THE IMPACT OF HORTICULTURE ON AN ENVIRONMENT, A CASE STUDY OF ABUJA

BY

EZEKIEL JAMES JOHN
PGD/GDRY/247/2001/2002

DEPARTMENT OF GEOGRAPHY
FEDERAL UNIVERSITY OF TECHNOLOGY
MINNA

A THESIS PROJECT SUBMITTED TO THE DEPARTMENT OF GEOGRAPHY, SCHOOL OF SCIENCE AND SCIENCE EDUCATION IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF POST – GRADUATE DIPLOMA IN ENVIRONMENTAL MANAGEMENT OF THE FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGERIA.

OCTOBER, 2003.

DECLARATION

I, **Ezekiel J. John** hereby declare that this report project entitled, the impact of horticulture on an environment. A case study of Abuja, is a product of my own research work under the supervision of Dr. Mrs. A. E. Odafen as the (HOD).



EZEKIEL J. JOHN

DEDICATION

This research project is dedicated to Almighty God for guiding me through from the commencement of my course at federal University of Technology, Minna.

My thanks also goes to my parents, my Brothers and Sisters.

Finally, my thanks goes to my darling Miss Atinuke Adebayo for her Love and affection.

CERTIFICATION

This research project has been read and approved in partial fulfillment of the requirements for the aware of post – Graduate diploma. Work under taken by Ezekiel J. John (PGD/GEO/247/2001/2002) under the Supervision of Dr. Mrs. A. E. Odafen (HOD) in the Department of Geography, Federal University of Technology, Minna.

Odafen 8/12/03
DR. (MRS) A. E. ODAFEN
SUPERVISOR

8/12/03
DATE

Odafen
DR. (MRS) A. E. ODAFEN
HEAD OF DEPARTMENT

8/12/03
DATE

PROF. J. A. ABALAKA
DEAN OF PG SCHOOL

DATE

PROF. ARIYO (A.B.U. ZARIA)
GEOGRAPHY DEPARTMENT.SX
EXTERNAL EXAMINER

DATE

ACKNOWLEDGEMENT

I have to express my sincere and heartfelt gratitude to my God who have mercy and protection over me through this hectic interestingly fulfilling journey.

I am also highly indebted to Prof. D. O. Adefolalu, Dr. Mrs. A. E. Odafen, Dr. S. P. Akinyeye, Dr. Abubakar Sadaoki who read through the manuscript and offered constructive suggestions and criticisms to make this work reach its present standard. And to my able humble other Lecturers Dr. Halilu, Dr. O. Apollonian. I wish also to thank my colleagues, Bankola Bamidele, Funmi Oyesan, Shiriff, Adebayo Wasiu, John Alabi, Adebisi Abiola, Mammud A. Aliyu, Davis Zinnas, Mohammed B. Y. (Small), Mohammed Abubakar Isah, and all my friends who gave me encouragement aid support in one way or the other during the course of writing this project.

I am equally grateful to Chief M. O. Adewoyin my Mum. For her monetary assistance throughout this course, special mention should be made to my Sisters & Brothers for their moral support through out the development of typing of the manuscript.

Finally, I also wish to thank my friends Bidemi Funmilayo, Toyin Ahmed, and Yovne for their support and assistance in the course of this project, to you all I say thank your and God's blessing.

ABSTRACT

This report highlights the result of research survey conducted to determine the impact of horticulture in an Environment of Abuja FCT.

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 asses 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 stated in 1991, reaching the Maximum within (4) four years (1995) but now, they are suffering a decline resulting from lack of motivation (zeal) 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 project during the period. Findings revealed nurseries and landscape contractors as responsible for the success achieved in green planting between 1991 & 1995

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

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

TABLE OF CONTENT

		PAGE
Title		
Title Page		i
Declaration		ii
Dedication		iii
Certification		iv
Acknowledgment		v
Abstract		vi
Table of Content		vii
List of Tables		x
List of Figures		xi
List of Maps		xii
List of Photographs		xiii
CHAPTER ONE		
1.0	INTRODUCTION.	1
1.1	HORTICULTURE AND ENVIRONMENT – A PREVIEW	1
1.2	PROBLEM STATEMENT	3
1.3	AIMS AND OBJECTIVES	4
1.4	JUSTIFICATION OF STUDY	4
1.5	SCOPE AND LIMITATION	5
1.6	THE STUDY AREA	6
1.7	MAP 1. F.C.T. MAP 2. F.C.C.	6

CHAPTER TWO

		PAGE
2.0	LITERATURE REVIEW	7
2.1	NEED FOR LANDSCAPE DEVELOPMENT / MAINTENANCE	7
2.2	MANAGEMENT PRACTICES IN HORTICULTURE ON ENVIRONMENT	8
2.3	BRIEF REVIEW OF LANDSCAPE STRUCTURE	9
2.4	IMPROVING THE LANDSCAPE QUALITY OF ABUJA	10

CHAPTER THREE

METHODOLOGY

3.1	INTRODUCTION	13
3.2	THE RESEARCH DESIGN	13
3.3	THE POPULATION	13
3.4	THE SAMPLE UNIT	14
3.5	THE SURVEY INSTRUMENT	14
3.6	VALIDITY OF THE INSTRUMENT	14
3.7	QUESTIONNAIRE ADMINISTRATION	15

CHAPTER FOUR

DATA ANALYSIS & RESULTS

4.00	ANALYSIS OF RESPONES	16
4.1.1	GROWTH PATTERN OF HORTICULTURAL PRACTICES IN STUDY AREA	16

4.2.0 EXTENT OF GREEN AREA DEVELOPMENT BY HORTICULTURAL PRACTICE 18

4.3.0. ANALYSIS OF THE STUDY AREA LANDSCAPE 25

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY OF RESULTS 31

5.2 CONCLUSION 32

5.3 RECOMMENDATION 32

REFERENCES 33

APPENDIXES

I SAMPLE OF QESTIONNAIRE 35

II DEFINITION OF KEY TERMS 38

LIST OF TABLES

TABLE	TITLE	PAGE
3.1	Number of Questionnaires Returned for Analysis	15
4.1	Age of Nurseries	16
4.2.1	Showing area of Locations	19
4.2.2	Available land area Occupied by Nurseries	20
4.2.3	% Respondents on Limiting factors Expansion of Nurseries	21
4.2.4	Grasses and Ground Cover plant Available for Sale	22
4.2.5	% Response to class of Buyers and Quantity Purchased	23
4.2.6	% Response to factor Responsible for Low Sale Landscape Plants	24
4.2.7	Other Services Provided by Environmental Horticultural Practices	24
4.2.8	% Response to type of Container used for plant production	25

LIST OF FIGURES

FIGURES	TITLE	PAGE
4.1	Growth Pattern of Horticultural Practices	17
4.2.1	% Respondents on Location of Nursery practices	19
4.2.2	% Respondents to Land Area Occupied by Nurseries	20
4.2.3	% Respondents on Limiting Factors to Expansions of Nurseries	21
4.2.4	Showing grasses and ground cover plant available for sale	22

LIST OF MAPS

		PAGE
1.1	Federal Capital Territory	6
1.2	Federal Capital City	6

LIST OF PHOTOGRAPHS

PLATES	TITLE	PAGE
1.	A well Landscaped Area in Garki I	27
2.	A Street with avenue Planting in Maitama District	27
3.	A road along National assembly quarters Garki II	28
4.	A typical street without plants in Garki II	28
5.	A typical road lacking Avenue planting in Garki II	29
6.	A typical road along Central Area	29
7.	A Private well landscape house in Asokoro District.	30
8.	A well Landscape Environment in Maitama.	30

CHAPTER ONE

1.0 INTRODUCTION

1.1 HORTICULTRE AND ENVIRONMENT – A PREVIEW.

Horticulture is a branch of Agriculture, concerned with intensively cultured plant directivity used by man for food, for medicinal purpose and for aesthetic gratification. In another way round it could be a branch of Agriculture that deals with pomology, olericulture and floriculture.

