

**THE IMPACT OF HORTICULTURE ON ENVIRONMENTAL LANDSCAPING
OF ABUJA - PHASE ONE.**

BY

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PGD / GEO / 99 / 2000 / 076**

**RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF
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MINNA , NIGERIA.**

MARCH, 2001.

DECLARATION

I, Okorie Alozie Godwin hereby declare that this report entitled, *the impact of horticulture on environmental landscaping of Abuja – phase one*, is a product of my own research work under the supervision of Prof. D .O Adefolalu.

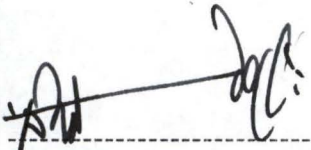
Okorie A. Godwin

DEDICATION


This research work is dedicated to the compassionate master of all lives, the great master of love, JESUS the Christ.

CERTIFICATION

This is to certify that this research project is an original work undertaken by Okorie Alozie Godwin (PGD/GEO/ 99/2000/ 076)under the supervision of Prof. D O. Adefolalu. It has not been submitted before by anybody for any purpose and has been prepared in accordance with the regulation governing the preparation of projects in the department of Geography, Federal university of technology, Minna.



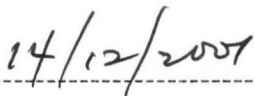
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Date

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ABSTRACT

This report highlights the result of a research survey conducted to determine the impact of horticulture on environmental landscaping of Abuja FCT – Phase one.

The objectives were to identify the growth pattern of horticultural practices, to estimate the quantity of landscape plant categories available, to account for green plantings in private and public areas and, to assess horticulture as a socio-economic tool for public environmental enlightenment.

Primary data was acquired through reconnaissance survey, observations and the use of questionnaire. Statistical analysis of data was carried and summarized using graphics, frequency and percentage distributions as appropriate. Results show the establishment of horticultural practices started in 1991, reaching the maximum within four years (1995) but now, they are suffering a decline resulting from lack of motivation and poor government policy on landscape development of the city. Horticultural practices in the city face the problem of inadequate land and very low patronage by government and private residents. However, horticultural practices produced enough quantity of plant seedling for all landscape projects during the period. Findings revealed nurseries and landscape contractors as responsible for the success archived in green planting between 1991 and 1995.

There are no indication of the use of horticulture in public environmental mobilization and enlightenment by the Abuja environmental protection board – AEPB.

Although, horticultural practices are scattered within phase one of the city, result show that it has not made significant impact on green area development.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Horticulture and Environment – A Preview

A landscape is defined as a prospect of inland scenery such as can be taken in at a glance from one point of view and scenery is defined as the general appearance of a place and its natural features from a picturesque point of view. Mans observation is a vital aspect of this definition. Our vision of the landscape is influenced by our natural instincts for survival, emotions, education, culture and experience. City landscape can be said to be define in terms of natural component- Vegetation, Landform, and Water. Human attributes – vegetation management, buildings and structures and, Aesthetic qualities –economic value, sensitivity and heritage. The Abuja city landscape comprises of the composite of natural and human features that characterize the surface of the present area including spatial, textural, compositional and dynamic aspects of the land. No component of the landscape is more directly related to modern city development and environmental change as vegetation. Besides, the impact of plant cover on build-up environment vegetation is crucial in reducing heat-island-effect, which determine the thermal condition of a city. Vegetation plays a functional role in the landscape as important controller of runoff, soil erosion, slope stability, microclimate and noise reduction. Without adequate supply of good quality nursery grown plants, re-vegetation of degraded urban landscape will be difficult. Plant nursery production is one of the major sources of providing free seedling for shelter belts, wind breaks, terrace and slop planting. Environmental horticulture refers to the growing, planting, use, maintenance, removal, disposal, and study of plants, usually in developing cities, towns and other settlements. It involves the production and sale of nursery grown seedlings, trees, shrubs and grasses for

landscape and garden developments. This practice demands the use of environmental resources such as land, fertile soil, reliable water supply and conducive weather conditions. In 1992, it was discovered that despite the prominence given to forestry, wide life and the provision of recreational facilities in the FCT master plan, the sub-sector was yet to witness considerable improvement. Instead, the existing forest reserve tends to degenerate as a result of uncontrolled destruction through construction activities and widespread bush fire. The ministry of federal capital territory (MFCT) realized that to nurture the flora and fauna of FCT involve protection and developing the ecological landscape, took giant steps towards a forestation, planting on the highways with trees to provide shade, fruit and aesthetic beautification. Also, it provided a one hundred hectares National arboretum and botanical garden, out of which five hectares was cultivated – Abuja plant nursery.

The Abuja plant nursery managed by the Abuja environmental protection board (AEPB) was to private horticultural leisure, plants, flowery services and needs of public and private building, security post, pavilions and ceremonies within and around the federal capital territory. The momentum of building and road development in Abuja increased in 1991, with the movement of the seat of government from Lagos to the federal capital. Since then the ability of the five hectares Abuja plant nursery to adequately carter for the plant and flowery needs of the now increased private and government residents becomes impossible. Hence, the manifestation of private environmental horticultural practices in the city.

1.2 PROBLEM STATEMENT

The Abuja environmental protection board was established in line with decree number 58 of 1998, which require state and local governments to establish environmental protection agency. The duty of the board included the provision of recreation, enhancement of aesthetic landscape of the FCT and public environmental enlightenment campaign among others. Environmental horticultural practices provide products such as trees, shrubs and grasses for aesthetic, recreational, health and landscape beautification. However, the Abuja environmental protection board (AEPB) lacks the qualitative information concerning the nature, extent and contributions of the increasing number of environmental horticultural practices or Plant nurseries for its decision making and environmental policy implementation.

1.3 AIM AND OBJECTIVES

The major aim of this research is to identify the role of environmental horticultural practices or Plant nursery in the present urban landscape of Abuja city phase 1.

The objectives are –

- 1.) To identify the pattern of growth of horticultural nurseries in phase 1.
- 2.) To collect data on horticultural plant availability and use for landscape beautification.
- 3.) To collect data on the extent of green area development in phase 1 of the city.
- 4.) Account for the green plantings in commercial and private residential areas.
- 5.) Assess green culture as a socio-economic tool for public environmental enlightenment and,
- 6.) To quantify the impact of horticultural practices or Nurseries on landscape improvement by the residents of the city.

1.4 JUSTIFICATION OF STUDY

The building of Abuja city has involved extensive deforestation and urbanization. Buildings and roads has displaced soil and plants, resulting to air pollution, noise, high wind and high temperature. Construction activities has also deprived the present dwellers of the city of an ideal living environment and reduced the quality of the aesthetics landscape seen of the city. Therefore, to improve the quality of the city environment require sound environmental management and protection decisions or policies.

