International Journal of Botany Studies
ISSN: 2455-541X; Impact Factor: RJIF 5.12
Received: 07-10-2020; Accepted: 22-10-2020: Published: 10-11-2020
www.botanyjournals.com
Volume 5; Issue 6; 2020; Page No. 153-156

Ethnobotanical study of ornamental plants met in the city of man, Cote D'ivoire

Ta Bi Irié Honoré[1*], N Guessan Koffi[2]
[1] UFR Agronomic, Forestry and Environmental Engineering (IAFE), University of Man, Côte d'Ivoire
[2] Botanical Laboratory, UFR Biosciences, Félix Houphouët-Boigny University, Côte d'Ivoire

Abstract
To determine the plants used in ornamentation of Man city (Côte d'Ivoire), investigations were carried out ten (10) districts of the city: Air France, Campus, Commerce, Domoraud, Doyagouné, Gbèpleu, grand gbapleu, Koko, Libreville and Lycée. The method used for these investigations is the traveling inventory, which consists of traveling through the city in different directions and identifying all the plant species with decorative potential. We identified 36 ornamental plants belonging to 20 botanical families. The Euphorbiaceae family is the most represented with 4 species followed by the Caesalpiniaceae and Rubiaceae families for 3 species. The exciting parts of these decorative plants are flower, leaf and harbor. The flower is the most abundant part listed. In relation to the specific frequencies, the statistical treatment revealed six very common plants: *Polyalthia longifolia* (Fs = 7.98 %), *Caesalpcherrina pulcherrina* (Fs = 7.51 %), *Caladium bicolor* (Fs = 7.51 %), *Centratherum punctatum* (Fs = 6.8 %), *Codiaeum variegatum* (Fs = 6.72 %) et *Bougainvillea glabra* (Fs = 6.18 %). This study showed a diversity of plants used by the population of Man in ornamentation. This study allowed us to know the ornamental plants of Man city like some cities of the country such as Abidjan and San-Pédro.

Keywords: Ethnobotanical, Ornamental, Doyagouné, Gbèpleu

Introduction
Since ancient times, humans have resorted to plants (Fleurentin *et al*., 2007) [7]. The reason of this is the use of plants in various areas of human life (housing, health, food, decoration). Plants are also the raw material for various industries (Aké-Assi, 2015) [2]. Unfortunately, for a quarter of century, we have witnessed the rapid disappearance of the forest (N'Guessan, 2008) [9]. Côte d'Ivoire is not immune to this phenomenon because in the country, the forest areas which amounted to 15 million hectares in 1900 years are today estimated at less than 4 million hectares (Ta Bi, 2013) [12]. In an effort to conserve and improve the quality of wild plants and increase their yield, humans very early on tried to tame them over more or less large areas (MBOH, 2016) [8]. This is the case with botanical gardens, national parks and reserves. Some of these areas containing only decorative plants, are called pleasure gardens, they reveal to us the splendor of the plant world (Aké-Assi, 2015) [2]. These beauty gardens are maintained by horticulturalists. Horticulture is known in all the big cities of Côte d'Ivoire: Abidjan, Bouaké, San-Pedro, Daloa, Man. However, except the works of Aké-Assi (2002) [1], the scientific researches devoted to plant species cultivated by horticulturalists in the country are rare. The author of the works cited has listed the plants used in decoration in the cities of Abidjan and San-Pedro. The botanical characteristics of these taxa have been revealed. For the city of Man, this work is non-existent. This study responds to this concern. It aims to contribute to the knowledge of ornamental taxa in the city of Man. This will specifically involve listing the decorative plants of the city. It is therefore a contribution to better knowledge of ornamental plants in Côte d'Ivoire.

Material and method
Presentation of the study environment
Man is a city in the west of Côte d'Ivoire (Figure 1). It is the capital of the Tonpki region, capital of the department, located to 580 km from Abidjan. It is a large city in Côte d'Ivoire stretching over 64 km2 with an estimated population of 131,522 inhabitants (RGPH, 2017) [11].

Fig 1: Geographical location of the city of Man, in Côte d'Ivoire

Material
The technical equipment for the inventory of ornamental

Plants consists of a notebook, a SAMSUNG brand digital camera (16.2 mega pixels). Sachets and newspapers were needed to classify the samples in order to herborize and identify them. A computer was required for entering and processing the data collected.

In connection with plant material, it includes all the ornamental plants found on the roads, in gardens, in private yards and even in houses in different districts of the city of Man.

