SURVEY ORNAMENTAL PLANTS IN THE UNIVERSITY OF BENIN EDO STATE NIGERIA

BY

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MAY, 2021

CERTIFICATION

This is to certify that the project work was carried out by **Aisosa Osamudiamen EDOSA** with matriculation number **LSC1605723** in the Department of Plant Biology and Biotechnology, University of Benin, Benin City under the supervisor of

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EXTERNAL EXAMINER DATE

DEDICATION

I wish to dedicate this work to God Almighty and to my parent

ACKNOWLEDGEMENT

The list of people I wish to acknowledge is too long for this page but I will try to capture everyone who contributed in no small measure to the success of this work.

Without God, this work would have been impossible to complete and I am grateful for His blessings, guidance, providence, mercy and love upon my life.

To my invaluable parents and family, I am honoured to partake in the fellowship of love that envelopes each and every member of our family. You are all highly appreciated.

To my supervisor, Prof Moses Osawaru , thank you for the inspiration, guidance, patience and understanding. To Dr. Matthew C. Ogwu, I thank you for everything. s

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ABSTRACT

Ornamental plants are plants selected for cultivation in a garden primarily because of their aesthetic values. Operators of such gardens may depend on its success for subsistence and income security. This study examined ornamental plants in four areas of the University of Benin, Ugbowo campus. The areas include Main gate, Life science, Physical science and Engineering. A total of 35 ornamental plant species were surveyed across the study area. A total of about 25 higher plant families were encountered in all the areas. Ornamentals are of great importance to man and the environment. They may be used for beautification, food, shade, aesthetic potentials among others and as wind-breakers. In this study, the diversity and abundance of ornamental species at the University of Benin main campus, Benin City, Nigeria was determined. Most common ornamental species include; *Cocos nucifera, Axonopus compressus, Duranta erecta, Eugenia unifolia and Magnifera indica*. The dominant families include; *Arecaceae, Moraceae, Rubiaceae, Fabaceae, Apocynaceae,* Combretaceae, Myrtaceae. The most common type of ornamentals encountered were trees and shrubs having a percentage of about 82.8% and the least been the bulb with a percentage of about 15%.

CHAPTER ONE

1.0 INTRODUCTION

There is no straight cut definition for ornamental plants in literatures as they are mostly implied. They are simply plants grown for their aesthetic qualities. Plants of this category have wide spectrum of areas where they are grown as well as variety of its parts used for aesthetic purpose including their flowers, leaves, scent, overall foliage texture, fruit stem and bark. Basically, they are grown in flower gardens, roadside or residential areas as house plants. Ornamental plants provide aesthetic functions by creating side attraction for human activities. The presence of these plants in an environment makes it beautiful and attractive in addition to been cool and inviting (Baiyewu *et al.,* 2005).

Nigeria is an agrarian society with about 70 percent of her over 140 million population engaged in agricultural production (ICARD, 2006). The production and use of ornamental plants has significant potentials for food and income security in Nigeria. Like other agricultural crops, the production of these crops plays crucial role in the developing economies including ensuring safe and healthy environment. Many Nigerians own and operate vegetable and ornamental horticulture gardens across the country. In Edo state, Southern Nigeria, operators use the venture to earn a living. They are conspicuously on road sides of major roads with displays of varieties of plant. The economic benefits and total outputs values of these enterprises are tremendous in the country. The incomes that accrue could be very significant and could contribute substantially to the nation's economy and development. Currently, Osawaru and Dania-Ogbe (2010) highlighted other uses of plants to include gateways to "gods" and as an integral part in tribal, social and cultural life style of man; thus a number of taboos and totems are ultimately related to the use of plants. The importance of ornamental plants in human includes as sources of medicinal herbs,

which are primary form of therapy for treatment of diseases; they are also known to have therapeutic values. For instance, walking through a botanical garden can be very relaxing and healthy. People with emotional and mental problems can be assisted when deliberately exposed to ornamental plants. Another benefit of ornamental horticulture is in the area of sports and recreation as turfs in sports field and leisure gardens where people can converse and interact. These plants also play crucial role in cooling the atmosphere through the evapo-transpiration thereby preventing health hazards (Omokhua *et al.,* 2002). Aquccah (2002) reported that in many societies some flowers are associated with specific events such as Rose flowers used to mark valentine season while the poinsettias flowers are associated with yuletide periods.

The industry has also contributed to the foreign exchange earnings of many countries. For instance in 2006, the floriculture items sold at all rated outlets in the United States of America was worth USD 20.8 billion (Society of American Florist, 2006). The enormous diversity of ornamental plants in Nigeria is capable to improve our economy. The industry in Nigeria is hampered by many problems and continues to receive very little attention in the nation's perspective plan for agricultural development (Oseni, 2004). More so, ornamental plants production which is mostly under developed (Bankole, 2002). There is also the problem of awareness amongst the populace primarily due to lack of environmental beautification plan across the nation.

1.1. JUSTIFICATION FOR THE STUDY

This study adds to existing body of knowledge on ornamental plants and their importance to the society.

1.2. AIM

To describe the ornamental plants found in the University of Benin, Ugbowo campus.

OBJECTIVES

- To describe the characteristics of the ornamental plants in the chosen environment.
- To identify or describe the uses of the ornamental plants.

CHAPTER TWO

2.0 MATERIALS AND METHOD

2.1 STUDY AREA

This study was conducted in the University of Benin main campus, situated at the Ugbowo axis of Benin City with a land area of 361 hectares. The study area falls within Ovia – North East Local Government Area of Edo State with a land area of 2,301 km^2.

Edo state is an inland state in Southern Nigeria boarded to the West and East by Ondo and Delta respectively, and Kogi to the North. It is geologically characterized by deposits, laid during the tertiary and cretaceous periods (Reyment, 1965). The topography of the study area is a flat type with a lot of vegetation which have been cleared as a result of urbanization. It has a laterite soil which is rusty-red in colour due to the presence of sand and clay with high proportion of organic matter. It is well aerated and has high water holding capacity.