Any policy requiring massive a forestation and ornamental beautification of new city as Abuja must depend on adequate knowledge of horticultural grown plants, the nature and extent of nursery or horticultural practices within the city. A such, the information presented in this report will no doubt be a powerful tool in the hands of Abuja environmental protection board (AEPB) for present and future environmental health, recreational and aesthetic landscape decision and policy implementation.

1.5 SCOPE AND LIMITATIONS

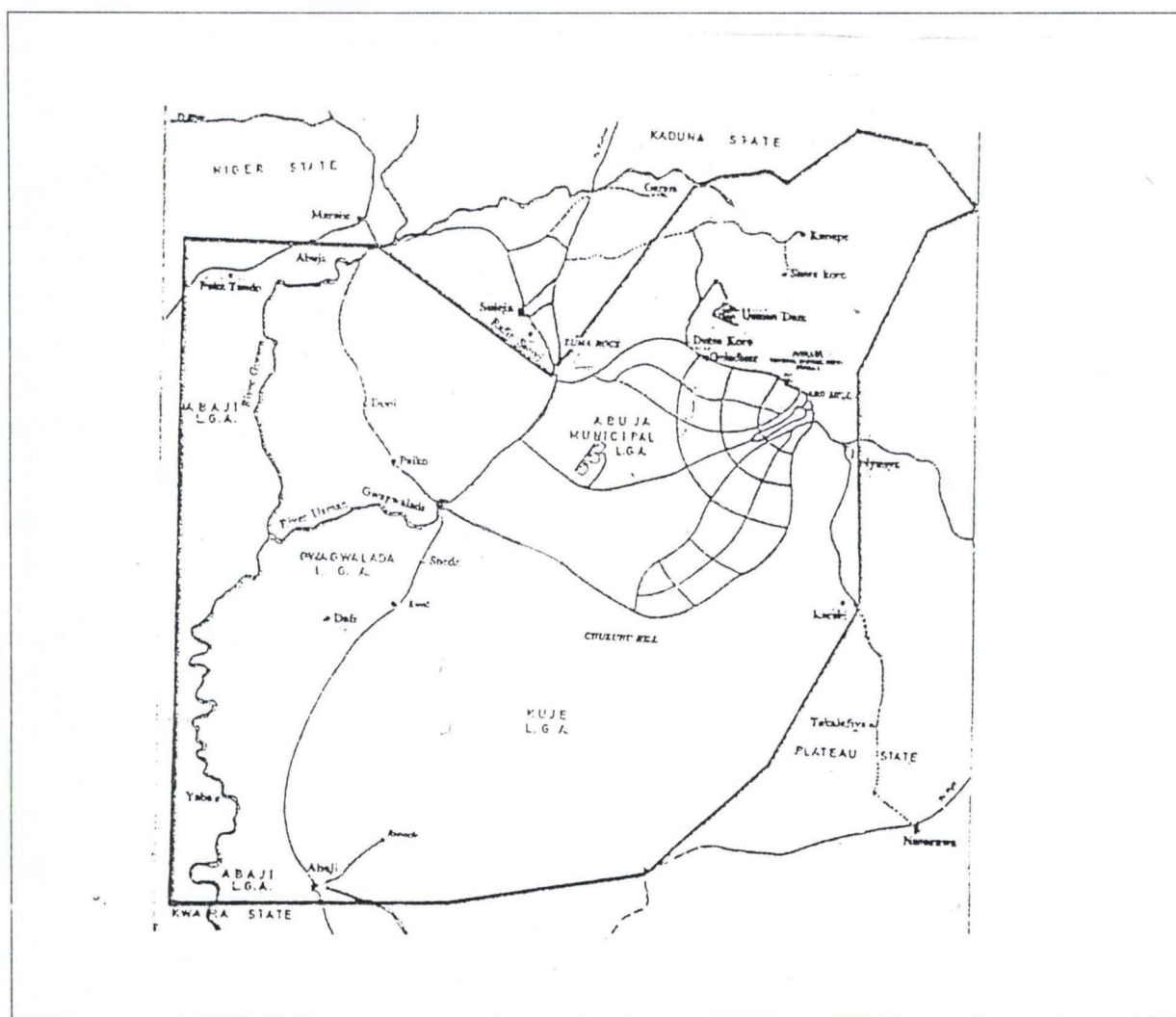
The scope of this study was limited to available resources and time. Only Nursery or landscape practices located within the phase 1 city development plan of Abuja were surveyed (Figure 1.4.1.)

Data on demography and geographical locations of horticultural practices were not collected for analysis. Analysis was limited to number of questionnaires correctly answered and returned to the researcher. No attempt was made to categorize nursery practices into large, small or medium class. Cost of plants and green area maintenance was excluded, while only

private nurseries were surveyed. The only government plant nursery existing was not considered.

1.6 THE STUDY AREA

The federal capital territory (FCT) lies between latitude $8^{\circ}25'$ and $9^{\circ}20'$ North of the equator and longitude $6^{\circ}45'$ and $7^{\circ}39'$ East of the Greenwich meridian. It is located at the center of Nigeria and share boundaries with Kaduna state to the north, Nasarawa state to the east and

