# Viability and Resource Use in Ornamental Plants Nursery Business in Nigeria

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**Abstract**

This study examined the ornamental plant nursery business in Nigeria, using Ilorin metropolis, Kwara State as a case study. The study specifically identified the factors affecting receipts from ornamental plant nursery operations and assessed the costs and returns structure for ornamental plant nursery business in Nigeria. For the study ornamental nursery operators/owners households were surveyed across the study area and interviewed via the use of the questionnaire. The gross margin, retuns to labour and management RLM and the regression analysis were the tools used in analysing the study data gathered. The study results showed that ornamental plant nursery operators are aging. Two variables, manure and labour were revealed to significantly determine receipts from ornamental plants nursery operations in the study area while the returns to labour and management RLM in the business is ₦152,618.6 per hectare of nursery garden. Inadequate funding was indicated as a major constraint to ornamental plant nursery production. The study therefore recommends the provision of adequate funds especially credit to farmers so as to boost production of ornamental plant nursery production in the study area and the education of youths and others alike to appreciate ornamental plant nursery business considering the business' profitability

**Keywords:** gross margin, retuns to labour and management RLM, regression analysis, ornamental plants nursery, Ilorin metropolis

## Introduction

Nigeria is an agrarian society with about 70 per cent of her over 140 million populace engaged in agricultural production. The agricultural sector provides food, employment, foreign exchange as well as raw-materials for the nation's agro-allied industries among other benefits (NBS/CBN 2006).

Over the years, Nigeria like most other countries has embarked on numerous agricultural development strategies; this include, the Farm Settlement Scheme launched in 1960s, National Accelerated Food Production Programme (NAFPP)in 1972, Operation Feed the Nation (OFA) in 1976, the River Basin and Rural Development Authorities established in 1976; Green Revolution inaugurated in 1980 and more recently the National Poverty Eradication Programme (NAPEP); Other programmes include the National Policy on Integrated Rural Development, National Special Programme for Food Security (NSPFS); National Fadama Development Project (NFDP) and the National Empowerment and Development Strategy (NEEDS), NEEDS was developed under the framework of the Millennium Development Goals (MDGs) (ICARD, 2006). In spite of these and other laudable initiatives, the agricultural sector in Nigeria has been unable to make substantial contribution to Nigeria's Gross Domestic Product.

In this light however, the production and use of ornamental plants or floriculture has significant potentials for increasing food production and incomes in Nigeria. Like other agricultural crops, the production of flowering or ornamentals crops play crucial in the developing economies. A number of Nigerians now establish vegetable and ornamental horticulture gardens across the country. The economic benefits and total outputs values of these enterprises are tremendous in the country. The incomes that accrue from commercial ornamental plant production through the sales of flowers and other ornamental plants could be very significant and could contribute substantially to the nation's economy.

Over the years, the production of both cut flowers and home plants has continue to increase steadily in most developed countries. The importance of ornamental plants in human health cannot be over-emphasized. Ornamental plants are not only sources of medicinal herbs which are primary form of therapy for treatment of diseases; they are also known to have therapeutic values. For instance, walking through a botanical garden can be very relaxing and healthy. People with emotional and mental problems have been helped when deliberately exposed to ornamental plants. Another benefit of ornamental horticulture is in the area of sports and recreation. Turfs are cultivated for sports field and community garden plots that are strategically located along walking paths. These paths serve as convenient places where people converse and interact. Ornamental plants also serve as environmental stimulants that trigger pleasant memories. These plants also play crucial role in cooling the atmosphere through the evapo-transpiration process on their leaves and other parts thereby preventing health hazards (Omokhua, *et al*, 2002).

The ornamental plant production industry generates employment for both the rural and urban dwellers. The industry provides wide varieties of jobs for many categories of people. These jobs include skilled labour jobs like the green-house and nursery managers and jobs for individuals involved in the cultivation and marketing of the ornamental plants. The industry has also contributed to the foreign exchange earnings of many countries. For instance in 2006, the floriculture items sold at all rated outlets in the United States of America was worth USD 20.8billion (Society of American Florist, 2006). Aquccah (2002) reported that in many societies some flowers are associated with specific events. For instance, the Rose flowers are used to mark the valentine season while the poinsettias flowers are associated with yuletide periods.