Landscape is a branch or submit in the horticulture concerned with the uses of flowers, the arrangement on the field where to use a specific type of plants where necessary their growing habit should be known. Growing them peculiar to each species planting or growing includes the systematic application placing them in a particular areas, or in a correct positions. In short, the actual job of landscaping is another specialized horticultural enterprises, which involves a knowledge of the principles of design, combined with the ability to execute a plan artistically soundly and economically.

The plan itself is concerned with the development of beauty through arrangement composition and design so that the result may give pleasure and enjoyment and bring improvement to the surrounding or the areas. The Abuja city landscape comprises of the composites of natural and human features that characterize the surface of the present area including spatial, textural, compositional and dynamic aspect of the land. No component of the landscape is more directly related to modern city development and environmental change as vegetation.

Although city landscape can be said to be define in terms of national component, vegetation, landforms and water, vegetation management, Human attributes, structures and Building and, Aesthetic qualities - economic value, sensitivity and

heritage. Besides, the impact of plant cover 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, micro climatic and noise reduction (source) 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 shatter belts, wind-breaks, slop planting and terrace.

Environmental horticulture base on growing, use, planting, maintenance, removals, disposal, and study of plants settlements. It involves the production and sale of nursery grown seedlings, trees, shrubs and grasses for landscape and garden developments. Although this practice demands the use of environmental resources such as land. fertile soil, reliable water supply and conductive weather conditions.

Aesthetic value of horticulture – is the aesthetic value of flower in our environment, homes, shady trees, lawn, flower beds and variety of other features in the garden, is highly important to human pleasure and comfort, and cannot be measured in quantitative terms. It is rather difficult to ascertain the precise position of a large industry such as horticulture. It involves not only the may facts of production, but also the processing services and maintenance aspects.

There are also immense possibilities for constancy services that could be undertaken in the field by those wanting to go into horticultural business. The beauty, created by plants through the patterns, scents, shades and airness are sufficient basis to crave for a flower lust.

In some years back, it was discovered that despite the prominence given to forestry, wild life and the provision of recreational facilities in the Abuja, F.C.T. master plan. The sub-sector was yet to witness considerable improvement. Instead,

the existing forest reserve tends to degenerated as a result of uncontrolled destruction through construction activities and wide-spread bush five.

The Ministry of Federal Capital Territory (MFCT) realized that to nature the Flora and Fanna of Abuja involve protection and developing the ecological landscape, took giant steps towards a forestation, planting on the highways with trees to provide shade as (Avenue trees) fruits and aesthetic beautification. Also it provided a one hundred hectares National arboration and botanical garden, out of which five hectares was cultivated Abuja plant nursery. The plant nursery managed by Abuja environmental protection board (AEPB) was to private horticultural lecture. Plants, flowery services and needs of public and private building, security post, pavilion and ceremonies within and around the capital.

The momentum of building and road development in Abuja increased in 1991, with the movement of the seat of Government from Lagos to the Capital territory. Since than the ability of the fore 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 of Abuja, manifested into practiced.

1.2 PROBLEM STATEMENT

The Abuja environmental protection board-been established with their decree number 58 of 1998, which require state and Local Governments to establish environmental protection agency. The board's duties included the provision of recreation, garden, enhancement of aesthetic valued landscape of the Capital and public environmental enlightenment campaign among other activities.

Environmental horticultural practices provide products such as trees, grasses for aesthetic, shrubs recreational, health and landscape beautification.

In addition, 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 it's decision making and environmental policy implementation

1.3 AIMS & OBJECTIVES

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

1. To collect data and analysis on the extent of green area development in Abuja city.
2. Assess green culture as a socio-economic tool for public environmental enlightenment.
3. To find out the benefits derived in the course of environmental garden and other areas of relaxation.
4. To assess the impact of horticultural practices on landscape improvement by the residents of the city.

1.4 JUSTIFICATION OF STUDY

Most buildings of Abuja city have involved extensive deforestation and urbanization. Buildings and roads have displaced soil and plants, noise, resulting to air pollution, high word 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, to be exquisitely show.

Therefore, to improve the aesthetic quality of the city environment require sound environmental Management and protection decisions or policies making. Any policy or decision requiring massive aforestration and ornamental beautification of new city as Abuja must depend on adequate knowledge of horticultural grown plants, with the nature and extent of nursery or horticultural practices within the city.

The information presented in this report will no doubt be a powerful weapon in the hand of Abuja environmental protection board (AEPB) for present and future environmental health, garden recreational aesthetic landscape decision and policy making.

1.5 SCOPE AND LIMITATIONS

This project study was limited to available resources and time. Only plant and nursery or landscape practices located within the city development plan to Abuja were surveyed.

Geographical Location and demography of horticultural practices were not collected for data analysis while analysis was limited to number of questionnaires correctly answered and returned to the researcher. No attempt was made to categorize was made to categorize nursery practices into large, small or medium class. Cost of plants and green area maintenance was excluded. In addition only private nursery were surveyed. The only government plant nursery was not considered at the time of surveying.

1.6 THE STUDY AREA

Abuja, Federal Capital Territory (FCT) lies between latitude $8^0 25^0$ and $9^0 20^0$ North of the equator and longitude $6^0 45^0$ and $7^0 39^0$ East of the Greenwich meridian. It is located at the center of Nigeria and share boundaries with Nasarawa State to the east and north, Kaduna State to the North, Kogi State to the sough-west and Niger State to the west. It covered a land area of about 8,000 square Kilometer and the vegetation is predominately guinea savannah.

The Federal Capital City (FCC) is about 250 sq km (3%) of the entire federal capital, out of which 8.300 hectares. Are open land 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. The first stage construction starting in 1986, with initial projected population of about 150,000 inhabitants. However, the present city development plan was based on four phases for a projected population of 3.1 million people (RNL, 1991). (MAP 1.6:2) Located with the municipal area council is made up of the following area of my study, were