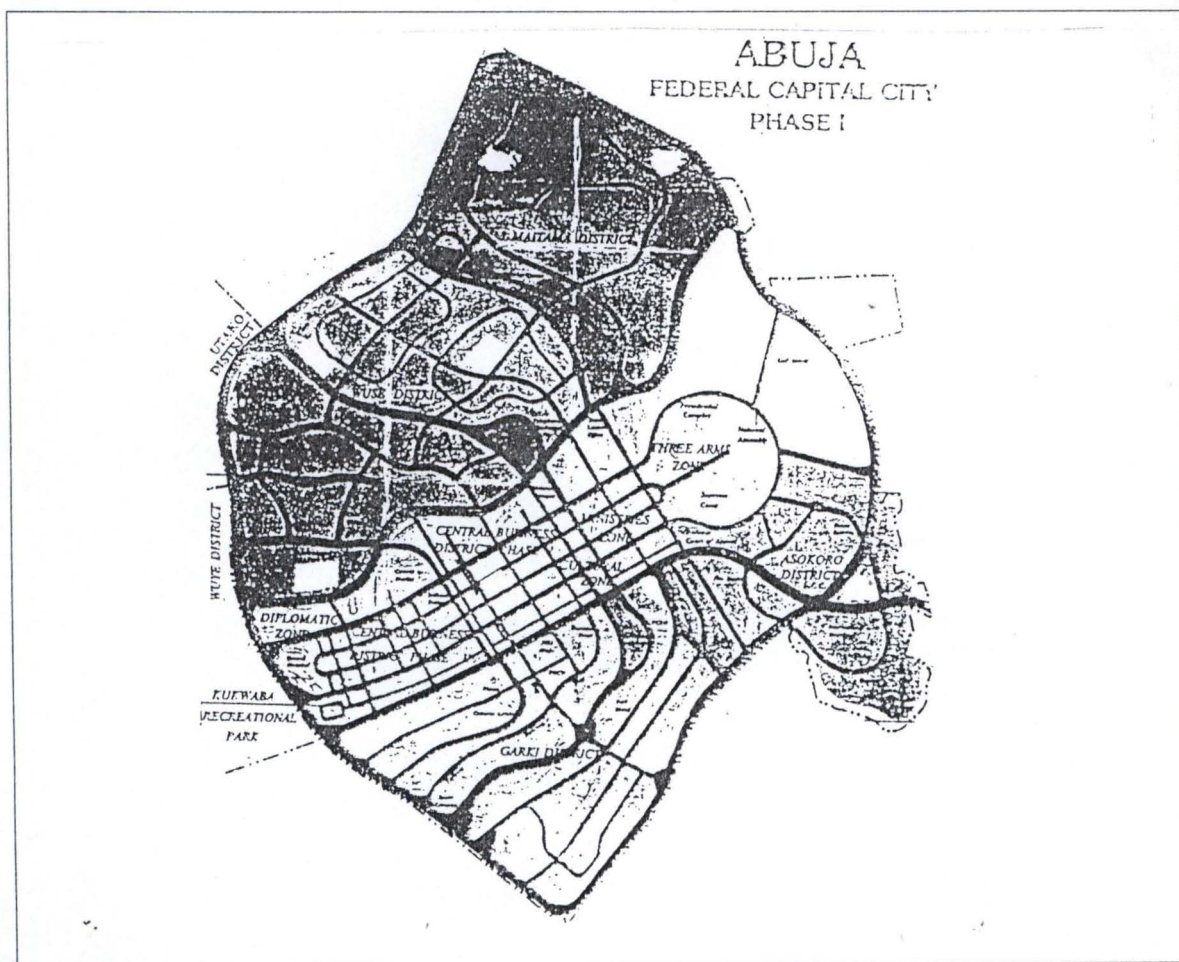


Map 1.1. Federal Capital Territory

Source; CCL, 1998.

north, Kogi state to the south-west and Niger state to the west. It covered a land area of about 8,000 square kilometers and the vegetation is predominately guinea savannah.

The federal capital city (FCC) is about 250 square kilometers (3%) of the entire federal capital, out of which 8,300 hectares are open and recreation land (Map 1.6.1). According to the Abuja master plan (IPA, 1979), the development of the new capital city was to be accomplished in an overall project development process of six phases with phase 1 construction starting in 1986. This phase has an initial projected population of 150,000



Map 1.2. Federal Capital City – Phase 1.

Source; CCL, 1998.

inhabitants. However, the present capital city development plan was based on four phases for a projected population of 3.1 million people (RNL, 1991).

The phase 1. (Map 1.6.2) located with the municipal area council is made up of the following area,

- i.) Central Area
- ii.) Garki I and II
- iii.) Wuse I and II
- iv.) Asokoro Area or district
- v.) Maitama district.

With the exception of the central area which is the main business district of the city, the four other districts are planned specifically for residential purpose.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 NEED FOR LANDSCAPE DEVELOPMENT

A city landscape may be defined as the composite of natural and human features that characterize the surface of the land at the base of the atmosphere, including spatial, textural, compositional and dynamic aspects of the land

Richard et al (1979) stated the fact that extensive urbanization has meant that man has become increasingly divorced from nature. Town and cities have spread over what was once countryside and have become so densely built, that building and hard ground surface have displaced soil and plants. Contact with plant in such area is dependent upon a conscious decision by man to provide conditions in which plants will grow and to tend and foster them. By doing do, a new dimension of natural beauty can be added to the built forms and spaces of urban area. Other positive benefites of this are the reduction of air pollution, screening as a buffer against noise and wind, and generally increasing the well being of the city dweller. Also, Oliver (1991) mentioned that man`s use of the environment has consistently urbanizing or domesticating effect on its appearance, that the diversity of the more natural landscape may become lost. This could eventually deprive our urban population of the relief that so many crave from their artificial daily environment and reduce the variety of landscape to be seen. Similarly, Derek (1979) indicated that visual improvement of landscape is of particular value where an open landscape has been fragmented by working or structures. He outlined the functions of trees and vegetation as follows a). Amelioration of climate. b) Soil improvement and conservation. c) Water conservation. d) Wild life conservation. e) Atmospheric

purification. f) Timber and food production. g) Visual and aural improvement of the environment and h) Recreation.

William (1991) in relation to urban climate asserted that climate in and around urban areas is usually some what warmer, foggier and less well lighted than the climate of the surrounding regions. In his opinion, vegetation is the most important component of the landscape relating to land use and environmental change. Besides being the most visible part of the landscape, it is also a sensitive **thermometer** of conditions and trend in part of the landscape are otherwise not apparent without the aid of detailed observation and measurement. Nearly everywhere that urban sprawl has taken place, it has resulted to wholesale destruction of existing vegetation including the fence rows,... large tracts of habitat such as woodland corridors along stream,vallies have been fragmented and reduced in area.

2.2 HORTICULTURE IN ENVIRONMENTAL MANAGEMENT PRACTICES

Environmental horticulture encompasses the industries that maintain and improve the functional use of plants in populated areas. Major categories include the production of ornamental plants, services related to ornamentals and equipments and accessories.

Report by the ministry of federal capital development authority Abuja (FCDA,1992) titled – Abuja so far...so good, observed that despite the prominence given to forestry, wide life and provision of recreational facilities in the FCT master plan, the forestry sub-sector has not witnessed any considerable development. Instead, the existing forest reserves tend to deplete or degenerate as a result of uncontrolled destruction through construction activities, poor land conservation and widespread bush fire.