The climate includes high annual rainfall (150 – 250 cm), of bimodal patterns with peaks at June/July and September respectively, it as a tropical climate is characterized by two opposing air masses, tropical continental and tropical maritime. The tropical continental air mass originates and blows from Eurasia Arabia high pressure between October – March. It is dry and brings the harmattan, which is called dry season. The tropical maritime air mass blows from the Atlantic between April – September. It is wet, warm and causes rain, which brings wet season. Majorly the wet season ranges from April to October with a brief fall at August. While the dry season ranges from November to March. The mean daily temperature usually ranges from 21 - 32^0C, but may vary during the harmattan period. The mean monthly relative humidity is high

(60% in the driest month to 95%). Radiation is fairly high and varies according to different period of the year. Radiation of above 1600 hours per year has been reported (Onwueme and Sinha, 1991).

The vegetation is comparable to the rainforest. With tall trees and rich soil which creates a good and conducive environment for the growth and development of rich vegetation. Great anthropogenic alteration over a long period of time had replaced the previous forest with mosaic or secondary forest (Dania–Ogbe *et al*., 1992).

2.2 SAMPLING FRAME

The study was carried out in the University of Benin ground in 2021 between March – April. The study was divided into four sites A, B, C and D. Site A begins from Main gate and ends at the Auditorium. Site B begins from the Faculty of Life sciences and ends at the back of Physical sciences. Site C begins from Physical sciences and ends at the beginning of the Faculty of Engineering. While site D was the whole of Engineering Sampling site is represented as Figure 1.

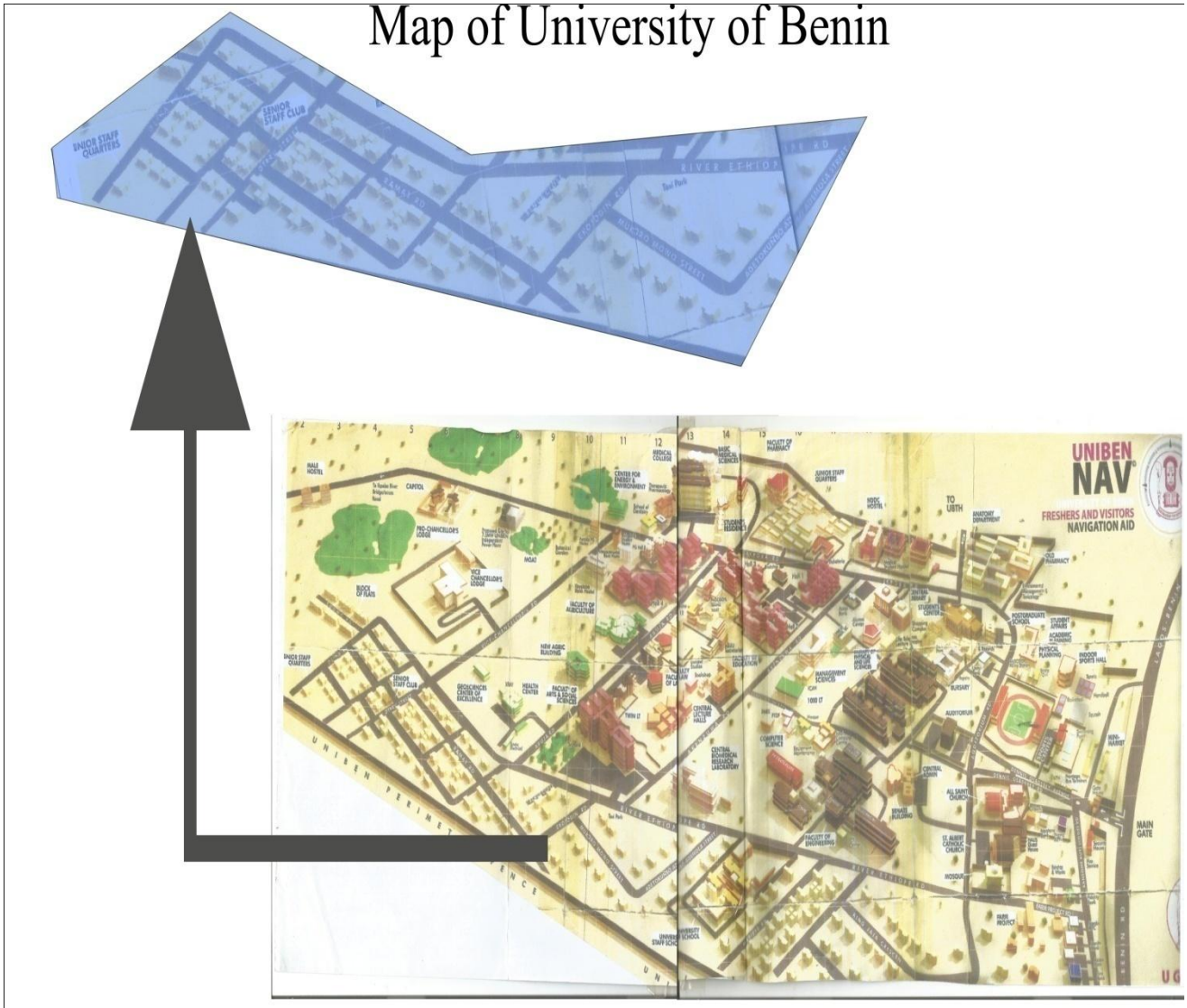

Figure 1: Map of study area with sampling site highlighted

2.3 IDENTIFICATION OF CROP PLANTS

The study area was properly surveyed majorly for ornamental plants that are used and valued for their ornamental vaues within the University of Benin, Ugbowo Campus. All crop plants encountered in the study area were recorded, their frequency was identified. Some of the crop plants were identified by their local names and others by their botanical names. The botanical names for every plant encountered in each sampling point were recorded in the study area. Identification was done using Aigbokhan (2014), Okpeke (1987) and Akubundu and Agyakwa (1998). Local names were also used to identify taxonomic species. Economic importance and other uses were obtained by respondents.

2.4 METHOD OF DATA COLLECTION

In other to get an open and public view on plant species is used as ornamentals within the campus, semi-structured open and close-ended questionnaires were made and shared amongst inhabitants of the campus.

