INVENTORY AND ECONOMIC EVALUATION OF SEEDLING SPECIES IN ORNAMENTAL /FOREST NURSERY ENTERPRISES IN MAKURDI METROPOLIS

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ABSTRACT

This study was carried out to ascertain the seedling species diversity of ornamental/forest nursery enterprises and their socio-economic contribution to people's livelihood in Makurdi metropolis. The study adopted survey method to generate data. This was accomplished through questionnaire administration and interviews with respondents. Descriptive statistics were utilized in analyzing the socio-economic variables, while Gross Income (GI), Net Income (NI), and Rate of Return on Investment (RORI) were adapted for economic analysis. The result revealed that twenty (20) different seedling species were available from the Ten (10) Ornamental/Forest Nursery enterprises in Makurdi metropolis. Yellow bush, Ixora, Oil palm, Royal palm, Golden palm, and Masquerade tree were most prevalent while Teak, Gmalina, and Pawpaw were less prevalent. The socio-economic contributions of these enterprises to the people included source of income, employment and revenue generation to government. The RORI of the enterprises varies between 16.9% and 76.9% and Net Income between N36 250 and N900 000 implying that the business is lucrative. About 198 persons are employed in these enterprises. Other benefits were environmental protection, beautification and decorative services. The study recommended that nursery operators should expand their production frontiers and particularly of the native seedling species, which were undersupplied. This will improve their profit margins and also create more employments for the people; the environment will also be protected. The study further recommended that the populace be encouraged towards increased involvement in the establishment of more nursery enterprises and tree planting.

Key Words: *Species diversity, Socio-Economic, Nursery Enterprises, Makurdi Metropolis.*

INTRODUCTION

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 (Tonne,

1963; Holden, 1995; Lipsey and Chystal, 1999). The contribution of small scale private business enterprise such as ornamental enterprises to the development of an economy cannot be overemphasized (Tonne, 1963; Keith, 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 Makurdi municipality for long and as such, their economic and environmental impacts on the people are expected. However, basic information on the activities of the nursery enterprises in Makurdi metropolis is not well documented . 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. It is against this backdrop that this study was initiated to provide useful information and stimulate interests in this enterprise. The study set out to systematically assess the socio-economic contributions of private commercial ornamental/forest nursery enterprises to livelihoods in Makurdi municipal area. The study will specifically:

I.   Take inventory of plant species from the private nursery enterprises in the study area, and

II. Assess the contribution of the nursery enterprises to the socio-economic life of the people in the study area.

METHODOLOGY

The study Area
This study was conducted in Makurdi Local Government Area (LGA) situated on latitude 7 20' to 8 North and longitude 8 20' to 9 East. The municipality comprises eleven council wards namely; Agan, Mbalagh, North-Bank1, North-Bank 2, Market Clerk, Central South Mission, and Ankpa/Wadata, Bar, Modern Market, Fiidi and Walomayo wards. Walomayo, Modern Market, Central South Mission and Market Clerk wards were covered for the study. Being a state capital, the inhabitants are predominantly career civil servants and traders. There are also artisans (in carpentry services, artwork, and nursery practices to mention but few) in the town operating in full time basis. Some civil servants and traders also embark on some of these artisan works to supplement their primary sources of livelihoods.

The Study Population and Sample size
The study population comprises the Forest/ornamentals nursery operators and users of products from these nurseries. Reconnaissance survey result revealed that ten (10) ornamental nurseries exist in Makurdi municipality. These comprise nine (9) private nurseries and a public (central) nursery. These nurseries were located in four council wards out of the eleven (11) in the municipality, and so, these were selected for effective data generation. The council wards were Wailomayo, Central Mission, Market Clerk and Modern Market. Ten (10) managers of the existing nurseries and Forty (40) randomly selected respondents (customers); ten (10) from each of the selected council ward were interviewed to generate data for the study. In the end, a sample size of fifty respondents was interviewed.

Data Collection

The primary data for this study was collected from interviews with the ornamental nursery managers and users of the seedlings from those nurseries. Information on the socio-economic contributions of these nurseries to the livelihood of the people was elicited using semi-structured questionnaires and personal observations from the selected council wards and recorded. These were then collated and analyzed to get results.