Despite all the great potentials of the ornamental plants business to improve the economy of nations, the industry in Nigeria has been hampered by many problems. It has also received very little attention in the nation's perspective plan for agricultural development (Oseni, 2004). Despite the many role of horticulture in human life, a lot of problems still militate against the industry in Nigeria, especially the ornamental plants production which is mostly under developed in Nigeria (Bankole, 2002). Ornamental plants production which is a sub-sector of agriculture in Nigeria is still in a developing state (Adeoye, *et al.* 1996; Ezedinma, *et al.* 1999). According to Fawusi (1996), though flower business is flourishing in Nigeria's metropolitan centers, their production and awareness still remain a serious problem. Factors reported for the ill state of ornamental plants production in Nigeria

include the lack of political will and knowledge of the discipline (Babatola, 2004), land tenure, inadequate credit facilities and farm inputs among others (Bankole, 2002).

The foregoing therefore raises the following research question as to;

*What is the nature of ornamental plants produced in the country?

*Are ornamental production practices profitable in the country?

*What are the factors affecting ornamental plants production in the country?

This study therefore sought to provide answers to these pertinent questions. The study examined ornamental plants production in Nigeria using Kwara State as a case study.

## Objectives of the Study

The main objective of the study is to examine the viability and resource use in ornamental plants nursery business in Kwara State, Nigeria. The specific objectives were to;

(i) identify the nature of ornamental plants nursery practices in the study area
(ii) examine farmer's socio-economic characteristics
(iii) estimate costs and returns to ornamental plants nursery business and
(iv) determine factors affecting ornamental plant nursery business in the study area.

## Justification of the Study

Little research is known to have been undertaken on the economics of ornamentals compared to that on crops like the cereals in Nigeria. Also, the production of ornamentals and its awareness as regards the profitability or otherwise of ornamental plant nursery business has remained low. A study like the current one undertaken is therefore timely as it examined the viability, profitability or otherwise and resource–use of ornamental plants nurseries in the study area. The study stands to educate ornamental plant nursery operators and other stake holders in the ornamentals production industry on the inherent problems in the industry, as well as creates awareness of the industry's benefit to the general public. This study will therefore serve as a guide to agricultural key players on ornamental plants nursery investment decisions in Nigeria. It will also provide useful information to other countries facing similar situation.

## Methodology

### Study Area and Data

The study was conducted in Kwara state Nigeria. Kwara state lies on latitude 7º 15º N and Longitudes 6º 18º E and covers a land area of about 32,500 square kilometers. The state is usually referred to as the gateway state between the northern and southern part of Nigeria. It shares common boundaries with Oyo, Ondo, Osun, Niger and Kogi States of Nigeria and has an international boarder with the republic of Benin (Kwara State Ministry of Information, 2002). According to the 2007 Nigerian National Population Census reports, the population of Kwara State stood at 2.37million people consisting mainly of the Yoruba, Nupe and Baruba ethnic groups (NPC, 2008)

The state has two main climatic seasons, the dry and wet season. The state's annual rainfall ranges between 1000 to 1500mm while the average temperature lies between 30ºc and 35ºc. Agriculture is the mainstay of the economy in Kwara State The state's vegetation which is mainly wooded Guinea savannah is well suited for the cultivation of a wide variety of staples like Yam, Cassava, Maize, Cowpea, Fruits and Vegetables. Rice and sugarcane are significant cash crops (NCRI, 1984, 1997; Kwara State Ministry of Information, 2002; Encyclopedia Britannica, 2003). Ornamental nursery productions are restricted to the urban areas of the state. (Encyclopedia Britannica,2003)