i. Garki I and II

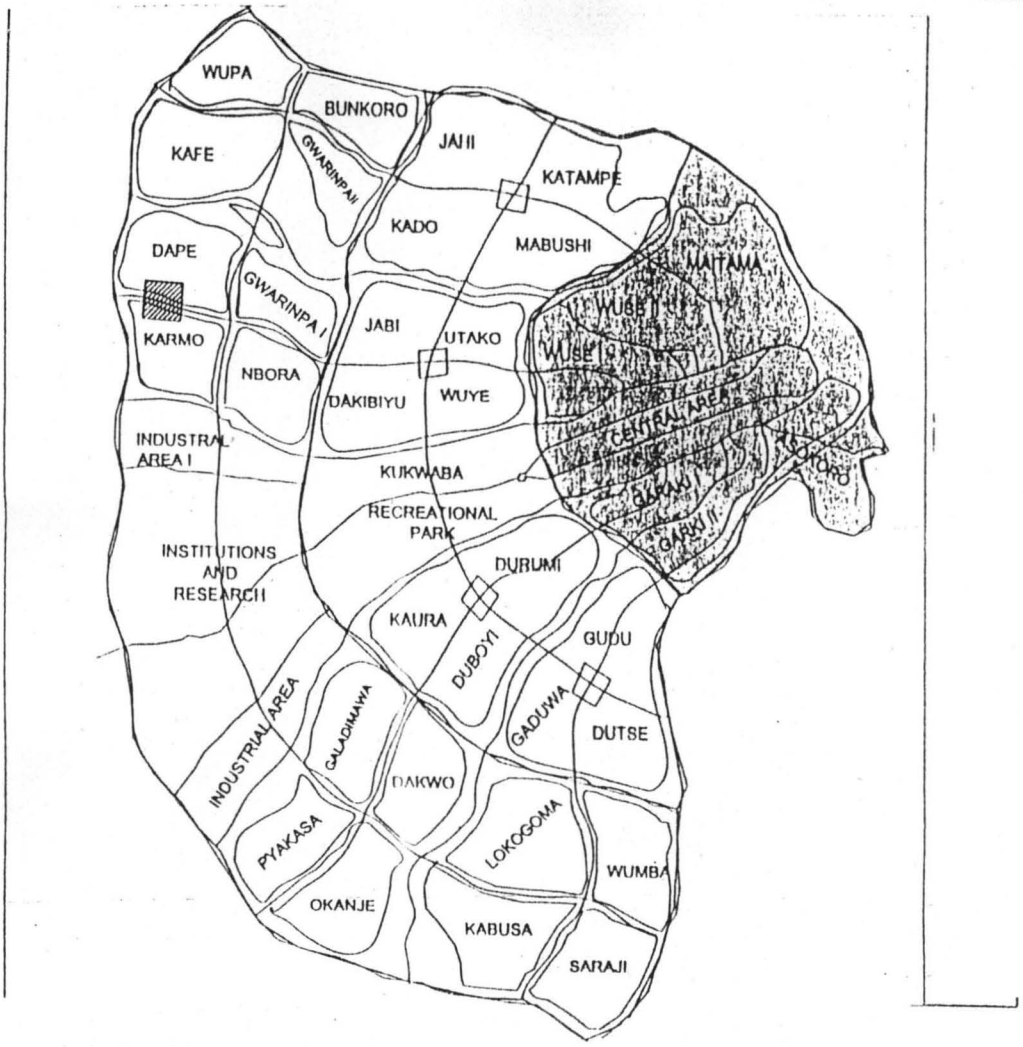
ii. Wuse I and II

iii. Asokoro Area or District

iv. Maitama District

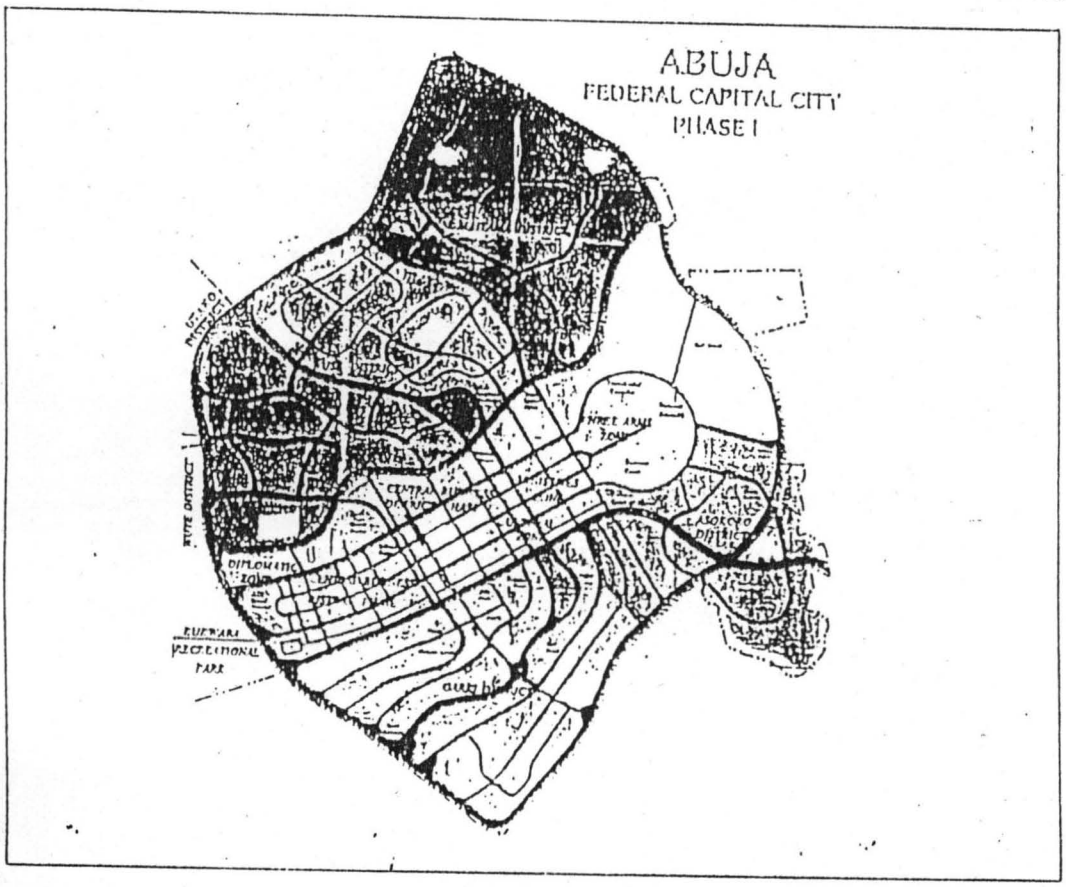
v. Central Area.

Only the central area which is the main business district of the city, the four (4) others are planned specifically for residential purposes.



Map 1.1. Federal Capital Territory

Source; CCL, 1998.



CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 NEED FOR LANDSCAPE DEVELOPMENT /MAINTENANCE

A modern city Horticultural 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.

Derek (1979) indicated that visual improvement of landscape is of particular value where an open landscape has been fragmental by working or structures. He outlined the functions of trees and vegetation as follows. (a) Amelioration of Climate (b) Atmospheric purification (c) Soil improvement and conservation (d) wild life Conservation (e) Water Conservation (f) Recreation (g) Timber and food production (h) Visual and aural improvement of the environment.

Richard et al (1979) stated the fact that extensive urbanization has meant the man has because increasingly divorced from nature. Cities and town have spread over what was once country side and have become so densely built, that building and hard ground surface have displaced soil and plants. Contact with plant in such are is dependent upon a conscious decision by man to provide conditions in which plant will grow and to tend and foster them. By doing so, a new dimension of natural beauty can be added to the built forms and spaces of urban area. Other positive benefits 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, William (1991) in relation to urban areas is asserted that climate in and around urban areas is usually somewhat 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 and otherwise not apparent without the aid of detailed observation and measurement.

2.2 MANAGEMENT PRACTICES IN HORTICULTURE ON ENVIRONMENT

Environmental horticulture involves the industries that maintain and improve the functional use of plants in populated areas. Major categories include the production of ornamental plant, services related to ornamentals and equipment's and accessories.

A 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, wild 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 tradition Nigeria town planing are in the private sector rather than public sector. However, in the 20th century Nigeria town planning, there is often 'open space' some of it research for future government use.