Method

The data collection

For the collection of botanical data, the method used is the traveling inventory already practiced by several researchers (Aké, 2015; Doh, 2015) [4, 6]. This method consisted of traversing the city in different directions and identifying all the plant species with decorative potential encountered. The districts with the most decorative plants were selected: Air France, Campus, Commerce, Domoraud, Doyagouné, Gbèpleu, Grand gbapleu, Koko, Libreville and Lycée. In these neighborhoods, we visited public places (schools, sub-prefecture, Town hall), gardens, Places of residence. We take pictures for each ornamental plant we find and immediately take a sample.

Laboratory works

The identification of plant species was carried out at the National Floristic Center of Félix Houphouët Boigny University in Abidjan, Côte d'Ivoire. For the nomenclature of plants, we relied on scientific works in the field of ornamental plants (Aké-Assi, 2002; 2015) [1, 2].

Specific frequency (Fs)

The specific frequency (Fs) is an ethnobotanical index. It is the ratio of the number of times a species has been encountered to the number of times all species have been encountered. It therefore designates the representativeness of the species in relation to each locality or in relation to all localities. In this study, the Fs reveals the plants most used in the ornamentation of Man city. It was calculated according to the following formula:

$$Fs = \frac{\text{Number of times a species of plant is encountered}}{\text{Total number of times all species of plant are encountered}} \times 100$$; Ta Bi (2017) [13]

Statistical analysis

The specific frequencies calculated were analyzed with the SPSS 20 software. These values made it possible to carry out a Factorial Analysis of Correspondents (AFC) to form different classes through a dendrogram. To perform AFC, we followed the Bayer code to rename plant species (Aké, 2015) [4]. This code consists of designating a plant by initials of five letters. These five letters are the first three letters of the genus and the first two letters of the species. For example, a plant called Lantana camara is referred to as Lanca.

Results

Ornamental plants listed

Surveys carried out in the city of Man have identified 36 plant species used as ornamental plants belonging to 20 botanical families. The Euphorbiaceae family is the most represented with 4 species followed by the Caesalpiniaceae and Rubiaceae families for 3 species.

Concerning the decorative parts of the listed plants, four (4) parts are indicated: the flower, the fruit, the leaves and the habit corresponding to the whole plant. The most abundant uplifting part is the flower which is shown in 16 species. The habit is indicated for 9 plants, the leaf in 8 species and the fruit is indicated for 3 plants on the list. All this information is recorded in Table 1.

Table 1: Listed plants and decorative parts

Species	Botanical families	Decorative parts
Acalypha hispida	Euphorbiaceae	Flower
Agave decipiens	Agavaceae	Harbor
Aglaonema commutatum	Araceae	Harbor
Alternanthera bettzickiana	Amaranthaceae	Flower
Ananas comosus	Bromeliaceae	Fruit
Bougainvillea glabra	Nyctaginaceae	Flower
Caesalpinia pulcherrima	Caesalpiniaceae	Harbor
Caladium bicolor	Araceae	Leaf
Cananga odorata	Annonaceae	Flower
Cassia pectabilis	Caesalpiniaceae	Flower
Cassia alata	Caesalpiniaceae	Flower
Catharanthus roseus	Apocynaceae	Flower

Table 2: continued: Listed plants and decorative parts

Species	Botanical families	Decorative parts
Celosia argentea	Amaranthaceae	Harbor
Centratherum punctatum	Asteraceae	Flower
Cestrum noctumum	Solanaceae	Flower
Chrysadidocarpus lutescens	Arecaceae	Fruit
Chrysophjyllum cainito	Sapotaceae	Fruit
chrysothemis puchella	Gesneriaceae	Leaf
Codiaeum variegatum	Euphorbiaceae	Leaf
Coleus blumei	Lamiaceae	Harbor
Costus speciosus	*Zingiberaceae*	Flower
Dieffenbachia picta	Araceae	Leaf
Episcia cupreata	Gesneriaceae	Harbor
Euphorbia milii	Euphorbiacea	Flower
Ficus benjamina	Moraceae	Harbor
Furcreae selloa	Agavaceae	Leaf
Hibiscus rosa-sinensis	Malvaceae	Flower
Ixora macrothyrsa	Rubiaceae	Flower
Jatropha multifida	Euphorbiacea	Leaf
Lantance camara	verbenaceae	Leaf
Mussaenda erythrophylla	Rubiaceae	Harbor
Mussaenda philippica	Rubiaceae	Flower
Plumeria rubra	Apocynaceae	Harbor
Polyalthia longifolia	Annonaceae	Harbor
Sanchezia rabilis	Acanthaceae	Leaf
Tagetes patula	Asteraceae	Flower

