported that the most prevalent limitation to ornamental plants nursing business is the operators inability to access adequate funds necessary to capitalize their farms.

It showed the seedlings species produced in the visited Nurseries within Ibadan metropolis (Table 6). There were four (4) species identified in the study area, belonging to three families namely Lamiaceae, Meliiaceae and Lecythidaceae. These species were indicators of marketable species in the study area. The most frequent and available seedling species encountered in the nurseries within the study area were *Gmelina arborea* (42%), *Tectona grandis* (35%), *Azadirachta indica* (14%), and *Eucalyptus camaldulensis* (9%).

Table 5: Constraints of forest tree seedlings production

Problem/constraints	not a problem (%)		minor problem (%)		major problems (%)	
Inadequate fund	13	(7.2)	10	(5.6)	57	(87.2)
Bush burning	14	(7.8)	24	(13.3)	42	(78.9)
Weed problem.	2	(1.1)	35	(49.4)	43	(79.4)
Pests and diseases	3	(1.7)	30	(16.7)	47	(81.7)
Farm inputs	20	(11.1)	13	(7.2)	47	(81.7)
High cost manure	47	(26.1)	19	(10.6)	14	(63.3)
Bad roads	21	(11.7)	7	(7.9)	52	(84.4)
Poor price	1	(0.5)	14	(7.8)	65	(91.7)
Government policies	2	(1.1)	9	(5.6)	69	(93.3)

Table 6. The Seedling Species Produced in the Nurseries within Ibadan Metropolis

S/N	**Common name**	**Botanical Name**	**Family**	**Percent**
1	Gmelina	*Gmelina arborea*	Lamiaceae	42
2	Teak	*Tectona grandis*	Lamiaceae	35
3	Neem	*Azadirachta indica*	Meliaceae	14
4	Eucalyptus	*Eucalyptus camaldulensis*	Lecythidaceae	9
Total				**100**

Source: Field Survey, 2019.

Conclusion

Plant nursery enterprise is a viable means of income in Nigeria, which one could be engaged in as a mean of employment, thereby reducing the population of graduates depending on Government for white collar jobs. Forest tree seedlings farming is a profitable venture in the study area in that for every ₦1 invested in the enterprise, a profit of ₦0.74 kobo will be realized, meaning that the farmers are operating in stage one of the production process.

Lack of fund was one of major constraints in the business. The forest tree seedling producers should form cooperative societies through which they can put in their financial resources together for members to borrow for reinvestment and to boost their production enterprise. Good road networks should be provided by the Government to ease the cost of transportation.

References

Adebanjo A, Adedoyin SF, Alabi DA (eds) (1996). HORTSON (Horticultural Society of Nigeria) conference proceedings, Ago-Iwoye, 1-4 April 1996. HORTSON, Lagos

Adebayo (2003). Seedling *production data 2002. (http:/www.fao.org).*

Aiyeloja AA and Larinde SL (2006). Investment of Employment Opportunity in Small Scale Forest Based Enterprises: Proc.31st Conf. of Forestry Association of Nigeria. Nov 2006, pp 449 453.

Ajewole OI (2001). Development potentials of urban forestry for sustainable environmental conservation of Lagos Metropolis. A Doctoral research proposal submitted to the Department of Forest Resources Management, University of Ibadan.

Ayozie DO (2006). The Role of Small Scale Industrial in National Development in Nigeria. *Association For Small Business And Entrepreneurship.* 32nd Annual Conference. Pp 120.

Ayozie DO and Latinwo HK (2010). Entrepreneurial Developments and Small-Scale Industry Contribution to Nigerian National Development. A Marketing Interface. Information Management and Business Review 1,2. pp 51-68.

Babalola FD (2008). Assessment of Small-Scale Private Nursery Enterprises in Ibadan, Oyo State, Nigeria.

Diaw K, Blay D and Adu Anning C (2002) Socio - Economic Survey of Forest Fringe Communities: Krokosua Hills Forest Reserve. A Report Submitted to the Forestry Commission of Ghana. 86p

Ebukiba Elizabeth (2010). Agriculture and Biology Journal of North America, Economic Analysis of Cassava Production (farming) in Akwa Ibom State.

Fakayode BS, Adewumi MO, Rahji MAY and Jolaiya JA (2008). Viability and Resource Use in Ornamental Plants Nursery Business in Nigeria. European Journal of Social Sciences, 6(4): 19-28.

Holden GW (1995). Parental attitudes toward Child bearing. In M.H. Bornstein (Ed) *Handbook of parenting: Vol.3. The status and social conditions of Parenting* (pp 359-392). Mahwah, Nj. Erlbaum.

Hylton (1990). "The influence of Litigation Costs on deterrence Under strict Liability and Under Negligence" *Int'l Rev. of Law and Econ.,* Vol.10, pp 161-171

Jibowo AA (2000). Essential of Rural Sociology. Gbemi Sodipo Press, Abeokuta, Nigeria. Second Impression, pp 220-236.

Joshi DR (1999). Urban Forestry, the Kathmadu Post, India. 7 Organization and Management, 2Edition, Published by the Gregg Division, New York. 7.

Larinde SL and Ruth S (2014). Assessment of Small Scale Private Plant Nursery Enterprise in Port Harcourt, Rivers State; Global Journal Bioscience and Biotechnology; Vol.3 (3); pp: 301-311.

Lipsey RG and Chystal KA (1999). th of Urban Forestry for Sustainable Environment Conservation of Lagos. M.Phil thesis Faculty of Agriculture and Forestry University of Ibadan, Nigeria.

Mailumo SS, Okonkwo MC, Afrika BM (2006). Socio-economic analysis of tree seedlings production in nurseries: evidence from municipal area council, Abuja, FCT, Nigeria. Proceeding of the 31st annual conference of Forestry Association of Nigeria (FAN), held in Makurdi, Benue state, Nigeria, 20–25 Nov, Forestry Association of Nigeria, pp 492–499.

TEE NT and LABO I (1990). Inventory and Economic Evaluation of Seedling Species in Ornamental /Forest Nursery Enterprises in Makurdi Metropolis. Journal of Research in Forestry, Wildlife and Environmental. 2 (2): 192-200.

Okon EO, Olaniyi OA and Ogunleye KY (2009). Adoption of improve Cassava technologies among farmers in Surulere local government area of Oyo State. Proceeding of the 39th annual conference of Agricultural Society of Nigeria University of Benin, October, 9-13th, pp;15-18.

Okunade (2005). Adoption of improved Cassava Technology among Farmers in Surulere Local Government Area of Oyo State. *Processing of the 39th annual Conference of Agricultural Society of Nigeria University of benin, 9-13th , pp;15-18*.

Swanson and Mbate (2008). Determinant of profitability and willingness to pay for metropolitan waste, use in urban agriculture of the federal territory Abuja Nigeria. J. trop. Agric. food eniron, extension. 7(1) 41-46.

****