Recently, the notion or (idea) of urban park 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 Federal Capital

Territory 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-build-able areas, it gives wise allocation to educational and sports facilities to satisfy the aesthetic value and relief from the built urban environment. Scott and George (1996) student the impact of urban forestry on California economy and fund that urban forestry accounted for at least & 3.789 billion in total scale & 2.092 billion income to individuals, and 64.000 Jobs in the State. This knowledge of economic activities was necessary for voters and government officials who make decisions that affect management of these and other National resources in California. Ramiro et al (1999) conducted a study, revealed that flower field in Carlsbad, San Diego Country of California has beneficial Agricultural tourism potentials. Also, the study shows that flower fields are excellent tool to educate the public about the importance of agriculture and it's contribution to the country's economy and quality of life.

2.3 BRIEF REVIEW OF LANDSCAPE STRUCTURE

Landscape has different meaning to different people, some see it as form of growing and installation of plant, while others see it as a form of seating before a large drawing board planning beautiful, drawings, some see it as moving of lawns, raised shrubs, pruning of shrubs and erect fences. However, landscape deals with designing, installation and maintenance of plant and soil. It is an act of gardening and construction and a form of land fashioning. A good landscape work seeks to

effectively control the movement of people and animal giving a similar of some order in the landscape. This can be done with the aid of plants which provide physical barrier.

Landscaping have the following scope – They are architects, Landscape Contractor, Landscape Nursery Maintenance and Landscape Manager/Supervisor.

MAINTENANCE REQUIRED

The maintenance aspect of the landscaping is of almost importance and is the last job to be done. This factor has already been talked about as the duty of landscape maintenance supervisor, who is a personnel required for landscaping.

The right job done at the right time is the most important role of landscape maintenance. The records of work and general work done should be taken accordingly to drain air, maintenance schedule, equipment and supplies will be required for all operation. Qualified well trained personnel will also be employed for carrying out necessary maintenance. After independence, some of the landscape work done by the colonial masters had deteriorated, while a lot of improvement was made in certain areas

2.4 IMPROVING THE LANDCAPE QUALITY OF ABUJA

There are several befitting landmark structures scattered around choice areas of Abuja City. One unique feature that characterizes these landmark structure is the state-of-the-air landscape works accompanying some of them. Landscaping is usually done to supplement the bare form of buildings with a more naturally and visually pleasing environment, so as to achieve stability, unity and coherence in the layout of the structure concerned. It involves an initial appraisal of existing vegetation

to determine which of it might be suitable for retention of even replanting, the making of lawns and hedges, and the planting of avenue trees and drainage work e.t.c.

Landscaping has the advantage of both ensuring effective use of 'open space', and acting as a visual and even physical link between deviling as well as breaking the monopoly of uniform estate layouts. But most essentially, it reestablished a suitable article environment that same area mimics the original habitat for the same area, so that any feasible effect of ecosystem destabilization are absorbed by it. If the culture of landscaping is imbibed as compulsory complement for every building project, Abuja would be endeared as one of the most beautiful cities in the world. Unfortunately, no compelling measures are placed on landscaping of structures, as only a few of those in the municipal area are properly landscaped. In the satellite towns of Gwagwalada, Nyanya, Bwari e.t.c. no particular interest is attached to this. The settlements are filling, unpleasant and characterized by stagnant pools and clogging of drainage system, posing threat of erosion. For an enhanced landscape quality, however, the entire vicinities of the FCT must be protected from undue distortion and destabilization through effective control measures where distortions occur mitigation efforts should be promptly employed to forestall the obvious adverse consequences for instance, all the streets pedestrian tracks and other public places should be landscaped. Avenue trees and hedge flowers should be planted on either side of all the streets and pedestrian tracks in the FCT, and not just as presently confined to Gark, Wuse and Airport Roads. Government participation could enhance more spectacular changes in this regard, though private or cor-porate assistance in form of good will is still desirable. Avenue trees would provide shelter, influence pedestrian circulation and act as wind breaks, accommodate change in grown water levels define external spaces and generally supply visual contrast and relief. Hedges

demarcate boundaries between street and pedestrian tracks, stabilize the soil from clogging the drainage system and reduce the wind speed.

Farming activities ordinarily destroy the natural heritage of an area. Unfortunately, this is assuming an undue prominence on fringe space within buit-up areas of the FCT. These farms are mostly of the type: Corn, Sugar Canes, Maize, Potato, Cassava and Yam. Farming in these areas is highly undersirable because of the landscape decay associated with it. The relevant authorities should enforce the ban on farming in built-up areas.

Indiscriminate rearing of animals in the city is also threatening the landscape. The animals mostly sheep and goats, often graze and trample on the lawns and flowers, destroying the soil quality and landscape. Relevant laws prohibiting the rearing of animals in the built-up areas should be implemented and enforced so that aesthetics of the FCT is preserved

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, reports, text books, journals and unpublished materials dealing with environmental horticulture and landscape development. The primary data were obtained through the reconnaissance survey and observation 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 Horticultural landscaping of Abuja City. 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 question the questionnaire provided enough data to satisfy the objective of the research project.

3.3 THE POPULATION

Reconnaissance survey and observations made by the research within the Abuja city Development area of the city reveled 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, I had 25 nursery practices selected at random for data collected regarding their impact on the city landscape. The structured questionnaire were allocated to the chosen nursery practices for answers.

3.5 THE SURVEY INSTRUMENT

The instrument wed in this research was a structured questionnaire made up of 14 questions with fixed alternative answer to ensure Uniformity of respondents. 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. 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 form sample unit.

3.6 VALIDITY OF THE INSTRUMENT

The questionnaire instrument was verified by pre-testing its validity on 10 randomly chosen Nursery practices in Abuja. Selected supplied answers to the questions. It was noted that these (3) three respondents did not supply answer 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 Abuja City, by the researcher and his assistants on Monday, 18th August, 2003. Collection of the answered questionnaire was made on Wednesday, 20th and Thursday, 21st August, 2003. The researcher was unable to collect 3 questionnaire while 4 questionnaire were returned without answers.

Table 3.1 showed the number of questionnaire 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.	Maitama District	25	25	100
2.	Wuse I and II	25	25	100
3.	Asokoro Area	25	24	96
4.	Gark I and II	25	22	88
5.	Central Area	25	22	88
	TOTAL	125	118	94.4

Source: Field Work, 2003.

CHAPTER FOUR

4.0 DATA ANALYSIS AND RESUILTS

4.1.0 ANALYSIS OF RESPONSE

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

4.1.1 GROWTH PATIERN OF HORTICULTRAL PRACTICES

Sorting horticultural practices by age groups two-third of the respondents (31% and 29%) represented Nursery practices 2 to 4 years and 5-10 years Old (Table 4:1). The remaining categories accounted for approximately 17% to 19% of the respondents, except for the over 10 years age group which accounted for only 4% of Nursery practices in the study areas.

This data shows a decline in the establishment of new horticultural practices in the last 3 year (fig 4.1.) reflecting the general trend in development of the zones. 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 Abuja is coming to conclusion, the number of new horticultural practices are decreasing.

TABLE 4.1
AGE OF NURSERIES

Year Since establishment	Number of respondents	Percentage of respondents
Less than One	20	17
1-2	23	19
2-4	36	31
5-10	34	29
Over 10	5	4
Total	118	100

Source: Field Work, 2003.