2.5 DATA ANALYSIS

From each site, diversity indices were determined using the following:

1. Margalef species richness index (d), which is used as a simple measure of species richness according to Margalef (1958).

   $$d = (S - 1) / \ln N$$

   Where

   S = total number of species;

   N=total number of individuals in the site and In natural logarithm

2. Shannon Weiner index H), which is the measure of diversity within a site according to Shannon and Wiener (1949).

   $H = -\Sigma Pi \ In \ Pi$

   Where $Pi = S / N$

   S = number of individuals of onespecies

   N = total number of all individuals in the site

   In = logarithm to base e

3. Sørensen similarity coefficient (CS), which measures similarity in species composition for four sections, A, B, C and D according to Sørensen (1948).

   $CS = d = (S - 1) / In \ N \ 100\%$, Where a = number of species found in both sites; b =number of species found only in site A and c = number of species found only in site B. Expressed as a percentage of similarity or dissimilarity. iv. Relative density of species (RD) = Number of individual species

CHAPTER THREE

3.0 RESULTS

Table 1: The Ornamental plant species and their common names.

The table below showed the common name of 35 ornamental plants observed in this study.

Ornamental plant	Common name	Ornamental plant	Common name
Alnus cordata	Italian alder	*Mentha spicata*	Spearmint
Araucaria heterophylla	Norfolk Island pine	*Magnifera indica*	Mango
Axonopus compressus	Dorrington grass	*Mussaenda philippica*	Buddha's lamp
Carica papaya	Pawpaw	*Phoenix reclinata*	Senegal date palm
Carisa carandas	Bengal currants	*Pinus canariensis*	Canary Island pine
Cassia javanical	Apple blossom flower	*Platycladus orientalis*	Chinese arborvitae
Castanea sativa	European chestnut	*Polyalthia longifolia*	Cemetary/Mascurade tree
Cocos nucifera	Coconut	*Robinia hispida*	Moss locust
Coreopsis lanceolata	Garden coreopsis	*Roystonea oleracea*	Caribean royal palm
Cycas revoluta	Sago cycas	*Sanseviera trifasciata*	African bowstring hemp
Diospyros kaki	Japanese persimmon	*Tabernaemontana divaricata*	Adam's apple
Durata erecta	Pigeon berry	*Terminalia catappa*	India almond
Eugenia uniflora	Brazil cherry	*Terminalia mantaly*	Madagascar almond/Umbrella tree
Ficus elastica	India rubber	*Tradescianta spathacea*	Moses-in-the-cradle
Ficus religiosa	Sacred fig	*Wodyetia bifurcata*	Foxtail palm
Hippeastrum puniceum	Barbados lily	*Psidium guajava*	Guava
Ixora coccinea	Flame of the woods		
Lagerstroemia speciosa	Queen's myrtle		
Lantania lontaroides	Red latan		

Table 2: Distribution of commonest ornamental plants by section

SECTION A	SECTION B	SECTION C	SECTION D
Durata erecta	*Sanseviera trifasciata*	*Castanea sativa*	*Pinus canariensis*
Ixora coccinea	*Terminalia catappa*	*Magnifera indica*	*Robinia hispida*
Terminalia mantaly	*Ficus elastica*	*Axonopus compressus*	*Carica papaya*
Latania lontaroides	*Robinia hispida*	*Lagerstroemia speciosa*	*Pinus canariensis*
Tabernaemontana divaricate	*Cycas revoluta*	*Mussaenda philippica*	*Polyathea longifolia*
Lantania lontaroides	*Ficus religiosa*	*Diospyros kaki*	*Roystonea oleracea*
Alnus cordata	*Phoenix reclinate*	*Carissa carandas*	*Wodyetia bifurcate*
Araucaria heterophylla	*Eugenia uniflora*		*Cassia javanica*
	Psidium guajava		*Cocos nucifera*
			Sansevieria trifasciata
			Tradescianta spathacea

8, 9, 7 and 11 ornamental species were identified in section A, section B, section C and section D respectively (figure 2).

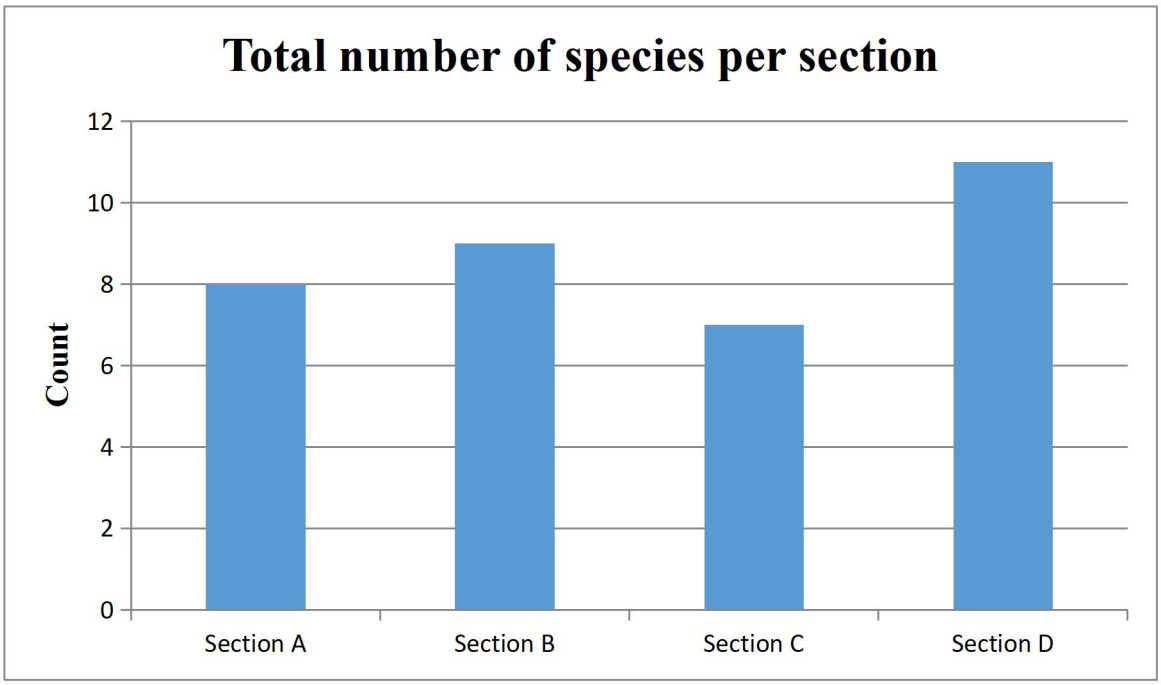

Figure 2: The number of ornamental plant species in each of the sections.