With emphasis on parks and gardens, the master plan (IPA, 1979, P. 128) indicated that parks and garden in traditional Nigeria town planning are in the private sector rather than

public sector. However, in the twentieth century Nigeria town planning, there is often 'open space' some of it reserved for future government use. Recently, the notion of urban parks and public gardens has developed due in part to the close proximity to rural open space and also to the utilitarian notion of land use pattern in Nigeria. Therefore, the master plan provided for the development of parks and gardens in both the capital city and FCT as a whole. The overall concept of 'open space' in the master plan is the primary function of recreational and aesthetic effects provided. Nigerian experience indicated that small isolated parks might be co-opted into Lorry parks or small open-air markets, hence it emphasized on controlled open space development. In addition to the open space system provided by the drainage course and various un-buildable areas, it gave judicious allocation to educational and sports facilities to satisfy the aesthetic needs and relief from the built urban environment

Ursula and Grant (1996) surveyed wholesale Nursery industries in California in 1989 and 1994. Results revealed that production method, diversity of plants categories that are produced, and the high demand for California nursery products within the state seem to be stable factors. They noted that , plant categories are always changing in popularity and growers need to follow these trends carefully to project the changing market demands, that nursery industry is expected to continue to grow in the next decade. They suggested that information from the survey should be used by decision makers to anticipate future needs and expansion in the industry.

Also, Scott and George (1996) studied the impact of urban forestry on California economy and found that urban forestry accounted for at least \$3.789 billion in total sales, \$2.092 billion in income to individuals, and 64,000 jobs in the state. This knowledge of economic activity

was necessary for voters and government officials who make decisions that affect management of these and other natural resources in California.

A study conducted by Ramiro et al (1999) revealed that flower field in Carlsbad, San Diego County of California has beneficial Agricultural tourism potentials. Also, the study show that flower fields are excellent tool to educate the public about the importance of agriculture and its contribution to the county's economy and quality of life.

CHAPTER THREE

3.0 METHODOLOGY

3.1 INTRODUCTION

The survey involved the collection of both secondary and primary data. Secondary data obtained from the review of related literatures, text books, reports, journals and unpublished materials dealing with environmental horticulture and landscape developments. The primary data were obtained through the reconnaissance survey and observations made by the researcher within the study area, and through the use of questionnaire instrument.

3.2 RESEARCH DESIGN

This research work was aimed at identifying the role of horticultural practices (private plant Nursery) on environmental landscaping of Abuja city, phase one. To achieve this aim, the researcher employed methods capable to determine the nature of horticultural practices as they exist at the time of the study. The survey method using appropriate questionnaire was considered the most suitable for primary data collection. Adequate number of closed-ended questions in the questionnaire provided enough data to satisfy the objectives of the research project.

3.3 THE POPULATION

Reconnaissance survey and observations made by the researcher within the phase I Development area of the city revealed an average of 45 private owned horticultural practices in each of the five development zones. The anticipated Nursery population was about 260 located mainly in the green area and under the over head bridges.

3.4 THE SAMPLE UNIT

The sample unit included 125 environmental horticultural practices randomly selected. Each of the five zones of phase I. had 25 nursery practices selected at random for data collection regarding their impact on the city landscape. The structured questionnaire were allocated to the chosen nursery practice for answers.

3.5 THE SURVEY INSTRUMENT

The instrument used in this research was a structured questionnaire made up of 14 questions with fixed alternative answers to ensure uniformity of respondents (Appendix II.)

The three-paged questionnaire was approved by the researchers supervisor and further made up to 125 copies which were distributed to the randomly selected environmental horticultural practices in the study area.

3.6 VALIDITY OF THE INSTRUMENT

The questionnaire instrument was verified by pre-testing its validity on 10 randomly chosen Nursery practices in phase I. Selected supplied answers to the questions. It was noted that these 3 respondents did not supply answers to questions relating to personal data and address of business area. However, the questionnaire was re-structured, standardized and simplified to the acceptance of the respondents. The valid questionnaire was then used for primary data collection from the sample unit.

3.7 QUESTIONNAIRE ADMINISTRATION

The valid questionnaire was administered to 125 randomly selected horticultural practices in phase I of the city, by the researcher and his assistants on Wednesday, 22, February, 2001.

Collection of the answered questionnaire was made on Friday 23, and Saturday 24 February, 2001. The researcher was unable to collect 3 questionnaires while 4 questionnaires were returned without answers.

Table 3.1 showed the number of questionnaires completed or answered and returned for analysis. A total of 118 questionnaires representing 94.4%, was collected for analysis.

TABLE 3.1. NUMBER OF QUESTIONNAIRES RETURNED FOR ANALYSIS

S/no	ZONE	No Administered	No Returned	Percentage
1	Central Area	25	22	88
2	Asokoro Area	25	24	96
3	Garki I and II	25	22	88
4	Wuse I and II	25	25	100
5	Maitama District	25	25	100
	TOTAL	125	118	94.4

CHAPTER FOUR

4.0 DATA ANALYSIS AND RESULTS

4.1 ANALYSIS OF RESPONDS

The data collected from the returned 118 questionnaires were analyzed, using summaries and descriptive statistic of frequencies and percentages.

4.2.1. GROWTH PATTERN OF HORTICULTURAL PRACTICES IN PHASE I.

Sorting horticultural practices by age groups two-third of the respondents (30% and 29%) represented Nursery practices 2 to 4 years and 5 to 10 years old (Table 4.1.) The remaining categories accounted for approximately 17% to 20% of the respondents, except for the over 10 years age group which accounted for only 4% of Nursery practices in phase I.

This data shows a decline in the establishment of new horticultural practices in the last 2 years (Fig. 4.1.), reflecting the general trend in development of the phase I. Before 1991, there were few nurseries (4%), with the coming of the seat of government to Abuja in 1991. The tempo of development increased and so did horticultural practices. Now that the development process of phase I is coming to conclusion, the number of new horticultural practices are decreasing.

4.2.2. HORTICULTURAL PLANT AVAILABLE FOR LANDSCAPE

BEAUTIFICATION

Shrub plants are the most popular type of landscape plants produced by all Nurseries followed by trees, other plants (Indoor plant) and Grass/Ground cover plants in that order (Table 4.2).

30% of the respondents have between 100 – 250 trees in their nursery while only 1.6% of the

TABLE 4.1. AGE OF NURSERIES IN PHASE 1.

Year since establishment	Number of respondents	Percentage of respondents
Less than one	20	17
1 – 2	23	20
2 – 4	36	30
5 – 10	34	29
Over 10	5	4
TOTAL	118	100

respondents produced over 1000 trees in their nursery/garden. At least 45% of the Horticultural practice surveyed, grow grass and other ground cover plants for sale. (Table 4.3). The survey reflected the diversity of the Nurseries which produced a wide range of plant for landscape beautification. One-third of all respondents produced over 250 to 500 trees and other landscape plants, and over 250 – 1000 shrub plants. These data showed that there were enough seedlings for landscape developments in other phase of Abuja city.