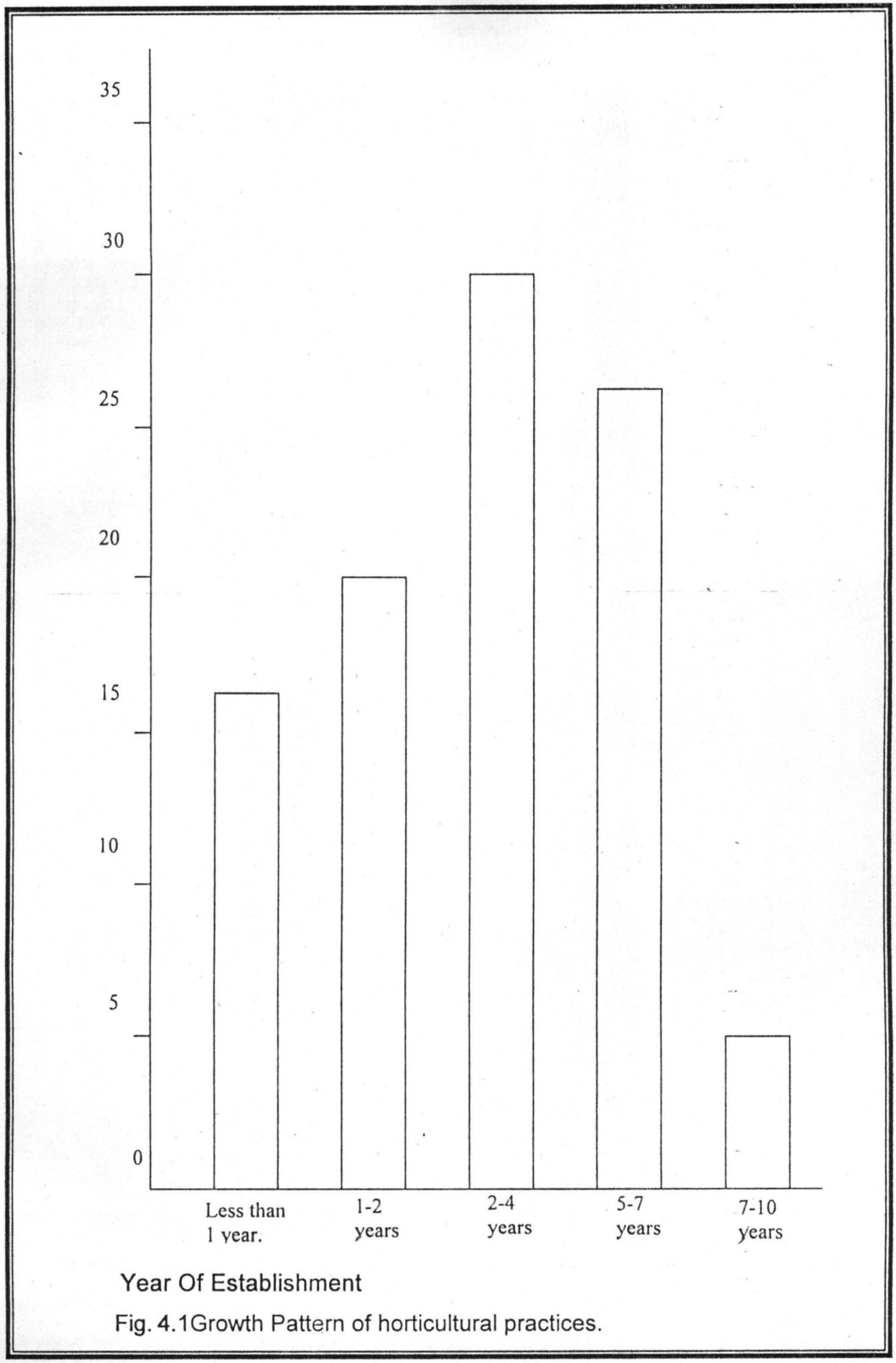


Fig. 4.1Growth Pattern of horticultural practices.

Source: Field Work, 2003.

4.2 EXTENT OF GREEN AREA DEVELOPMENT BY ENVIRONMENTAL HORTICULTURE PRACTICE.

Nurseries Located in the green area accounted for 70% of the Horticultural practices surveyed. Only 8 Nurseries were located on private allocated plot representing 7% of the respondents. The remaining 23% Where located under bridge or both under bridge and green area.

(fig. 4.2.1) over two third of the nursery practices occupied a land area of 1000-5000m^2. Representing 76.3% of the total surveyed why the remaining 23.7% goes for land area between 5000 and above see table 4.2.2. this implies that although horticultural practices area ubiquitous in Abuja area, their presence have not made appreciable impact an green area development. (fig. 4.2.3) However, finance, labour and materials with 31.4%, 24.5% and 21.2%. receptively has the highest limiting factor. See (table 4.4.3) why land and others account for 22.9% this implies that land aid others factor apart from the 3 mentioned above has an insignificant effect.

Table 4.2.1

Showing Area of Locations

Types of Area	Number (No)	%Percentage	Degree
Green Area	83	70	253.2
Private Plot	8	7	24.4
Others	27	23	82.4
Total	118	100	360

Source: Field Work, 2003.

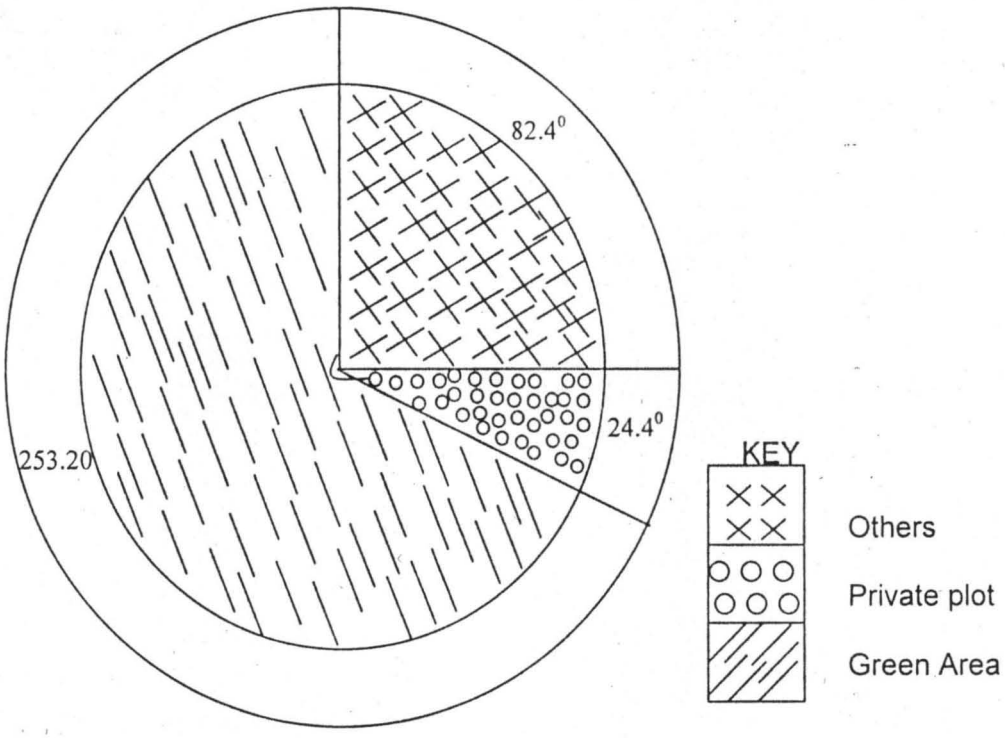


Fig. 4.2.1

% Respondents on Location of Nursery Practices in the study area.

Source: Field Work, 2003.

TABLE 4.2.2

Available land area occupied by Nurseries in the study area.