Specific frequency

The specific frequencies of the plants made it possible to establish an ascending hierarchical classification through a dendrogram (Figure 1). This dendrogram shows three groups of plants when cutting at the cluster distance of three (3). The first group consists of six plants which are more represented in the ornamentation of the city of Man. They are Polyalthia longifolia (Fs = 7.98%), Caesalpcherrina pulcherrina (Fs = 7.51%), Caladium bicolor (Fs = 7.51%), Centratherum punctatum (Fs = 6.8%), Codiaeum variegatum (Fs = 6.72%) and Bougainvillea glabra (FS = 6.18%). Five other plants with specific frequencies varying

Between 6% and 3.52% form the second group: Cassia alata, Catharanthus roseus, Cananga odorata, Jatropha multifida and Furcraea selloa. The other plants constituting the third group have a specific frequency of less than 3%. These are the plants little encountered in the city of Man.

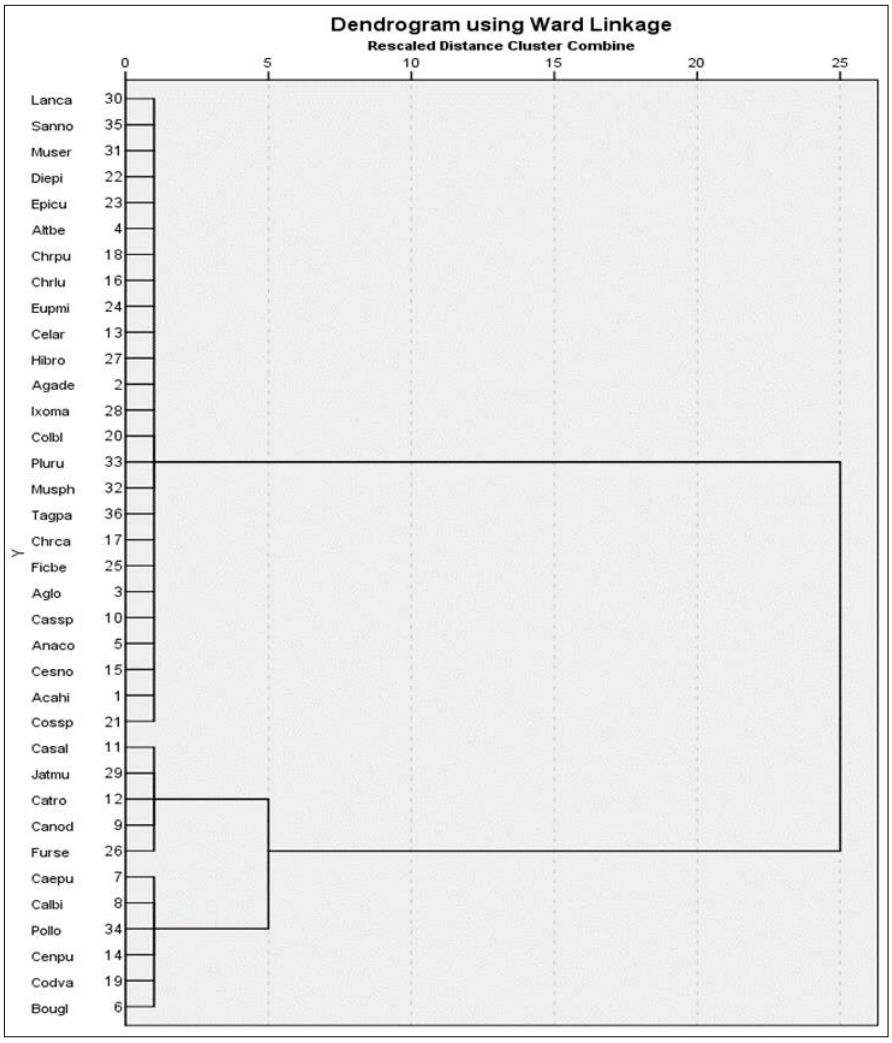

Fig 2: Dendrogram of the hierarchical classification of plants listed according to their specific frequencies

Discussion

The investigations relating to ornamental plants in the city of Man permit to identify 36 plant species. This list of ornamental plants in this study is not identical to the list of ornamental plants established in Abidjan and San-Pedro by Aké-Assi (2002) [1] which presents a catalog of 287 plant species. This numerical difference is linked to the distribution of plants which is done according to ecological factors (aké *et al*., 2015) [5]. However, several plants from this study have already been cited among the decorative plants of northern Côte d'Ivoire (Aké-Assi *et al*., 2019) [3]. Nevertheless, it is important to stress that all the ornamental plants listed by Aké-Assi (2002) [1] are not all found in Man. In addition, the decorative parts such as the flower, the leaf and the harbor have also been indicated in the study of Togolese ornamental flora (Radji *et al*., 2010) [10].