The target population for the study therefore comprised households operating ornamental plant nurseries in Ilorin metropolis, Kwara State, Nigeria The sampling technique involved a one stage random selection of forty ornamental plants nursery operators' as the study respondents. The sample design outlay is as shown in Table 1. The sampling frame for the random selection of ornamental crop production nursery operators was the ornamental plants nursery operators' listings. The listings was sourced from official reports of the Association of Ornamental Nursery Operators in Kwara state

**Table 1:** Sample Design Outlay for Study

| Location | Number of respondents |
|---|---|
| Government Reservation Area | 5 |
| Pipeline Road | 5 |
| Muritala Road | 5 |
| Offa-Garage Area | 10 |
| Gaa- Akanbi Area | 10 |
| Tanke-Fate Area | 5 |
| **Total** | **40** |

**Source:** Field Survey, 2008

## Data Analysis

The analytical tools and analysis employed for the study comprised the descriptive statistical tool, the farm budget and the OLS Regression Analysis. The Description Statistical Analyses employed were the frequency and coefficient of variation. The descriptive tools were used to examine the nature of ornamental plants produced in the study area and to asses the socio-economic characteristics of ornamental plants nursery households.

## Farm budget analysis

To determine the structure of the costs and returns to ornamental plant nursery business, a farm budget analysis was employed. The farm budget focused on the returns to farmer's return to labour and management RLM

First the gross margin was estimated as

$$GM=GVP–TVC \quad (1)$$

Where GM = Gross Margin, GVP = Gross Value of Production which was obtained by adding the revenue from direct sales of ornamentals valued at market prices in naira, TVC = Total Variable Cost which comprised of expenses (direct and imputed) on seed/seedling, weeding, fertilizer, agro-chemicals and labour, and other expenses excluding the non-paid family labour.

The model used in estimating the operator's returns to labour and management are as presented in equations (2)

$$RLM=GM-(r+R_l+D+L_u) \quad (2)$$

Where RLM is the return to operator's labour and management, GM is the gross margin. r is the imputed interest on capital which represents the interest paid by ornamental nursery operators on informal loans. $R_l$ is the imputed rent on land. This variable represented the sums farmers would have paid for their nursery land if they did not own it. D is the depreciation charge which was determined using the straight line method with no salvage value at the end of useful life for items like watering cans, hoes, cutlass, polythene bags, jute bags, pots and $L_u$ is the imputed cost of non-paid labour, which comprised the family and exchange labour. This variable is estimated, since the use of the family labour and exchange labour implies a corresponding opportunity cost (Akande,2003).

## Regression Analysis

The OLS Regression tool was employed to identify the factors affecting receipts from ornamental nursery business in the study area. The regression equation estimated is stated as equation (3)

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + \mu \quad (3)$$

Where Y= total revenue from the sales of ornamentals plants in naira (₦), $X_1$= manure in kilograms (kg), $X_2$= Labour in Man-days, $X_3$= Fertilizer(organic) in kilograms (kg) and $X_4$ = type of education acquired by the nursery operator. This variable was dummied as 1 if nursery operator acquired formal and 0 if operator acquired informal education.

## Results and Discussion

### Types of Ornamental Plants

The frequency distribution for the common ornamental plants nursery practices in the study area are presented in Table 2. The Table indicates that the hedges, trees, palms, grasses and houseplants are the ornamental plants nursed in the study area. The most common of these were the hedges, followed by trees, palms, grasses and the houseplants. The prevalence of hedges in the study area may be because of the high resistance nature of such plants to drought, its early germination quality, as well as its popular demand for boundaries demarcation.