Area (M^2)	Number (No)	% Percentage	Degree
Less than 1000	48	40.7	146
1000 – 2000	28	23.7	85
2000 – 5000	14	11.9	43
5000 – 10,000	16	13.6	49
10,000 and above	12	10.1	37
Total	118	100	360

Source: Field Work, 2003.

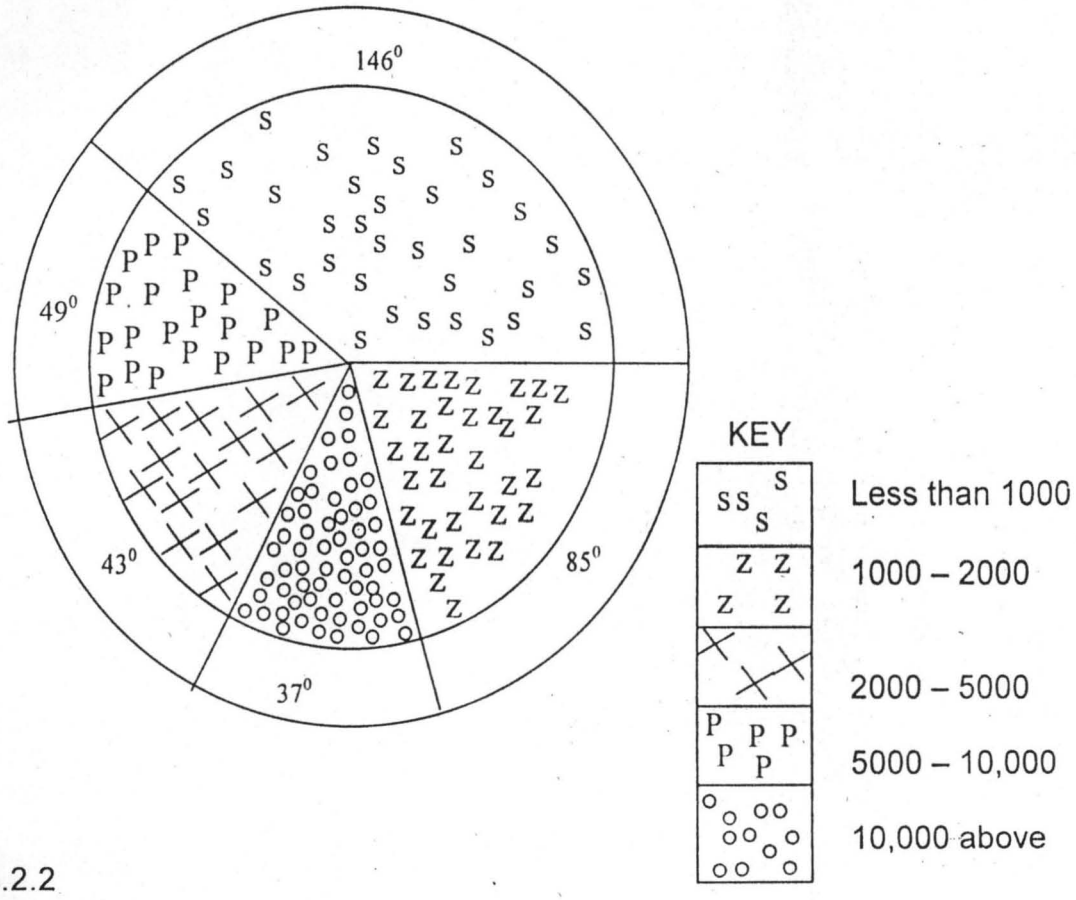


Fig 4.2.2

Land area occupied by Nurseries in the study area.

Source: Field Work, 2003.

Table 4.2.3

% Respondent on the limiting factors.

Factors	Number (No)	% percentage	Degree ^{0}
Land	16	13.6	49
Finance	37	31.4	113
Labour	29	24.5	88
Materials	25	21.2	76
Others	11	9.3	34
Total	118	100	360

Source: Field Work, 2003.

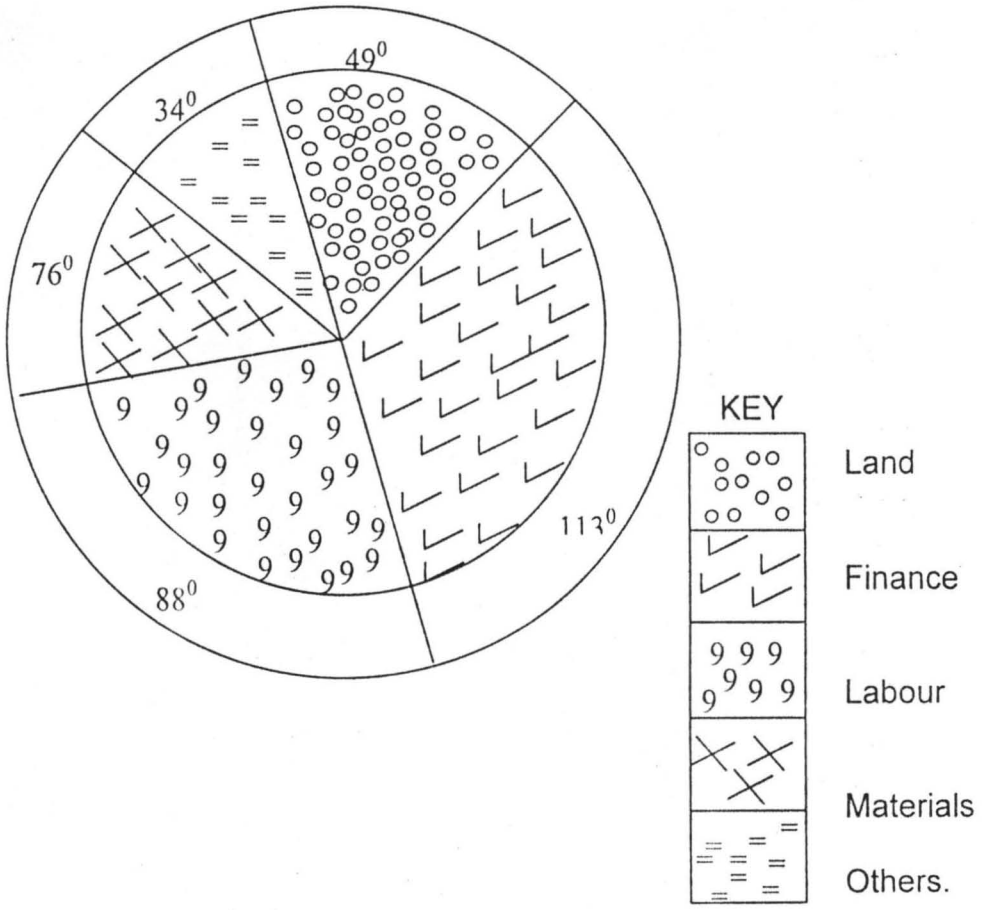


Fig 4.2.3

% Respondent on Limiting factors to Expansion of Nurseries.

Source: Field Work, 2003.

Table 4.2.4

Grasses and Ground Cover Plant Available for Sale.

	RESPONDENTS		
Area m^2	(No.) Number	Percentage %	Degree ^{0}
Less than 1000	59	50	180^0
1000 – 2000	22	18.6	67
2000 – 5000	22	18.6	67
5000 – 10,000	10	8.6	31
Over 10,000	5	4.2	15
Total	118	100	360

Source: Field Work, 2003.