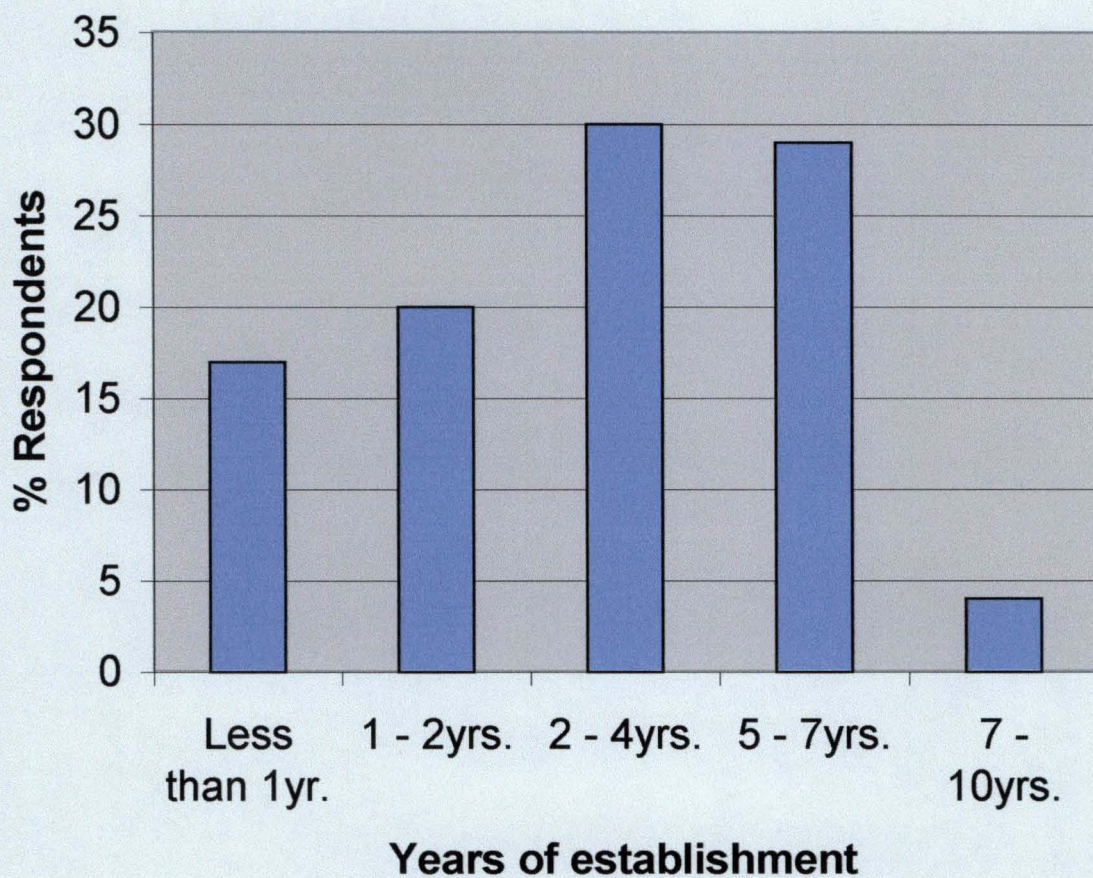


Fig. 4.1. Growth pattern of horticultural practices in phase 1.

TABLE 4.2. AVAILABLE NUMBER OF PLANT FOR LANDSCAPE BEAUTIFICATION IN PHASE 1.

Number of plants	% Respondents		
	Trees	Shrubs	Other plants
Less than 100	33	-	31
100 – 250	30	18	28
250 – 500	21	-	30
1000 – 5,000	14.4	31	5
5,000 – 10,000	1.6	19	3.4
Over 10,000	-	21	-
No plant	-	11	-
No responds	-	-	2.6

4.2.3 EXTENT OF GREEN AREA DEVELOPMENT BY ENVIRONMENTAL HORTICULTURAL PRACTICE.

Nurseries located in the green area accounted for 68% of the Horticultural practice surveyed. Only 7 Nurseries were located on private allocated plot representing 6% of the respondents. The remaining 26% were located under bridge or both under bridge and green area (Fig. 4.2.1). Two – third of the Nursery practice occupied a land area of 100 – 500 m² or less than 0.05 hectare. Three respondent representing 2% of the population surveyed occupied land area of over one hectare. This implies that, although horticultural practices are ubiquitous in

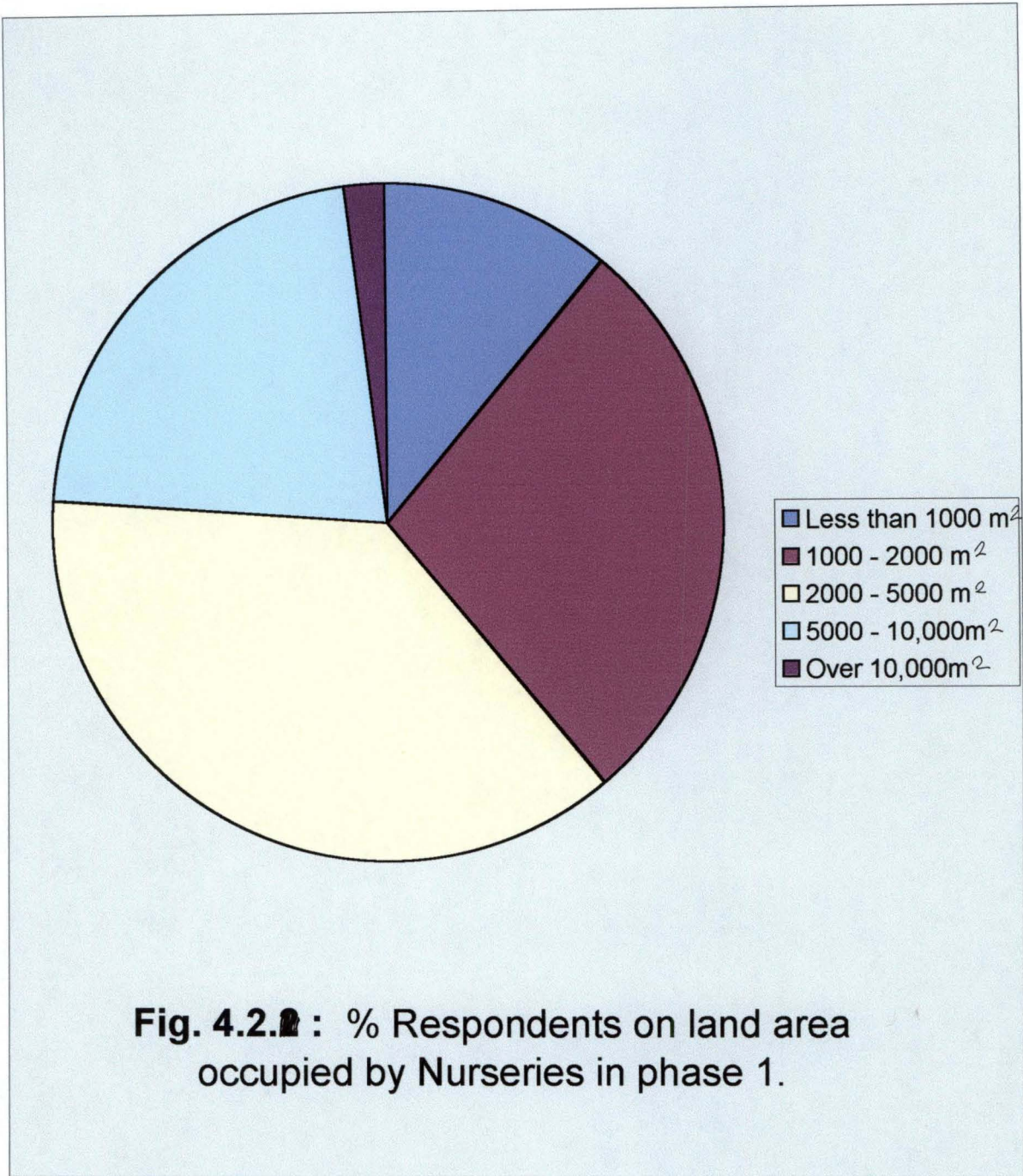
phase I, their presence have not made appreciable impact on green area development (Fig. 4.2.2.) However, over half of the respondents (58%) identified land as the major limiting factor to the expansion of the Nursery; only 3% accounted for other factors such as water, et.c. The remaining 39% attributed limitation of expansion to lack of finance, materials and labour (Fig. 4.2.3).