Some of the characteristics of the ornamental plants such as their type or group they belonged to, their flowering nature, their leaf type, whether they are annual, biennial or perennial as well as other uses of the ornamental plants are shown in the tables below.

Table 2 (i): Some characteristics of the ornamental plants

Ornamental Plant	Family	Characteristics				
		Type	Flowering	Leaf	Timeline	Other uses
Alnus cordata	Betulaceae	Tree	Yes	Deciduous	Annual	Wind break
Araucaria heterophylla	Araucariaceae	Tree	No	Evergreen	Perennial	Lawn specimen. Tropical accent. Houseplant for colder climates.
Axonopus compressus	Poaceae	Grass	Yes	Evergreen	Annual	Pastures and lawn grass
Carica papaya	Caricaceae	Tree	Yes	Evergreen	Perennial	Fruits, medicine
Carissa carandas	Apocynaceae	Shrub	Yes	Evergreen	Annual	Fruits, pickles
Cassia Javanica	Fabaceae	Trees and Shrubs	Yes	Deciduous	Perennial	Shade
Castanea sativa	Fagaceae	Tree	Yes	Deciduous	Annual	Edible
Cocos nucifera	Arecaceae	Tree	Yes	Evergreen	Perennial	Edible
Coreopsis lanceolata	Asteraceae	Herb	Yes	Evergreen	Perennial	Good plant for areas with poor, dry soils
Cycas revoluta	Cycadaceae	Shrubs	No	Evergreen	Perennial	Food, medicine, nitrogen fixers
Diospyros ka ki	Ebenaceae	Tree	Yes	Deciduous	Perennial	Fruit, medicinal
Duranta erecta	Verbenaceae	shrub	yes	Evergreen	Annual	Used as border
Eugenia uniflora	Myrtaceae	Trees and shrubs	Yes	Evergreen	Perennial	Fruit, fence
Ficus elastica	Moraceae	Trees and shrubs	No	Evergreen	Perennial	Rubber production
Ficus religiosa	Moraceae	Tree	No	Evergreen **	Annual	Medicinal

** Deciduous in native monsoon climates

Table 2 (ii): Some characteristics of the ornamental plants

Ornamental Plant	Family	Characteristics				
		Type	Flowering	Leaf	Timeline	Other uses
Hippeastrum puniceum	Amaryllidaceae	Bulb	Yes	Evergreen	Perennial	Emetic, purgative
Ixora coccinea	Rubiaceae	Shrub	Yes	Evergreen	Perennial	Hedges and Screens, medicinal, fruit
Lagerstroemia speciosa	Lythraceae	Tree/shrub	Yes	Deciduous	Perennial	Roadside trees
Latania lontaroides	Arecaceae	Tree	Yes	Evergreen	Costaplamate	Specimen
Magnifera indica	Aracardiaceae	Tree	Yes	Evergreen	Perennial	Shade, fruit
Mentha spicata	Lamiaceae	Herb	Yes	Evergreen	Perennial	Aromatic oil
Mussaenda philippica	Rubiaceae	Shrub	Yes	Evergreen	Annual	Medicinal
Phoenix reclinata	Areacaceae	Tree	Yes	Evergreen	Perennial	Production of mats, baskets, hats and palm wine production.
Pinus canariensis	Pinaceae	Tree	Yes	Evergreen	Perennial	Medicinal, food, timber
Platycladus orientalis	Cupressaceae	Tree	Yes	Evergreen	Perennial	Religious purposes
Polyalthia longifolia	Annonaceae	Tree	Yes	Evergreen	Perennial	Timber, religious purposes
Robinia hispida	Fabaceae	Shrub	No	Deciduous	Perennial	Hedge or screen
Roystonea oleracea	Arecaceae	Tree	Yes	Evergreen	Perennial	Food, landscape improvement

Table 2 (iii): Some characteristics of the ornamental plants

Ornamental Plant		Characteristics				
		Type	Flowering	Leaf	Timeline	Other uses
Sansevieria trifasciata	Asparagaceae	Herbaceous	Yes	Evergreen	Perennial	Medicinal, string and mat production
Tabernaemontana divaricata	Aspocynaceae	Shrub	Yes	Evergreen	Perennial	Containers, wall sides
Terminalia catappa	Combretaceae	Tree	Yes	Deciduous	Perennial	Fruit, shade
Terminalia mantaly	Combretaceae	Tree	Yes	Deciduous	Perennial	Medicinal, street tree
Tradescantia spathacea	Commelinaceae	Herbaceous	Yes	Evergreen	Perennial	Medicinal, agro-forestry
Wodyetia bifurcata	Arecaceae	Tree	Yes	Evergreen	Perennial	Decorative fruit
Psidium guajava	Myrtaceae	Tree	Yes	Evergreen	Perennial	Medicinal, fruit

Most of the species (82.8%) were trees and shrubs while grasses and bulbs were the least represented (figure 2). Also perennial ornamental plants were the most prevalent in the observed species (figure 3). 77.1% of the ornamental plants had evergreen leaves while the rest 22.9% were deciduous in nature (figure 4).