**Table 2:** Type of Ornamental Plants Nursery Practices by Respondents

| Common Name | Frequency | Percentage % | Rank |
|---|---|---|---|
| **Hedges** | | | |
| Yellow bush | 27 | 100 | 1 |
| Green bush | 27 | 100 | 1 |
| Croton | 27 | 100 | 1 |
| Ixora | 27 | 100 | 1 |
| Hibiscus | 27 | 100 | 1 |
| **Trees** | | | |
| Masquerade | 27 | 100 | 1 |
| Ficus yellow | 20 | 74.1 | 3 |
| Christmas tree | 26 | 96.3 | 1 |
| Queen of night | 27 | 100 | 1 |
| **Palms** | | | |
| Royal palms | 24 | 88.9 | 2 |
| King palms | 27 | 100 | 1 |
| Golden palms | 25 | 92.6 | 1 |
| **Grasses** | | | |
| Bahama | 16 | 51.9 | 4 |
| **Houseplants** | | | |
| Dumbcane | 21 | 77.8 | 3 |

**Source:** Field Survey, 2008.

### Socio-economic Characteristics of Respondents

The socio-economic characteristics of the ornamental plant nursery operator respondents are presented in Table 3. The table showed that most of the ornamental plants nursery operator respondents were within age range bracket 21 – 50 years. This age bracket composed of youths and few adults This implies that ornamental plants nursery business in the study area can be greatly improved upon, since it is concentrated mostly in the hands of young and agile individuals. The coefficient of variation of 0.25 indicates that there is great variation between the ages of the respondents. The Table also indicates that most of the ornamental plants nursery operator respondents 85.5 per cent were males. The large male-female margin of respondents shows that ornamental plants production business is not popular among

the women folks in the study area. This may be due to the high labour requirements for ornamental plants nursery operations.

**Table 3:** Socio-economic Characteristics of Respondents

| Characteristics | Frequency | Percentage % |
|---|---|---|
| **Age (in years)** | | |
| 21 – 30 | 6 | 22.2 |
| 31 – 40 | 1 | 3.7 |
| 41 – 50 | 10 | 37.0 |
| 51 – 60 | 9 | 33.3 |
| > 60 | 1 | 3.7 |
| **Total** | **27** | **100.0** |
| **Mean** | | **44.5** |
| **Co-efficient of Variation** | | **0.25** |
| **Gender** | | |
| Male | 23 | 85.2 |
| Female | 4 | 14.8 |
| **Total** | **27** | **100.0** |
| **Level of Education** | | |
| Tertiary | 21 | 77.7 |
| Secondary | 3 | 11.2 |
| Primary | 1 | 2.7 |
| Non-formal | 2 | 8.4 |
| **Total** | **27** | **100.0** |
| **Years of Experience** | | |
| 1 – 10 | 12 | 44.4 |
| 11 – 20 | 12 | 44.4 |
| >20 | 3 | 11.2 |
| **Total** | **27** | **100.0** |
| **Mean** | | **13.3** |
| **Co-efficient of Variation** | | **0.40** |

**Source:** Field Survey, 2008.

About three-quarters of the respondents have had tertiary education from post-secondary institutions like the polytechnics, colleges of education and the universities, indicating that ornamental plants nursery operations in the study area have acquired reasonable formal educational background that could enable them introduce improvements into their ornamental plants nursery business. This level of education is far above the primary school education status in Nigeria. The high literacy level of the respondents could affect their choice of inputs and the utilization of existing inputs and also their willingness to adopt improved technologies. The average years of experience of the respondents in the study area was found to be 13.3 years with a coefficient of variation of 0.40. An average farming experience of at least 13 years for the respondents implies that the ornamental plants nursery operators in the study area can be considered to be quite knowledgeable on the operations and constraints of ornamental plants nursery operations. Respondents could therefore appreciate any improved technology introduced to them.

## Production Resources

Table 4 shows the production resources profile for ornamental plant nursery operators in the study area. The Table showed that the main source of land for ornamental plants nursery operation were rented lands. The dominance of rented land was because the nursery gardens were located near major roads and highways within the metropolis. Such sites are usually owned statutorily by government in the study area. More than half of the respondents operate their nurseries on land/garden sizes that were between 0.01 – 0.50hectares. This finding agrees with Iluyonade, *et al.* (1997) that about ninety per cent of ornamental plants production in Nigeria is operated on small land size.