TABLE 4.3. GRASSES AND GROUNDCOVER PLANT AVAILABLE FOR SALE

Area M ²	Respondents	
	Numbers	Percentage
Less than 1000	53	45
1000 – 2000	18	15.1
2000 – 5000	18	15.1
5000 – 10,000	6	5
Over 10,000	1	0.8

4.2.4. GREEN PLANTING IN RESIDENTIAL AND COMMERCIAL AREAS.

Respondents estimated the highest quantify of plant sold to landscape contractors (59% followed by private individuals (31%) while fellow garden operators accounted for 5% sales (Table 4.4.). The respondents reflected an estimated 12,635 individual seedling plants sold by each Nursery practice during the last one year of its operation, yielding an average income of N75,423.00 to the individual Horticultural practice. Table 4.4. indicated that private individuals contribute to green plantings in residential areas while government



and landscape contractors accounted for green area planting and beautification in public area. However, lack of publicity was identified as the factor responsible for low sales of landscape plants and subsequent use by residents. (Table. 4.5). While lack of publicity accounted for 66% of responds, 24% was attributed to high cost of landscape plants, other factors took the remaining 10%. Garden location accounted for more sales (45%), followed by flower display and stock (20.3%). Advertisement was the least factor Identified for more sales (1.7%) by the respondents.

TABLE 4.4. PERCENTAGE RESPONDS TO CLASS OF BUYERS AND QUANTITY PURCHASED.

Class of buyer	Respondents	
	Numbers	Percentage
Individuals	37	31
Hotel & Lodging houses	5	4.2
Hospital & Religious organizations	1	0.8
Landscape contractors	69	59
Garden operators	6	5
TOTAL	118	100

To document other roles and services of plant Nursery within the city, Questions were asked concerning type and source of container used for plant production, other services provided to the public and level of expertise in horticulture of respondents. Results showed 32.2% of Nurseries provided more than one service to the public from four categories listed. Services such as vegetable production, cane works, Art/Craft works, inter-locking block tiles concrete flower pots and sculptor were among other services indicated by respondents. (Table 4.6). Educational services scored only 1.6%, supporting the fact that over 60% of respondents were not trained in horticulture. Data on level of expertise in horticulture revealed 36% respondents with Diploma, first or second degree in horticultural practice. This fact no doubt had influenced the use of environmental horticulture as an effective tool to educate residents

TABLE 4.5. PERCENTAGE RESPONDS TO FACTORS RESPONSIBLE FOR LOW SALES OF LANDSCAPE PLANTS

Factors	Respondents	
	Number	Percentage
Lack of publicity	78	66
High cost of plants	28	24
Non-availability of plants	7	6
Lack of transport	5	4
TOTAL	118	100

about local environmental issues and the importance of plants to life. This survey indicated substantial contribution of Nurseries in waste management by recycling “pure-waster bags”.

Table 4.7 shows that more than 60% respondents uses

Condemned “pure water” plastic bags as pots for plant production. 20% uses other types of containers except pure-water bag. The different types of container use by Nurseries for plant production in the study area are, Agricultural polyethen bags Domestic polyethen bags condemned “pure water” bags Re- use of cement sacks and plastic buckets.

TABLE 4.6. OTHER SERVICES PROVIDED BY ENVIRONMENTAL HORTICULTURAL PRACTICES IN PHASE I.

Services provided	Respondents	
	Number	Percentage
Garden planting works	41	35
Garden / landscape maintenance	11	9.3
Catering	15	12.7
Educational	2	1.6
More than one service above	38	32.2
Others	5	4.2
No responds	6	5
TOTAL	118	100

TABLE 4.7. PERCENTAGE RESPONDS TO TYPE OF CONTAINER USED FOR PLANT PRODUCTION.

Type of container used	Respondents	
	Number	Percentage
All types	12	10
All types except plastic bucket.	27	23
All types except Agric. Bags.	55	47
Agric polyethylene bags only.	7	6
All types of except pure-water bags	17	14
TOTAL	118	100