(from Table 4.2.4)Half of the respondent has less than 1000m^2 of land for sale (for Horticultural practice) covering 50% in the 180^0 of the total respondent, land between 1000 to 5000 m^2, for sales caries 44% of the total respondents, only 10% of 31^0 of the land between 5000 and 10,000m^2 are for sales while the reaming 5% or 15^0 are for over 10,000 m^2 of land for sale. This shows that little available land area for sales.

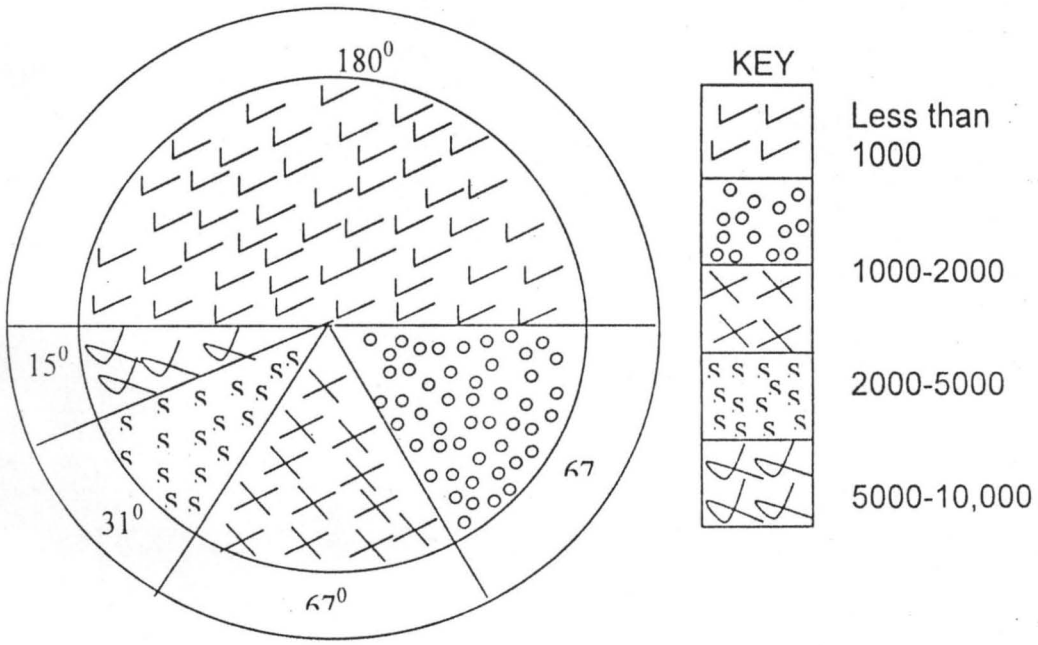


Fig. 4.2.4 Showing grassed and ground cover plant Available for sale.

Source: Field Work, 2003.

Table 4.2.5

Percentage Response to Class of Buyers and Quantity Purchased

	RESPONDENTS	
Class of Buyer	Numbers	Percentage
Individuals	37	31
Hotel & lodging house	5	4.2
Hospital & religious Organizations	1	0.8
Landscape contractors	69	59
Garden operators	6	5
Total	118	100

Source: Field Work, 2003.

To document other roles and services of plant Nursery within the city, questions were asked concerning type and some of container used for plant production, other services provided to the public and level of expertise in horticulture of respondents. Results should 32.2% of Nurseries provided more than one service to the public from four categories listed. service such as vegetable production, care works, Art/Craft works, inter-locking blocks tiles concrete flower pots and sculptor were among other service indicated by respondents. (Table 4.2.7) Educational service scored only 1.6%, supporting the fact that over 60% of 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 about local environmental issues and the importance of plant to life. This survey indicated substantial contribution of Nurseries in waste management by recycling "pure-waste bags".

Table 4.2.6

Percentage Response to Factor Responsible for Low Sales of Landscape plants.

	RESPONDENTS	
Factors	Numbers	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

Source: Field Work, 2003.

Table 4.2.8 Shows that more than 60% respondents use 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 4.2.7

Other Services Provided by Environmental Horticultural Practices in Abuja

	RESPONDENTS	
Services Provided	Numbers	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

Source: Field Work, 2003.

Table 4.2.8

Percentage Response to Type of Container used for Plant Production

	RESPONDENTS	
Types of Container Used	Numbers	Percentage
All types	12	10
All types except plastic bucket	27	23
All types except Agricultural Bags	55	47
All types polyethen bags only	7	6
All types of except pure water bags	17	14
Total	118	100

Source: Field Work, 2003.

4.3.0 ANALYSIS OF THE STUDY AREA LANDSCAPE

Reconnaissance survey should differences in landscape within the five zones of the study area in Abuja while Asokoro District, Maitama District and some parts of central have ideal landscape environments, Garki II and Wuse areas have bare areas devoid of trees and shrubs plantings. Plate 1 and 2 shows the beauty of good and aesthetic environmental landscape could be appreciated. Despite the aesthetic effects, those areas provide recreational services to residents of the city of Abuja. Comparing plate 3 and 4 are the photograph of an area in Garki II showing poor landscape environment. Plate 5 and 6 However, shows the untidiness and unpleasant condition of deforestation or lack of vegetation resulting from construction activities in the city. In addition comparing with plate 7 & 8. Most government offices and building in the central area have well landscape environment, which are the presidential villa and National Assembly and other areas in Asokoro. An exception is the area around the Garki II. (plate 6). There are observed decline in the rate of green area development within the city since the last few years. Data from this survey confirmed this trend (fig. 4.1). This could be attributed to very poor motivation

(zeal) 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 horticultural establishment that's Abuja horticultural establishment Opposite National Hospital. (F.S.P).



Plate 1 A well landscaped Area in Garki 1



Plate 2 A street with Avenue Planting in Maitama District



Plate 3 **A road along National Assembly Quarters Garki II**



Plate 4 **A Typical street without plants in Garki II**



Plate 5 A typical Road lacking Avenue planting in Garki II





Plate 7 **A Well landscaped Environment in Maitama**



Plate 8 **A Private well landscaped House in Asokoro**

CHAPTER FIVE

5.0 SUMMARY AND CONCLUSION

5.1 SUMMARY OF RESULTS

Study demonstrated that horticultural practice has a substantial influence on the present landscape of Abuja City. Results showed that nursery practices begin to increase in 1991 as construction activities in the city, increased (fig 4.1), Establishment of new Nursery practices in Abuja decreased equally as construction activities were nearing completion. The diversity of Nursery in landscape plant production ensured adequate supply of plant seedling to landscape contractors and private residents for – vegetation and beautification of the city of Abuja. During the development period (Table 4.2.1 and 4.2.2) categories of landscape and horticultural plants produced included grasses, ground cover and other plants (indoors, cut-flower etc) Two-third of the horticultural practice surveyed occupied an average land area of 0.5 hectare (fig. 4.2) while (70%) were located in green areas (fig 4.2.1). over half of the respondents (58%) attribute low green area developments by the nurseries to lack of land for expansion. Private practices would be seen to be substantial on the city landscape with emphasis in vegetation and beautification.

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

Finally, findings indicated poor government zeal and participation in landscape development and beautification of the city. The (AEPB) Abuja ,Environment Protection Board have not included horticulture as an educational tools for it's public environment enlightenment programs. Example drama, film shows, seminars, and campaign e.t c.

5.2 CONCLUSION

The impact of horticulture on an environment of Abuja. Despite the limitations of the research earlier stated, if has succeeded in documenting the nature, extent and contributions of private Nursery practice in Abuja city, and to some extent quantified their impacts on the developed environment. No comprehensive statistical analysis 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 in Abuja environmental health recreational and aesthetic landscape development depends.