**Table 4:** Production Resources Profile of Respondents

| Resource Characteristics | Frequency | Percentage % |
|---|---|---|
| **Sources of land** | | |
| Communal land | 8 | 27.8 |
| Rented land | 14 | 51.8 |
| Purchased land | 3 | 11.1 |
| Lease | 2 | 7.4 |
| **Total** | **27** | **100.0** |
| **Land size (ha)** | | |
| 0.01 – 0.50 | 16 | 59.2 |
| 0.51 – 1.0 | 8 | 29.6 |
| >1.0 | 3 | 11.1 |
| **Total** | **27** | **100.0** |
| **Mean** | **0.66** | |
| **Co-efficient of variation** | **0.00011** | |
| **Type of Fertilizer Used** | | |
| Organic | 27 | 100.0 |
| Inorganic | 8 | 29.6 |
| **Type of Labour Used** | | |
| Hired and Family | 20 | 74.1 |
| Family | 7 | 25.9 |
| Communal | 4 | 1.08 |
| **Traditional Tools Used** | | |
| Hoes | 27 | 100.0 |
| Cutlass | 27 | 100.0 |
| Secatuer | 27 | 100.0 |
| Watering can | 27 | 100.0 |
| Spade | 27 | 100.0 |
| **Mechanical tools Used** | | |
| Mower | 2 | 7.4 |
| Sprinkler | 14 | 51.8 |
| Pump | 5 | 18.5 |
| None | 6 | 22.2 |

**Source:** Field Survey, 2008.

Fertilizers are very important agrochemicals in any tropical agriculture. All the respondents reported they used inorganic manures such as compost, animal dung, and poultry droppings for their ornamental plant nursery farms. Only few of the respondents reported they used the organic fertilizers like NPK 15:15:15 and NPK 27:10:10.

Labour is a very essential input in any agricultural production process. Table 4 indicates that majority of the respondents employed hired labour for their nursery operations. In most cases the farmers augmented their family labour with hired labour. Only few of the respondents used communal labour. Most of the ornamental plant nursery operators employed mainly conventional input likes the hoes, cutlasses, secatuer, watering can and spade for their nursery operations, however very few of the respondents employed mechanical equipments like mowers and sprinklers (Table 4). The tools and equipments inventory for the respondents only indicates that the respondents nurseries are crude, and poorly capitalized. Since very few improved tools and equipments are used for ornamental plamt nursery in the study area, this will definitely serve as a deterrent to large scale ornamental plant nursery business.

## Costs and Returns Analysis

To determine the structure of the costs and returns to ornamental plant nursery operations, a farm budget analysis was employed to determine the returns to farmer labour and management in ornamental plant nursery operations in the study area. The summary is presented in Table 5. The Table

showed that the estimated average total variable costs of production TVC incurred by respondents is ₦26,264.7 per hectare. Labour is shown to constitute the bulk of TVC implying that ornamental plant nursery production is labour intensive and involving high cost of labour. The gross revenue is ₦210,871.3 while the gross margin is ₦184,606.6. Since some of the inputs like land, and non-paid labour like family and communal labour were not purchased, the costs had to be imputed. Also, it is shown that ornamental plants nursery enterprises in the area has a retuns to labour and management RLM of ₦152,618.6 per hectare per annum. This signifies that on the average, ornamental plants nursery business in the study area is profitable.

**Table 5:** Summary of Costs and Returns Structure of Ornamental Plants Nursery Enterprise (₦ /Ha)

| **Items** | **Average in naira ₦ per hectare** |
|---|---|
| **Gross Revenue (GR)** | **210,871.3** |
| Less | |
| **Total Variable Cost (TVC)** | **26,264.7** |
| Seedlings and /seeds | 6501.71 |
| Fertilizer | 10000.06 |
| Hired labour | 4005.61 |
| Polythene bags and pots | 4107.02 |
| Marketing/Transport | 1650.30 |
| Equals | |
| **Gross Margin (GM)** | **184,606.6** |
| Less | |
| Imputed rent/rent on land | 18,500 |
| Less | |
| Deprecation on tools and equipments | 5,056.6 |
| Less | |
| Imputed cost of family labour | 8,431.4 |
| equals | |
| **Returns to farmer labour and Management (RLM)** | **152,618.6** |