Data Analysis

Descriptive statistics were applied in analyzing demographic and other socio-economic variables. Furthermore, three tools of economic analysis namely Gross Income (GI), Net Income (NI) and Rate of Return on Investment (RORI) were adapted in analyzing economic variables like profitability and capital turnover (Olukosu and Erhabor, 1988). These tools were defined and computed as follows;

Net Income (NI)

Net income (NI) is defined as gross income (GI) less Gross cost (GC)

Mathematically: NI = GI − GC …………………………………….….. (1)

Where:

GI = Total quantity of product sold over the period × prevailing market price GC = Total cost of production (cost of labour, fertilizer, water, transportation, polythene bags, wood shavings and compost)

Rate of return on investment (RORI)

The Rate of Return on Investment (RORI) depicts the level of profitability of an investment and is an important criterion in determining the choice of investment. It is determined using the following relationship:

$$RORI = \frac{GI - GC}{GC} \times \frac{100}{1} \text{…………………………………………………… (2)}$$

Where:

GI = Gross Income and

GC = Gross Cost of production.

RESULTS AND DISCUSSION

Inventory of Plant Species in the Forest Nursery Enterprises in Makurdi Municipality

The private nurseries studied were distributed within the municipality in four council wards as follows; Walomayo Ward (Paul Nursery, Jottas Palm, Shopping flower and great way), Modern Market Ward (Ageende Nursery, Eden Nursery, Lilly of the valley), Central South Mission Ward (Ache Nursery), and Market Clerk Ward (Ixo Palm). Inventory of the plant species in these ornamental/forest nurseries revealed that twenty (20) different species were available. These were distributed as shown in Table 1.

Table 1: Distribution of the Available Plant Species within Nursery Enterprises in Makurdi Metropolis

S/No	Common name of Species	Names of the Nurseries								
		Paul	Shopping flower	Great way	Edem	Lily of Valley	Ageende	Ache	Ixo palm	Jottas palm
1	Cashew	*	-	-	*	**	**	-	-	*
2	Mangoes tree	*	*	**	*	**	*	*	*	*
3	Masquerade tree	**	**	**	**	*	**	**	**	**
4	Pawpaw tree	*	*	_	_	_	_	_	*	*
5	Juja pine	*	*	*	*	*	*	*	**	*
6	Step tree	**	**	**	*	*	**	*	*	*
7	Acalypha	**	*	-	*	-	**	**	*	**
8	Special Croton	**	*	*	**	**	**	**	*	**
9	Mahogany tree	*	*	-	-	*		*	*	-
10	Neem	**	*	-	-	*	*	-	*	-
11	Eucalyptus	*	*	*	-	*	*	-	*	*
12	Oil palm		**		**		*	**		**
13	Golden palm		**	**	**	**	*	**	**	**
14	Royal palm			**	**	**	*	**	**	**
15	Ixora	**							**	
16	Queen of Philippines	*	*	*	*	-	-	*	*	*
17	Orange tree	**	*	*	*	**	-	*	*	*
18	Gmelina	*	*	-	-	-	-	*	-	-
19	Yellow bush		**	**	**	**	**	**	**	
20	Teak	*	-	-	-	-	-	*	-	-

Source field survey 2007

Key: - Absence of species.

*Small Quantity (1-400 seedlings).

** Moderate Quantity (401-999 seedlings).

***Large Quantity (1000 & above seedlings).

The result showed that Oil Palm, Golden Palm, Royal Palm, Yellow bush, Masquerade Tree and Ixora were dominant across the nine nursery enterprises studied. Oil palm was highly distributed probably because of the high demand for it by the rural people who grow them for economic reasons as source of raw material for palm oil production, palm wine production and income. The high distribution of other ornamental plant species like Golden palm, Royal palm, Yellow bush, and Masquerade ornamental plants could be explained by the high demand for them and the ease with which their seedlings could be raised. Furthermore, because of their appealing vistas, people use these species extensively for aesthetic purposes.

Teak and Gmelina were available in small quantities (less than 400 stands), and this was only at Paul and Ache Nurseries. This low availability, as reported by the nursery operators, was due to poor demand for the product in the market as people could easily secure them from their surroundings. Furthermore, the trend probably reflects the typically low interest of people and society in the practice of plantation forestry. Similar distribution was observed in the case of

Mahogany an indigenous species. The main reasons for its low availability in the nursery enterprises were the difficulty of raising its seedlings, and its long gestation period (Adams, 1999). This finding also partly corroborates that of Babalola, 2008 that commercial horticultural gardens hardly have tree species in stock, but ornamental crops for interested members of the public.