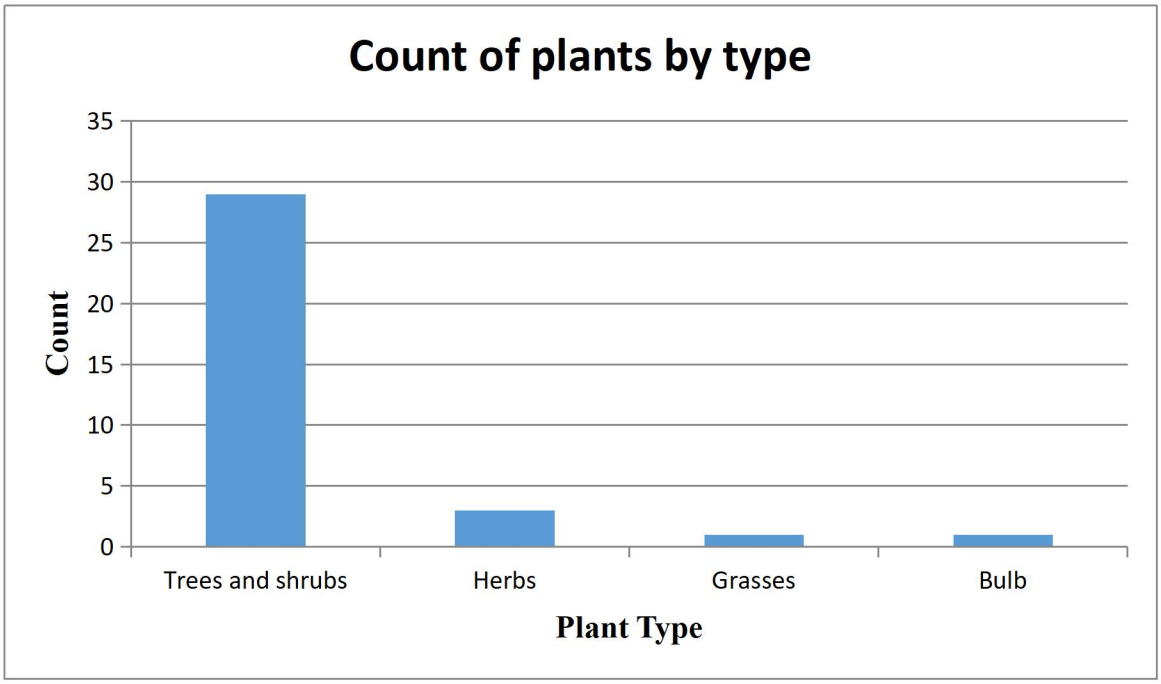

Figure 3: The distribution of the ornamental plants based on their type or classification.

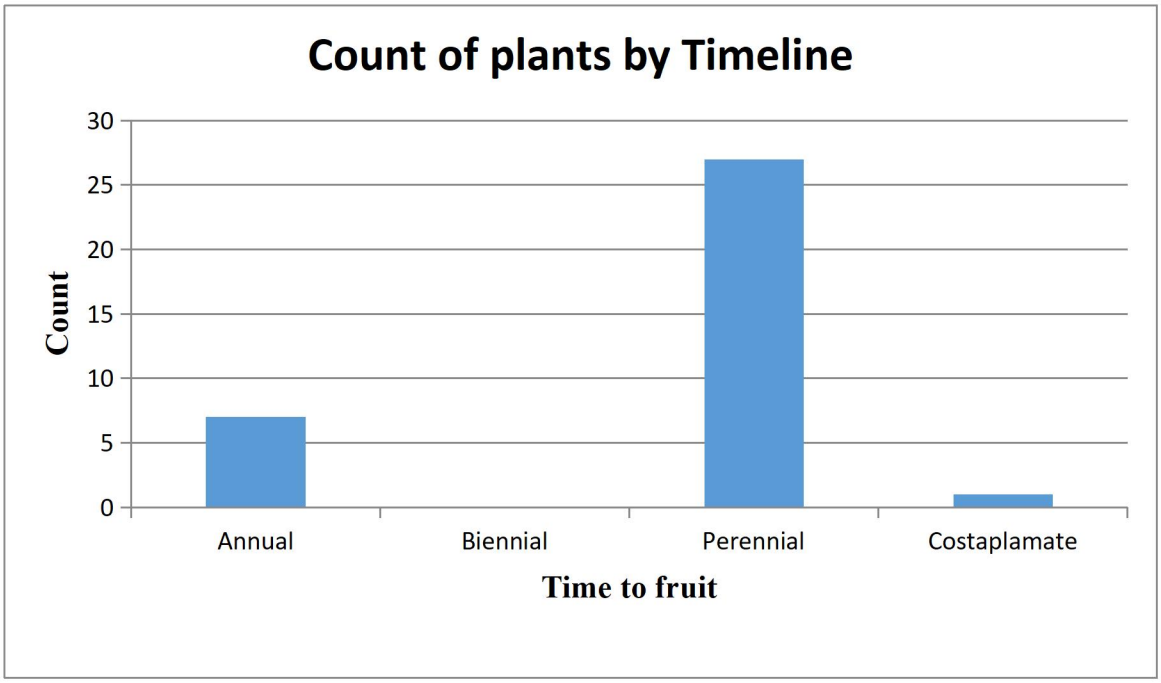

Figure 4: The distribution of the ornamental plants based on seasonality.