1 US$ Equals 118 naira (₦)
**Source:** Field Survey, 2008

## Regression Estimates

Regression analysis was carried out to determine the influence of hypothesized factors including quantity of manure $X_1$, labour $X_2$, quantity of fertilizer $X_3$ and educational status of $X_4$, on the volume of sales of ornamental plants in the study area. The double log function met the lead equations' criteria and was therefore chosen as the lead equation. The equation is presented as equation 4

$$\log y = \log 3.004 + 0.422 \log X_1 + 0.007434 \log X_2 + 0.00197 \log X_3 + 0.266 \log X_4 \quad (4)$$
$$(5.697) \quad (2.934)^* \quad (2.995)^* \quad (0.957) \quad (1.912)$$

$R^2 = 0.621$

F-Ratio =6.229.

Values in brackets are t-values

*Significant at 5 per cent level of significance

All the factor/variables co-efficients have the expected apriori positive signs implying that as more of these variables are employed in ornamental plants nursery, the receipts from ornamental plants nursery will increase. The variable co-efficients for manure $X_1$, and labour $X_2$ are statistically significant at 5 per cent level implying that the two variables have significant influence on receipts from ornamental plants nursery business. The remaining variables' co-efficients, fertilizer $X_3$ and type of education $X_4$ are statistically insignificant at 5 per cent level implying that the two variables do not impact significantly on the receipts from the nursery business.

The insignificance of the fertilizer variable may be because the ornamental plants nursery operators usually apply small, less than recommended amount of fertilizer to their plants The $R^2$ value is 0.621 implying that the variables/factors included in our regression model accounts for about 62.1

per cent variations in the receipts from ornamental plants sales The f-ratio is 6.229 and significant at 5 per cent level implying that the joint effects of the included variables in our model were significant for the receipts from ornamental plants sales

### Constraints to Ornamental Plants Nursery Operations

Table 6 indicates the frequency distributions of constraints to ornamental plants nursery activities in the study area. The table shows that the most prevalent limitation to ornamental plants nursing business is the operators' inability to access adequate funds necessary to capitalize their farms. This problem as reported by the farmers has particularly relegated the production of ornamental plants to mere small gardens.

**Table 6:** Constraints of Ornamental Plants Nursing

| Constraints | Frequency | Percentage % | Rank |
|---|---|---|---|
| **Inadequate fund** | 25 | 92.8 | 1 |
| **Pests and diseases** | 6 | 22.8 | 2 |
| **Poor market** | 2 | 7.4 | 3 |
| **Water shortage** | 2 | 7.4 | 3 |

**Source:** Field Survey, 2008.

## Conclusion

This study examined the viability and resource use in ornamental plants enterprises in Nigeria The study specifically identified the factors affecting ornamental plant nursery operation and assessed the costs and returns structure for ornamental plant nursery business in Nigeria. The study results shows that ornamental plant nursery operators were aging while manure and labour were revealed to significantly determine receipts from ornamental plants nursery operation in the study area. The result also indicates that ornamental plants nursery occupation is profitable. Inadequate funding was indicated as a major constraint to ornamental plant nursery production.

Based on the study findings therefore there is a need for all stake holders in the ornamental plants nursery industry to seek out ways of providing adequate funds especially credit to farmers so as to boost ornamental plant production in the study area. In this vein ornamental plant nursery operators can be mobilized into viable cooperatives so that they can gain from the use of pooled resources and finances incooperatives. There is also the need to educate of youths and others alike as regards the gains derivable from ornamental plant nursery production business especially considering its viability and profitability. Lastly, the consumption of ornamental plants for beautification should be encouraged as this would widen the market scope for the ornamental agriculture thereby encouraging participation in the ornamental business.

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