5.3 RECOMMENDATIONS

Results clearly revealed that Nursery practices occupy a small portions of the available green areas in Abuja. It is therefore recommended here that (AEPB) should incorporate private horticultural practices in it's Environmental policy for effective landscape beautification of all the areas 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 sanitation and heath checking. Finally, further research work is needed to document the geographical location of Nursery practices and to understand fully it's demographic and socio-economic implications to the city landscape as a whole.

REFERENCES

AEPB (1997) The environment, Abuja keep it clean, by public relation unit, Abuja Environmental Protection Board (AEPB)

CCL (1998) Abuja street maps, concept communications Abuja.

Edmond J.B, Til senn – (1977) – Fundamental of Horticulture published by M.C. crew Hill new york pg. 506

Enioloranda T. O. (1993) Lecture note on ornamental garden. A.B.U. Zaria College of Agriculture.

FCDA (1992) Abuja – so-far... so Good, The Ministry of Federal Capital Territory, Abuja Efua media Associates ltd. Pp 34-35

Hornby A. S. (1995) Oxford Advanced learner's Dictionary of current English, Jonathan Crowther (ed.) Oxford University, Press P. 226.

IPA (1979) The master plan for Abuja, The Federal Republic of Nigeria. FCDA Abuja.

MFCT (1993) Abuja 1985-1992, The Ministry of Federal Capital territory Abuja Efua Media Associates Ltd. Pp.40-41

MFCT (1997) Federal Capital territory statistical yearbook department of planing, Research and statistic, (MFCT) Abuja. Nigeria

Oliver W. R. Lucas (1991). The Design of forest landscape. Oxford University press. Walton street. Oxford pp. 23-32.

Ramiro E. L. George E. G., Desmond 4.5, Diane B. W. WAYNEL. S. and scoff 4.P (1999). Agritourism benefits agriculture in san Diego Country, in california Agriculture, volume 53, Number 6. DFANR, University of California, Oakland, CA 64512 – 3560. U.S.A. Pp. 20-24

Richard baker, Kathy S. and Rik. S. (1979), Planting in artificial condition, landscape design with plants, Brain clouston (Ed.) The landscape institute, william Heinemam Ltd. London.

RNL (1991) Abuja Business Directory: Volume I Rechekado (Nig.) Ltd Abuja.

Scott R.T. and George G. (1996). Urban forestry adds & 3.8 billion in sales to california economy in calitomia Agriculture, Volume 50, Number 1, DANR, University of California, Oakland, CA 64612-3560 USA pp. 6-10.

Sylvia Crowe (1979) Forestry and land use, in land use and landscape planing, Derek Lovejoy (ed.) Blackie Publishing group, Bishopbriggs glasgow great Britain. Ursula and Great (1996) Wholesale Nursery Surveys reveal inventory, Customers and business practices, in california Agriculture Volume 50, Number 5, DANR University of California. Oakland. CA 64612-3560. USA P9 – 16-21.

William M. Marsh (1991) landscape planing and environmental application 2nd edition, John Wiley and sons inc. USA P9. 228

The post Express – Abuja post: Property and environment improving the landscape quality of Abuja. (Thursday), October 21, (1999) P9 19.

QUESTIONNAIRE

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 AN ENVIRONMENT, A CASE STUDY OF ABUJA.**

NOTE = The objective of this research project is to identify the role of horticultural practices (Nursery) on environment of Abuja.

This research work has nothing to do with the exercise to fulfill the requirement of Geography department.

INSTRUCTION:- tick ( ) for the correct responses.

1. What is your level of expertise in Horticulture?

   SSCE ☐ First Degree ☐

   Diploma ☐ Second Degree ☐

2. In which part of the city is your Garden/Nursery Located?

   Garki I and II ☐ Wuse I and II ☐

   Asokoro area ☐ Maitama district ☐

   Central area ☐

3. Where is your Garden/Nursery Situated?

   Green area ☐ Private plot ☐

   Under the Bridge ☐ Road side ☐

4. How old is the nursery practice in this Location:

Less than 1 year ☐ 1-2 year ☐ 2-4 years ☐

5-10 year ☐ and over 10 year ☐

5. What is the land area of your garden/nursery?

Less than 1000m^2 ☐ 1000m^2 ☐ 200-500m^2 ☐

500 – 1hectare ☐ over 1 hectare ☐

6. What is the estimated number of plants in your garden/nursery for sale

Grass/Ground cover plant (m^2):

Less than 100m^2 ☐ 100-200m^2 ☐

200-500m^2 ☐ 500-1000m^2 ☐ over 1000m^2 ☐

7. Can you estimate the total number of plant solid in the last one year?

Less than 1000 ☐ 1000-5000 ☐

5000-10,000 ☐ 10,000-20,000 ☐ over 20,000 ☐

8. Can you estimate the total amount sold in the last one year

less than N10,000 ☐ N10,000-N50,000 ☐

N50,000-N100,000 ☐ over N100,000 ☐

9. Which of the following class of buyers purchased the largest quality of plants?

Private individuals ☐

Hospital/religious Organization ☐

Hotels & Lodging Houses ☐

Nursery/Garden Operators ☐

10. Apart from plants selling, which other services do your provide to the public?

Garden Maintenance ☐ Garden landscape planting ☐

Catering Services/ educational services ☐

Other – Specify ☐

11. In your opinion, what factors(s) attracts buyers to your

Nursery/Garden? Garden Location ☐

Flower / plant display and stock ☐

Plant Quality ☐ Cheap price ☐

Advertisement ☐

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

Lack of Publicity ☐ Lack of transport ☐

High cost of ornamental plants ☐

Non-availability of landscape plants ☐

13. How do you get containers for plant production?

Purchase of Domestic polyphone bags ☐

Purchase of Agric. polyethen bags ☐

Re-use of Condemned "Pure water" bags ☐

Re-use of Cement sack/bags ☐

Purchase of plastic buckets ☐

14. What do you consider as limiting resources for expansion of your Nursery?

Land ☐ Finance (money) ☐ Labour ☐

Material acquisition ☐ others-specify ☐

APPENDICE I

AEPB = Abuja Environmental Protection Board

Aesthetic Value = Value of flower in our homes, shady trees, avenues, lawns, flower beds and varieties of other features in the garden, is highly important to human pleasure, and comfort.

Annuals = These are plants mostly herbs, which complete their life cycle within a growing season.

Biannials = These are plants which complete their life cycle with 2 growing season

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 land used for ornamental plant seedling production.

Grasses = These are plants use mainly for creating lawns

Ground Covers = These are perennials, dwarf shrubs and vines which produce even surface used in gardening to cover bare ground .

Herb = These are small plants which have soft non-woody stems most of them are annual plant completing their life cycle within a growing season.

Indoor Plants = These are ornamental plants used for house decoration. They require shade to do well.

Landscape = Is branch or submits in the horticulture concerned

with the uses of flower, the arrangement on the field where to use a specific type of plants where necessary their growing habit should be known.

Ornamental garden = We display our dexterity in sitting or planting out ornamental flowers mainly for beautification and it is the sand time called "feature garden"

Perennials = They grow for three or more years, these are all under the classification of plants with reference to seasonal growth habits.

Plant Nursery = Environmental Horticultural practices.

Shrub = This is a woody plant with many branches but the branches are very near the ground sometime shrub may become a small tree.

Tree = Is a highly woody plant capable of growing to great heights.

Environment = Is a reservoir of resources on which man draws to sustain his economics activities, and assure his survival and well-being.