It is also worthy to note that despite the limited diversity of ornamental plant species (20 only) raised by the ornamental nursery enterprises in Makurdi metropolis, only Paul nursery had 100% of these ornamental plant species present in her enterprise. Shopping flower and Ixo enterprises had 90% and 85% respectively. While Jottas and Ache enterprises had 80% respectively, Lilly of the valley and Ageede enterprises had 75%. Eden garden and Great-way had the least diversity representation of 70% and 65% of these 20 species available for supply in their enterprises respectively. The Relative Abundance of the species is as explained by the data presented in Table 2

Table 2: Mean Population Distribution of Seedling Species in Private Nurseries in Makurdi.

Order	Common Names	Number each Seedling in the Nurseries	Number of Private Nurseries	Mean Number of Seedlings in the nurseries
1	Yellow bush	20700	9	2300
2	Ixora	13800	9	1534
3	Masquerade tree	13000	9	1445
4	Oil palm	11043	9	1227
5	Royal palm	10116	9	1124
6	Golden palm	9060	9	1007
7	Special Croton	8118	9	902
8	Acalypha	5635	7	805
9	Orange tree	6400	8	800
10	Cashew	3600	5	720
11	Juja pine	6300	9	700
12	Queen of Philippines	4900	7	700
13	Mango tree	5300	9	588
14	Step tree	5020	9	558
15	Neem	2500	5	500
16	Teak	760	2	380
17	Pawpaw tree	1020	3	340
18	Gmelina	900	3	300
19	Mahogany tree	1060	6	176
20	Eucalyptus	966	7	138

The result revealed that Yellow bush, Ixora, Oil palm, Royal palm, Golden palm, and Masquerade tree were most prevalent; with at least 1007 seedlings from each nursery. These are the species that were highly demanded for in the area. Teak, Gmelina, and Pawpaw were less prevalent and were found in only few of the Nursery enterprises. This was because they were commonly available to people from free ranges and securing them was relatively easy. Because of their wide adaptability, people could also produce some of the seedlings by themselves.

Socio-Economic Benefits of Commercial Nursery Business in Makurdi Municipality

The socio-economic benefits of private commercial nurseries in Makurdi municipality were determined in terms of incomes, profitability, uses and employment potentials. The result revealed that the commercial nursery operators were involved in nursery business activities and other works like decoration and landscaping. These activities provided revenue and income to the people. Corroborating this view, Babalola, 2008 asserted that planting of ornamental trees and shrubs is gaining acceptance because large number of people are involved in horticultural gardens as a means of livelihood in the urban areas. The author furthered that in the city, tree population is mainly influenced by the popularity of the species, the purpose, and the function the tree is expected to serve. The result presented in Table 3 illustrates the mean annual incomes generated by the nine private nursery enterprises in the last five years.

Table 3: Mean annual Incomes Generated by Private Commercial Nursery Enterprises in Makurdi in the last Five years

Nursery Enterprises	Gross Income (₦)	Production Cost (₦)	Net Income (₦)	Rate of Return on Investment
Lily of the Valley	685,000	158,000	527,000	76.9
Paul Nursery	1,220,000	320,000	900,000	73.8
Ixo Palm	670,000	301,000	369,000	55.1
Eden Nursery	458,000	265,000	193,000	42.1
Ache nursery	360,000	218,000	142,000	39.4
Great Way	675,000	450,000	225,000	33.3
Jottas palm	1,000,000	700,000	300,000	30.0
Shopping Flower	1,080,000	820,000	260,000	24.1
Ageende Nursery	215,000	178,750	36,250	16.9
Total	6,363,000	3,410,750	2,952,250	