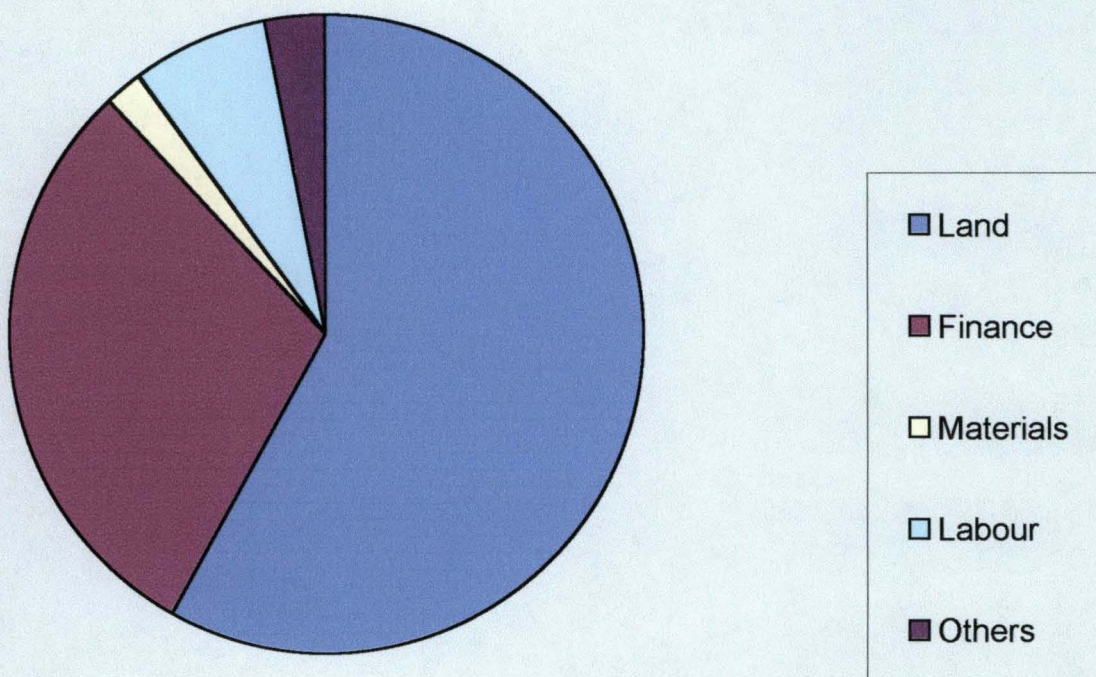


Fig. 4.3 :
% Respondents on limiting factors to expansion of Nurseries in phase 1.

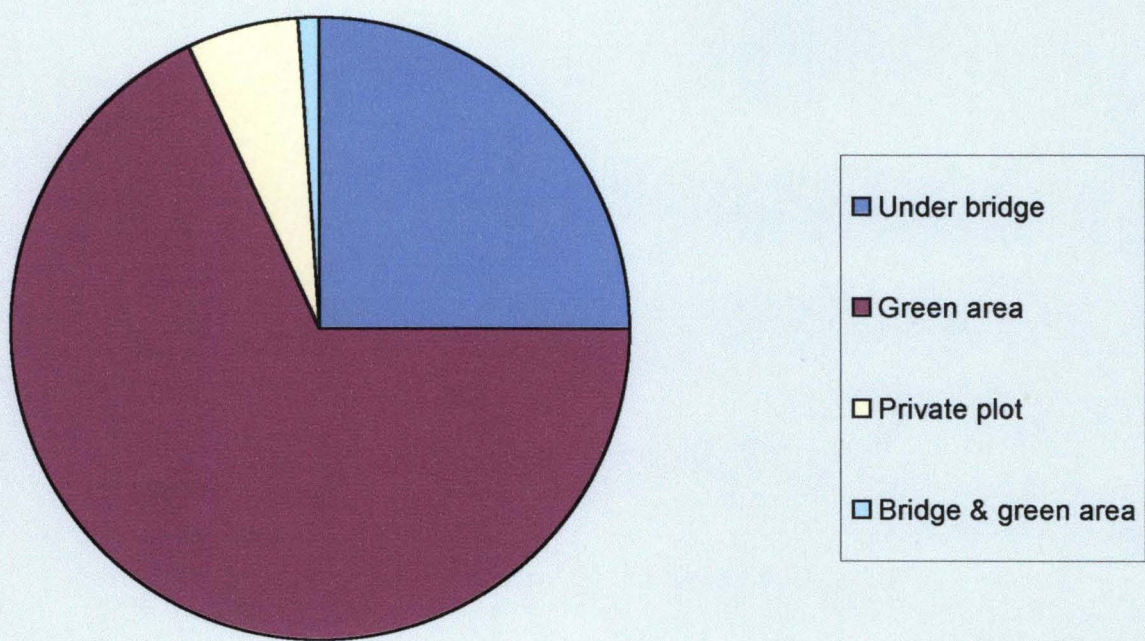


Fig. 4.4 :
% Respondents on location of Nursery practices in phase 1.

4.2 ANALYSIS OF PHASE ONE LANDSCAPE

Reconnaissance survey showed differences in landscaping within the five zones of phase one. While Maitama district, Asokoro district and some parts of Central have ideal landscape environments Garki II and Wuse areas have bare areas devoid of trees and shrub plantings. Plate 1 and 2 are the photograph of two areas in Garki II showing poor landscape environment. When compared with Plates 3 and 4, the beauty of good environmental landscape could be appreciated. Despite the aesthetic effects, these areas provide recreational services to residents of the city.

Plates 5 and 6 further, illustrates the untidiness and ugliness of deforestation or lack of vegetation resulting from construction activities in the city. Again compare with plates 7 and 8. Most government offices and buildings in the central area have well landscape environment, examples include, the National Assembly, the Presidential villa and other areas within the three arms zone, an exception is the area around the Supreme court building (plate 5). There are observed decline in the rate of green area development within phase one since the last few years. Data from this survey confirmed this trend (Fig. 4.1). This could be attributed to very poor motivation of horticultural practices by successive administration of the FCT and general low government involvement in landscape development and beautification. At present the government has only one moribund horticultural establishment.



PLATE 1: Area behind National assembly quarters, Garki II.



PLATE 2: A typical street without plants in Garki II.



PLATE 3: A landscaped area in Garki I.



PLATE 4: A typical street with Shrub plants in Maitama district.



PLATE 5: The supreme court area of the three arm zone, Central Area.



PLATE 6: A typical road lacking avenue planting, in Garki II.



PLATE 7: A Private landscaped house in Maitama district



PLATE 8: A road with avenue trees in Central Area.

CHAPTER FIVE

5.0. SUMMARY AND CONCLUSION.

5.1 SUMMARY OF RESULTS.

This study demonstrates that horticultural practice has a substantial influence on the present landscape of Abuja city phase I. Results showed that Nursery practices begin to increase in 1991 as construction activities in phase I, increased. (Fig. 4.1), Establishment of new Nursery practices in phase I decreased equally as construction activities were nearing completion. The diversity of Nurseries in landscape plant production ensured adequate supply of plant seedling to landscape contractors and private residents for- vegetation and beautification of the city. During the development period (Tables 4.2 and 4.3). Categories of landscape and horticultural plants produced included trees, shrubs, Grasses, Groundcover and other plants (indoor, cut-flower etc.) Two-third of the horticultural practice surveyed occupied an average land area of 0.5 hectare (Fig. 4.2) while 68% were located in green areas (Fig. 4.2.1). Over half of the respondents (58%) attribute low green area development by the nurseries to lack of land for expansion (Fig. 4.2.3). Findings estimated 12,635 plant seedlings sold by each Nursery undertaking per annum. If this estimated number of plants were to be multiplied by the actual number of horticultural practice in phase I, then projected to 10 years, the role of this private practices would be seen to be substantial on the city landscape with emphasis on vegetation and beautification.