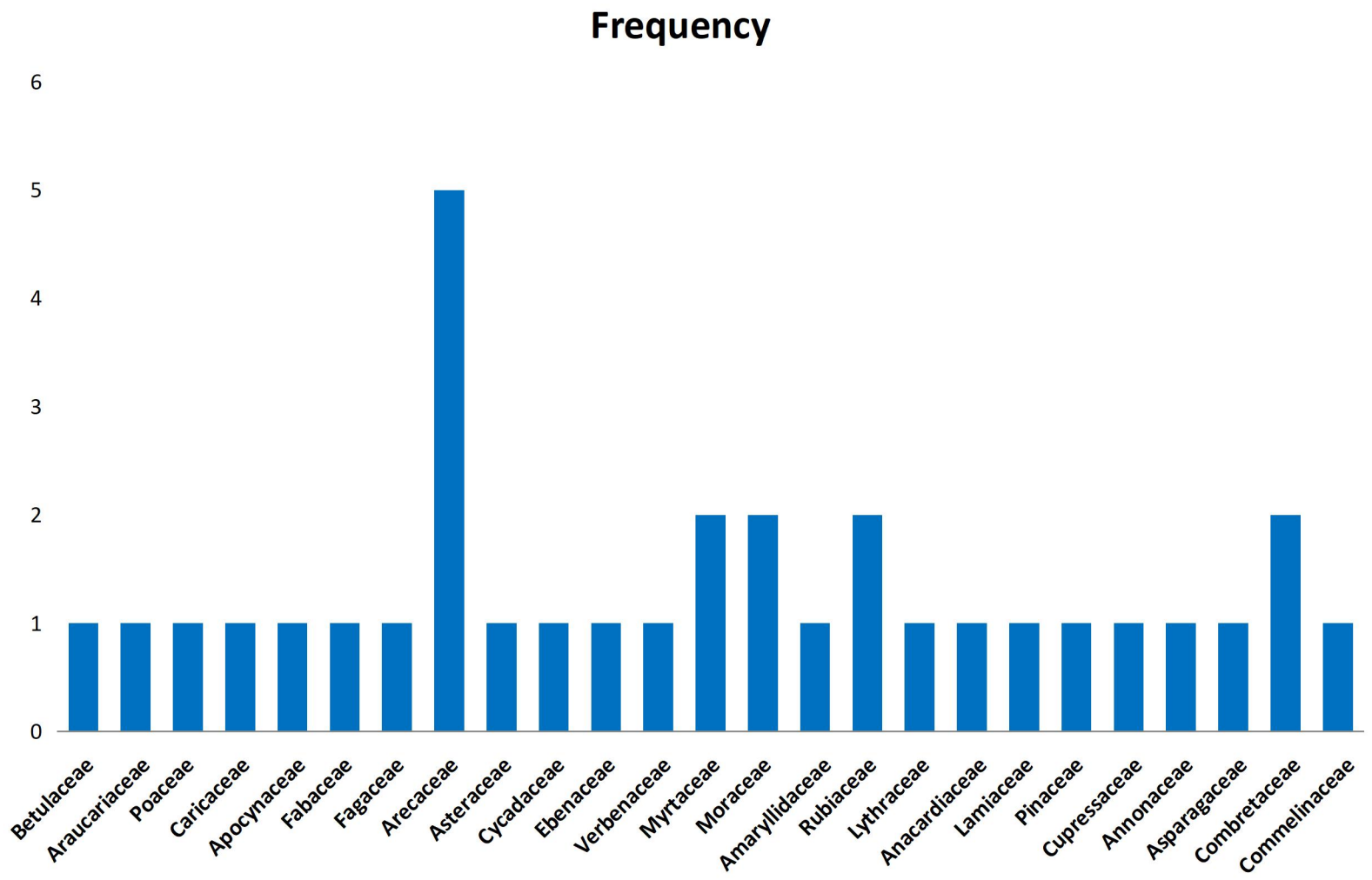

Fig 5: Frequency of ornamental plant families

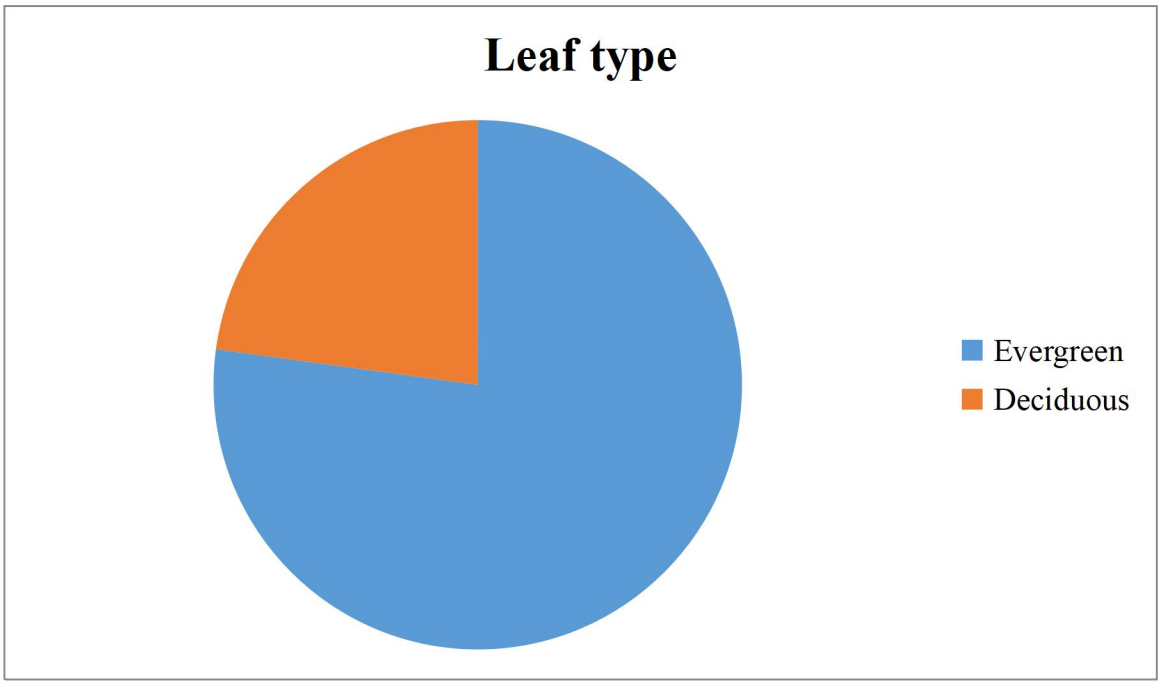

Figure 6: The distribution of the ornamental plants based on the leaf type. 77.1% of the ornamental plants had evergreen leaves while the rest 22.9% were deciduous in nature.

Diversity Indices of the ornamental plants.

The table below showed some of the diversity indices calculated for each ornamental plant. These included the relative density (RD), the relative abundance (Pi) and Margalef species richness index (d).

Table 3 (i): Diversity Indices of the ornamental plants

Ornamental species	count (S)	RD	Pi	d
Alnus cordata	1	2.86	0.03	0.00
Araucaria heterophylla	1	2.86	0.03	0.00
Axonopus compressus	4	11.43	0.11	0.84
Carica papaya	3	8.57	0.09	0.56
Carisa carandas	1	2.86	0.03	0.00
Cassia javanical	3	8.57	0.09	0.56
Castanea sativa	2	5.71	0.06	0.28
Cocos nucifera	1	2.86	0.03	0.00
Coreopsis lanceolata	2	5.71	0.06	0.28
Cycas revoluta	2	5.71	0.06	0.28
Diospyros kaki	1	2.86	0.03	0.00
Durata erecta	4	11.43	0.11	0.84
Eugenia uniflora	4	11.43	0.11	0.84
Ficus elastica	1	2.86	0.03	0.00
Ficus religiosa	1	2.86	0.03	0.00
Hippeastrum puniceum	3	8.57	0.09	0.56
Ixora coccinea	4	11.43	0.11	0.84
Lagerstroemia speciosa	3	8.57	0.09	0.56
Lantania lontaroides	2	5.71	0.06	0.28
Psidium guajava	2	5.71	0.06	0.28