Conclusion

Investigations relating to ornamental plants in the city of Man took place in ten (10) districts of the city with more decorative plants: Air France, Campus, Commerce, Domoraud, Doyagouné, Gbèpleu, Grand gbapleu, Koko, Libreville and High School. The method used for these investigations is the traveling inventory, which consists of traveling through the city in different directions and identifying all the plant species with decorative potential. They identified 36 ornamental plants belonging to 20 botanical families. The Euphorbiaceae family is the most represented with 4 species followed by the Caesalpiniaceae and Rubiaceae families for 3 species. The exciting parts of these decorative plants are flower, leaf and habit. The flower is the most common part in the ornamentation of the city of Man. The study shows that there is a diversity of plants used by the people of Man in ornamentation.

References

1. Aké-Assi. Contribution to the study of ornamental plants cultivated in the regions of Abidjan and San-Pédro, in Côte d'Ivoire. 3rd Cycle Doctorate, U.F.R. Biosciences. 2015; 1:291.
2. Aké-Assi. Plants with decorative potential of the flora of southern Côte d'Ivoire: taxonomic, ethnobotany studies and domestication test of *Thunbergia atacorensis* Akoegninou & Lisowski (Acanthaceae), a newly introduced species. Doctoral thesis, UFR Biosciences, Félix Houphouët-Boigny University, Ivory Coast, 2015, 207.

3. Aké-Assi, Faustine Akossoua Kouassi, Kwassi Dauphner, Serges S Amani. Floristic Diversity of Plants with Decorative Potentiality from Natural Formations in the North of the Côte d'Ivoire. European Scientific Journal May 2019 edition. 2019; 15:1857-7881
4. Aké CB. Ethnobotanical study of plants and spontaneous fungi, used as food in the Department of Agboville and the District of Abidjan (Côte d'Ivoire). Unique doctoral thesis, UFR Biosciences, Félix Houphouët- Boigny University of Abidjan. 2015, 172.
5. Aké CB, N'Guessan K, Kouamé NM. Traditional Consumption Stateous of Wild Food Plants and Mushrooms Species in Abidjan and Agboville (Côte d'Ivoire). European journal of Scientific Research. 2015; 135(1):182-195.
6. Doh KS. Plants with antidiabetic potential used in traditional medicine in the District of Abidjan (Côte d'Ivoire): ethnobotanical study, tri-phytochemical characterization and evaluation of some pharmacodynamic parameters of certain species. Unique doctoral thesis, UFR Biosciences, FHB University of Abidjan, 2015, 152.
7. Fleurentin J, Hayon JC, Pelt JM. Plants that heal us: Traditions and therapy. Edition west-France, Rennes (France), 2007, 189.
8. Mboh H. Vegetation assessment of Takamanda fores treserve and comparism with Campo Ma'an and Ejagham forest reserves. Thesis, Faculty of Agronomy and Agricultural Sciences, University of Dschang, Cameroon, 2016, 62.
9. N'Guessan K. Medicinal plants and traditional medical practices among the Abbey and Krobou peoples of the Department of Agboville (Côte d'Ivoire). State Doctorate Thesis in Natural Sciences, Ethnobotany Specialty, University of Cocody-Abidjan (Côte d'Ivoire), UFR Biosciences, Botanical Laboratory, 2008, 235.
10. Radji R, Kokou K, Akpagana K. Diagnostic study of Togolese ornamental flora. Journal of Biological and Chemical Sciences. 2010; 4(2):491-508
11. RGPH. General Population and Housing Census, Global Results Permanent Technical Secretariat of the RGPH Technical Committee, Côte d'Ivoire, 2017, 26.
12. Ta Bi IH. Ethnobotanical study of antidiabetic plants sold in the markets of the commune of Yopougon in the district of Abidjan (Côte d'Ivoire). Master in Tropical Ecology. Félix Houphouët- Boigny University (Côte d'Ivoire), UFR Biosciences, 2013, 46.
13. Ta Bi IH. Ethnobotanical, phytochemical and pharmacodynamic studies of some species of the genus *Corchorus* L., recorded in Côte d'Ivoire. Unique doctoral thesis, UFR Biosciences, Félix Houphouët-Boigny University of Abidjan, 2017, 142.