A number of other contributions of environmental horticulture were found. Services such as waste, recycling through the Re-use of plastic bags, recreation, catering, landscape maintenance, and planting among others were identified.

Finally, findings indicated poor government motivation and participation in landscape development and beautification of the city. The AEPB have not included horticulture as an educational tool for its public environmental enlightenment programs.

5.2. CONCLUSION.

This study is the first to evaluate the impact of horticulture on environmental landscaping of Abuja. Despite the limitations of the research earlier stated, it has succeeded in documenting the nature, extent and contributions of private Nursery practice in phase I of the federal capital city, and to some extent quantified their impacts on the Developed environment.

No comprehensive statistical analyses was applied to the data collected, as such the information contained in this report is considered baseline statistical information for Abuja environmental protection board (AEPB) in whose jurisdiction the future of Abuja environmental health recreational and aesthetic landscape development depends.

5.2 RECOMMENDATIONS.

Results clearly revealed that Nursery practices occupy a small portion of the available green areas in phase I. It is therefore recommended here that AEPB should incorporate private horticultural practices in its Environmental policy for effective landscape beautification of all phases in future. This may be achieved by making appropriate land allocation decisions, which will legally make more land available for the practice. Also the board can explore the possibility of using Environmental horticulture as a tool for mobilizing resident on issues of environment sanitation and health.

Finally, further research work is needed to document the geographical location of Nursery practices and to understand fully its demographic and socio-economic implications to the city landscape as a whole.

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APPENDIX. I

DEFINITION OF TERMS

- AEPB - Abuja Environmental Protection Board.
- Agric Polyethylene bags - Specially made black polyethylene bags for plant production.
- Cement sacks - Empty cement sack use by Nurseries as pot for planting trees.
- Domestic polyethylene bags- Polyethylene black shopping bags measuring about 30cm x 45 cm.
- Environmental horticulture - Environmental horticulture refers to the growing, planting, use, maintenance, removal, disposal, and study of plants, usually in developing cities, towns and other settlements.
- FCC - Federal Capital City.
- FCT- Federal Capital Territory
- Garden - A piece of private ground used for ornamental plant seedling production.
- Grasses - These are plants use mainly for creating lawns.
- Green area - These are "open space" provide in the Abuja master plan for the primary purpose of recreational aesthetic effect, and to serve as a major scenic entrance into the city (master plan).
- Ground covers- These are perennials, dwarf shrubs and vines which produce even surface used in gardening to cover bare ground.
- Indoor plants - These are ornamental plants used for house decoration. They require shade to do well.

- Landscape- This is a prospect of inland scenery such as can be taken in at a glance from one point of view.
- Plant Nursery- Environmental Horticultural practices.
- Pure water bags - Water-proof bag of about 12 x 15 cm used to package commercial drinking water popularly know as pure – water.
- Shrub- Shrub is a woody plant which have many stems that rise from ground level or close to it. It occupy a more or less permanent place in a garden.
- Trees- Perennial plants with tall central track (2m) from which branches grow.

APPENDIX. II

**FEDERAL UNIVERSITY OF TECHNOLOGY
P.M.B. 65, MINNA, NIGER – STATE.
SCHOOL OF POST –GRADUATE STUDIES
DEPARTMENT OF GEOGRAPHY.**

RESEARCH TITLE - The impact of horticulture on Environmental landscaping of Abuja. - Phase one.

NOTE:- The aim of this research project is to identify the role of environmental horticultural practices (Nursery) in the present landscape of Abuja City Phase I. This research work has nothing to do with the government or it's agencies. It is purely an academic exercise to fulfill the requirement of Geography department.

INSTRUCTION:- tick () for the correct responses

1 In which part of the city is your Nursery/Garden located?

Central area , Garki I and II , Wuse I and II ,
Asokoro area Maitama district .

2 where is your Nursery/Garden situated?

Under the bridge , Green area , Private allocated plot .

3 what is the land area of your garden/nursery?

Less than 1000m² , 1000m² – 2000m²
200 – 500m² , 500 – 1ha , Over 1 hectare

4 How old is the nursery practice in this location:

Less than 1 year 1-2 years 2- 4 years
5- 10 years over 10 years

5 what is the estimated number of plants in your garden/nursery for sale.

i **TREES:** - less than 100 100- 250 250 – 500 500 – 1000
Over 1000

ii **SHRUBS** less than 250 250 – 1000 1000 – 5000
5000 – 10,000 Over 10,000

iii **GRASS/GROUND COVER PLANTS (M²):**

Less than 100m² 100 – 200m² 200 – 500m²
500 – 1000m² Over 1000m²

iv **OTHER PLANTS** (indoor plants):

Less than 100 100 – 200 200 – 500 500 – 1000
over 1000

6 Can you estimate the total number of plants sold in the last one year?

Less than 1000 1000 – 5000 5000 – 10,000
10,000 – 20,000 Over 20,000

7 Can you estimate the total quantity sold in the last one year.

Less than ₦10,000 , ₦10,000 – 50,000 ,
N50,000–N 100,000 Over ₦100,000

8 Which of the following class of buyers purchased the largest quantity of plants?

Private individuals Hotels & lodging houses hospitals/ religious
Organizations Landscape contractors Nursery/Garden operators

9 Aside plant to the sales, which other services do you provide to the public?

Garden landscape planting Garden maintenance Catering services
Educational services others – specify

10 In your opinion, what factor(s) attracts buyers to your Nursery/Garden?

Garden location flower / Plant display and stock.

Plant quality cheap Price Advertisement.

11. What factor (s) do you attribute to low sales?

Lack of publicity high cost of ornamental plants

Non availability of landscape plants Lack of transport.

12. How do you get containers for plant production?

Purchase of Agric polythen bags

Purchase of Domestic polythen bags.

Re-use of Condemned “ pure water “ bags.

Re – use of cement sacks / bags.

Purchase of plastic buckets.

13. What do you consider as limiting resource for expansion of your Nursery?

Land Finance (money) Material acquisition

Labour Others – specify.

13. What is your level of expertise in Horticulture?

SSCE

Diploma

First-Degree

Second Degree

Thanks for your co- operations.

A.G OKORIE