Keys: RD = Relative density, Pi =Relative abundance d = Margalef species richness index

Table 3 (ii): Diversity Indices of the ornamental plants

Ornamental species	count (S)	RD	Pi	D
Mentha spicata	2	5.71	0.06	0.28
Magnifera indica	4	11.43	0.11	0.84
Mussaenda philippica	3	8.57	0.09	0.56
Phoenix reclinata	3	8.57	0.09	0.56
Pinus canariensis	1	2.86	0.03	0.00
Platycladus orientalis	2	5.71	0.06	0.28
Polyalthia longifolia	2	5.71	0.06	0.28
Robinia hispida	1	2.86	0.03	0.00
Roystonea oleracea	1	2.86	0.03	0.00
Sanseviera trifasciata	1	2.86	0.03	0.00
Tabernaemontana divaricata	3	8.57	0.09	0.56
Terminalia catappa	3	8.57	0.09	0.56
Terminalia mantaly	4	11.43	0.11	0.84
Tradescianta spathacea	2	5.71	0.06	0.28
Wodyetia bifurcate	3	8.57	0.09	0.56
Psidium guajava				

Keys: RD = Relative density, Pi =Relative abundance d = Margalef species richness index

The various species were scored according to their relative densities (RD); i.e. abundant ($RD \geq 5.00$), frequent ($4.00 \leq RD \leq 4.99$), occasional ($3.00 \leq RD \leq 3.99$), rare ($1.00 \leq RD \leq 2.99$) and threatened/endangered ($0.00 < RD \leq 1.00$)

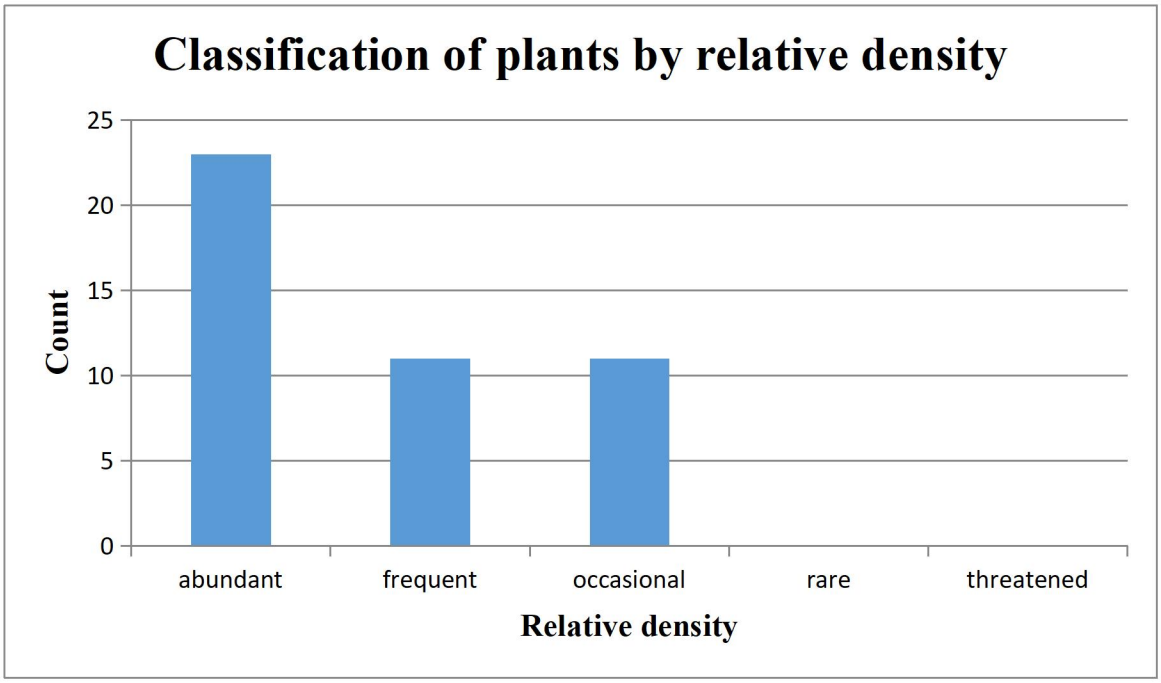

Figure 7: The distribution of the ornamental plants based on the relative density. 65.7% of the ornamental plants were abundant while 31.4% were both frequent and occasional. There were no rare and threatened species.

CHAPTER

DISCUSSION

This study has documented the taxonomy, diversity and uses of ornamental plants in the University of Benin, Ugbowo campus. The trees, shrubs, bulb, and grasses in and around our environment play a vital role in promoting sustainable development within our communities is an important component of green infrastructure, trees can provide several social, communal, physiological, economic and environmental benefits. They also contribute greatly to the health and welfare of every individual who lives and works in the environment.

The result from this study shows that ornamental plants are of great diversity in the University of Benin Ugbowo campus. More so, they provide essential services to the inhabitants of the study area. (Matthew, 2017) listed *Magnifera indica, Psidium guajava, Cocos nucifera* and more, as some this trees are of great value they were encountered in the study area. The uses of these ornamentals includes; beautification, shade, medicinal plant.

The result of this study also shows some characteristics of these ornamental plants such as their type or group they belong to, family, flowering nature, leaf type, life cycle and the uses of these ornamental plants.The study also aids in distributing the commonest ornamental plants in Ugbowo Campus based on the

species found in the different sections observed. Several charts were obtained from this result showing the number of ornamental species in each section, another showing the life-cycle (annual, biannial, perennial or costaplamate) and with this it safe to say that majority of the ornamentals in the University of Benin, Ugbowo campus are trees and shrubs while the least are bulbs and majority are perennial plants. The study also shows that majority of the ornamentals are evergreen in nature while a few are deciduous in nature.

This study of ornamentals is in line with (Isah, 2016).Floriculture which has to do with the growing or planting of flowers is not well utilized here in Nigeria due to the lack of awareness of the importance of ornamental plants(trees, shrubs, grasses) and their uses especially flowers. They are not aware of it aesthetic, medicinal and social-economic uses therefore resulting in the underutilization of ornamental plants in Nigeria. Another reason is due to the lack of coordinated scientific researches on floriculture growth and poor level of investment by both the public, government and private sectors.