The result illustrate that the Rate of Return on Investment (RORI) from these private nursery enterprises varied from 16.9 % to 76.9%. Similarly, Net Income (NI) varied from N36 250 to N900 000 implying that the business was prolific and the ornamental nursery dealers were operating at profitable levels. The highest RORI (76.9%) was

observed in Lilly of the Valley Nursery. This was probably due to the size of that nursery, the high diversity of species produced, and the location within an accessible and populated area. Conversely, the least RORI (16.95%) was observed in Ageende Nursery. The probable reason is that, seedlings in this nursery unit were usually sold at relatively lower unit prices than in the other nursery units. Furthermore, the enterprise was relatively smaller in terms of size or scale of production, and thus, there were limited number and diversity of species available for sale. Apart from the foregoing income sources, the labour and material input supplies, which were production costs to the nursery entrepreneurs, were income sources to the suppliers of such inputs (Sergent, 1993). This implies that labour and other supplies like compost, wood shavings, sharp sand, polythene bags, and transportation among others constituted the production cost of nursery operators in Makurdi metropolis. For instance, in the last five years, seedlings production costs of N3, 410,750; about N682, 150 annually (Table 4) was the flux of money that goes to the employees and material input suppliers. Thus; the operators' incomes and profit, and the employees' and suppliers' incomes are economically essential because they promote economic activities and satisfy societal needs (Olukosi and Erhabor, 1988, Hamed and Deindre, 2007).

Furthermore, the result on employment potentials was as presented in Table 4. The result revealed that 198 persons were employed in Ornamental seedlings enterprises. Of this number, 32 people were employed on permanent status, while 166 were employed on temporary basis

Table 4: Employment Structure of Commercial Nurseries in Makurdi Muncipality

Name of Nursery	Permanent Appointments	Temporary Appointments	Total
Lily of the Valley	3	15	18
Paul Nursery	5	21	26
Ixo Palm	3	25	28
Eden Nursery	4	25	29
Ache nursery	4	20	24
Great Way	3	16	19
Jottas palm	3	15	18
Shopping Flower	4	17	21
Ageende Nursery	3	12	15
Total	32	166	198

This shows that seedling production provided employment opportunities to people in Makurdi metropolis. Again, the ornamental seedlings produced by the enterprises were sold to various groups of people; farmers, civil servants, and institutions like churches, schools, and business men for various uses.

Out of forty (40) respondents interviewed 5.0% indicated that the seedlings were

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utilized for production (e.g. landscaping), 20.0% for protection of the environment against degradation forces, 25.0% for beautification of the environment and 50% for multiple uses, which involves any of the purposes presented in (Table 5).

Table 5: Utilization of Ornamental Seedlings in Makurdi Area.

Utility Purpose	Frequency	Percentage
Beautification	10	25.0
Protection	8	20.0
Production	2	5.0
Multipurpose	20	50.0
Total	40	100

CONCLUSION

From the inventory of the Ornamental/Forest nursery enterprises in Makurdi metropolis, the result on species diversity of the seedlings revealed that twenty (20) different species were being produced from the Ten (10) Ornamental/Forest Nursery enterprises. Yellow bush, Ixora, Oil palm, Royal palm, Golden palm, and Masquerade tree were the most prevalent and abundant species among the Ornamental /forest nurseries. Each of the ten Ornamental/Forest nurseries in Makurdi metropolis has on average 1007 seedlings of each of the above listed species. Teak, Gmalina, and Pawpaw were less prevalent and were found in only few of the Nursery enterprises. The Relative ease of producing the seedlings, their prices, and the extent of demand for them were the main determinants of their distribution.

Evidence from the findings of this study led to the conclusion that the Ornamental/Forest nursery enterprises in Makurdi metropolis contribute effectively to the economic, social and ecological wellbeing of the people in the area. In fact, there are empirical figures to these evidences on incomes, revenue, and employment . Other benefits were environmental protection, beautification and decorative services. All the interviewees ascertained that 100% of the nursery owners agreed with the hypothesis that nursery operations were near-efficient economically, socially and ecologically.

From this study's findings, it was evident that Ornamental/Forest nursery enterprises can contribute more to the socio-economic life and ecological needs of the people of Makurdi municipality if expanded. Therefore, the following recommendations were made that nursery operators should expand their production frontiers and particularly of the native or local species, which are currently undersupplied. This will improve the profit margin of the enterprise owners and also create more employments for the people; the environment will also be protected. The study further recommended that the populace should also be encouraged towards increased involvement in the establishment of more nursery enterprises and tree planting.

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