The study aids in the classification of ornamental plants found in the observed sections of the University of Benin, Ugbowo campus based on their relative density(RD) and the result showed that (65.7%) of ornamentals were abundant while(31.4%) were both frequent and occasional and non was found rear and threatened.

The study also reveals the total number of families found in observed sections to be 25 in total, the least number of family to be 1 and the highest number of family to be 5. It was reported by Olayiwola, that most house owners believing in using spaces in their surroundings for building shops and hiring accommodations (Olayiwo, 2005). There is complete neglet of environmental beautification planning across the nation; however, the presence of some ornamental plants in an environment makes it beautiful and a beautiful environment is always cool and inviting. Planting of ornamental plant around homes often add aesthetic values to our surroundings. Amusa also supported that to control these environmental problems, it was suggested that people should cultivate the habit of having ornamental plants as cover-mat for fruit trees in their surroundings (Amusa, 2005). In fragrance, many ornamental plants are choosen because they appeal to the sense of smell in addition to their visual appeals. Some fragment of plants prove beneficial in repelling pests, such as mosquitoes and flies (Anonymous, 2014).

CONCLUSION

The diversity and abundance of ornamental species in the University of Benin, Ugbowo Campus have been documented. The identification and description of the various ornamental plants were carried out based on their species, families, characteristics and uses. It has been shown that the diverse ornamental species are a necessary component of the institution. Result of the survey reveals a total of thirty-five different ornamental species were acquired from the various sections of which majority were trees and shrubs and the least of them were bulbs. It has been shown that the diverse ornamental species are a necessary component of the institution. Anthropogenic activities are the major reason behind the decrease in the number of tree species in the institution. These diverse ornamentals (trees) provide valuable environmental and economic services thus are of great importance. This study has revealed that several ornamental plant species are cultivated to beautify the human environment as well as to provide shade, modify temperatures, reduce wind speed, abate noise, provide privacy and prevent soil erosion. People use cut flowers, dried flowers and indoor plants. Outdoors, they use town grasses shade trees, ornamental frees shrubs, vines, herbaceous perennials as habit and bedding plants. Images of plants are often used in arts, architectures, human and photography as well as on textiles, money, stamps, flags and coats of arms. Conservative measures should be put in place to prevent the disappearance

and as well promote cultivation of more ornamental plants. Also a unit should be put in place that will be in charge of the maintenance of these ornamental plants.

REFERENCES

Acquaah, G. (2002). *Horticulture Principle and Practices.* Pearson Education Inc, Singapore. 43p

Agric Slovenica, 87(2):333–342.

Aigbokhan, E. I. (2014**).** Annotated Checklist of Vascular Plants of Southern Nigerian – a quick reference guide to the Vascular Plants of Southern Nigeria: a systemic approach. Uniben press, Benin City. 345p.

Akobundu, I. O. and Agyakwa, C. W. (1998). A Handbook of West African Weeds. Second Edition. International Institute of Agriculture. African Book Builders, Ibadan, Nigeria. 565p.

Available online at http://www.bioscientistjournal.com

Aworinde, D.O., Erinoso, S.M., Ogundairo, BO., and Olanloye, A.O. (2013). Assessment of plants grown and maintained in home gardens in Odeda area, Southwestern Nigeria. J Horticult Forest.

Baiyewu, R. A., Amusa, N.A. and Olayiwola O. (2005). Survey on the use of ornamental plants for environmental management in South Western Nigeria. *Research Journal of Agricultural and Biological Sciences,* **1**(3): 237-240.

Bankole, C.B. (2002). Horticulture and the Environment Prospects in Nigeria. A Paper Presented at the 20th Annual Conference of Horticultural society of Nigeria.13p

Dania-Ogbe, F. M., Adeboye, O. C. and Bamidele, J. F. (2001). Ethnobotany of indigenous food crops and useful plants; Leafy Vegetables of Southwest Nigeria; their identification,

nutritional studies and cultivation of farmer assisted endangered species. Paper presented at the biennial of the UNU/INRA College of Research Associates. 19-20 April, 2001, Accra, Ghana.

Dania-Ogbe, F. M., Egharevba, R. K. A. and Bamidele, J. K. (1992). Field survey of indigenous and useful plants, their preparation for food and home garden in Edo and Delta States, Nigeria. Volume 3. The United Nations University, Tokyo, Japan. 95p.

International Conference on Agrarian Reform and Rural Development (ICARD). (2006). Technical Report Series. Geneva. 67p

Kravanja, N. (2006). Significant perceptual properties of outdoor ornamental plants. A**cta**

Matthew, B. (1997). Growing Bulbs: The Complete Practical GHuide. London: Batsford ISBN 9-7-80-7134-4920-4.

Mcmah, A.M. (2021). What are ornamental plants. (online). (Available at: https://www.homequestionsanswered.com/what-are-ornamental-plants.htm

Okpeke, L. K. (1987). Tropical Tree Crops. Spectrum Books Limited, Ibadan, Onitsha, Zaria, Nigeria. 327p.

Omokhua, G., Idumah, F.O. and Abu, H.E. (2002). The prospects of fruits tree cross to the Nigeria Economy. A paper presented at the 20th Annual Conference of Horticultural Society of Nigeria. 45p

Onwueme, I. C. and Sinha, T. D. (1991). Field crop production in Tropical Africa. CTA, Ede, The Netherlands. 480p.

Osawaru M.E and Ogwu M.D. (2014).Survey of ornamental gardens in five local government areas of Southern Edo State Nigeria. The Bioscientist Vol. 2(1): 87- 102.

Oseni,T.O (2004). Integrated Horticultural Crop Production and Extension Services. A Paper Presented at the 22nd Annual Conference of Horticultural society of Nigeria.56p

Palma, M.A., Hall, C.A., Collart A (2011) Repeat buying behavior for ornamental plants. A consumer profile. J Food Distrib Res 42(2):67–77.

Reyment, R. A. (1965). Aspects of the Geology of Nigeria. University of Ibadan Press. Ibadan, Oyo State. 358p.

Society of America Florist (2006). Overview of the Floriculture Industry. Society of America Florist Bulletin. 20p