

# Plants Checklist of Mount Kenya University Botanic Garden, Thika, Kenya

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**Abstract** A checklist of plant species occurring at Mount Kenya University Botanic Garden is presented. The purpose of this study was to develop a check list of plants that could be used for education, research and as a conservation guide. Two methods of study were used; first was physical identification and enumeration of the plants and secondly, line-transect and point centered quadrant techniques. A total of 223 plant species that belong to 57 families were identified. Three were vulnerable, endemic and rare and were identified as *Combretum tanaense* in Combretaceae, *Ficus scassellatii* ssp. *thikaensis* in Moraceae and *Pavetta teitana* in Rubiaceae, respectively.

**Keywords** Biodiversity, *Ex situ* conservation, Flora and Indigenous

## 1. Introduction

Plant diversity is relatively high in Kenya with approximately 6881 plant species occurring in different ecosystems (Zhou *et al.*, 2017). These plant population is constantly decreasing due to effects of climate change and as a result of anthropogenic activities (Millar *et al.*, 2007). Therefore, the government is instituting conservation efforts through legislations and different government agencies that are mandated to manage the environment and biodiversity. The legislations include Kenya Wildlife Conservation Management (The Constitution of Kenya, 2010; Government of Kenya, 2012b, 2013), National Environment Management Authority (NEMA) (Government of Kenya, 2012a) and Kenya Forest Service (KFS) (Government of Kenya, 2017).

Botanic gardens provide for *ex situ* conservation and a means for achieving plant diversity and conservation (Thormann *et al.*, 2006; World Health Organization, International Union for Conservation of Nature and Natural Resources & World Wide Fund for Nature, 1993; Wyse Jackson & Sutherland, 2000). The Botanic gardens constitute documented collections of living plants for purpose of scientific research, conservation, display and education (Hawkins, 2008; Oldfield, 2009). Globally, there

are about 1846 botanical gardens and more than 30% of them are owned by Universities and other research institutions for higher education. Less than 40% of botanic gardens are found in tropical regions of the world. Despite the fact that the tropics are characterized by high biodiversity and endemism, the region has faced high rate of threats due to climate change and human activities in the recent past (Prance *et al.*, 2000).

In Kenya, there are more than twelve botanic gardens which include the Kaya Cum Arboretum in Bamburi (Mombasa County), Moi University Botanic Garden in Eldoret, East African Agriculture and Forestry Research Institute (KARI) in Muguga. The Baobab Gardens in Kilifi, Mutomo Hill Plant Sanctuary in Kitui, Mazeras Botanical Gardens/Nursery in Mombasa County, Nairobi Arboretum and the Nairobi Botanic Garden of the National Museums of Kenya in Nairobi County, Pwani University botanical garden in Kilifi County, Egerton University in Nakuru County, Jomo Kenyatta University and Mount Kenya University, Kiambu County (Anonymous, 2018a, 2018b, 2018c; Omondi & Omondi, 2015; Misonge *et al.*, 2016). Other Universities in Kenya such as Kenyatta University and University of Nairobi in Nairobi County and Kenya Methodist University in Meru County have botanic gardens whose flora largely remains undocumented.

Mount Kenya University Botanic Garden is a member of Botanical Gardens Conservation International (BGCI) which constitute a network of 500 gardens (Botanic Gardens Conservation International, 2018). The network spearheads inter-botanical gardens collaborations with the aim of documenting and mitigating the impacts of global climate change (Primack & Miller-Rushing, 2009). Such programs,

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among others, in turn, provide important models for establishing specific strategies to protect valuable plant species from extinction (Donaldson, 2009). The current study seeks to develop a check list of plants of Mount Kenya University Botanic Garden to serve as a guide for research and education. The list shall also be important in prioritizing conservation of rare, endemic and vulnerable indigenous plant species.

## 2. Material and Methods

### Study area

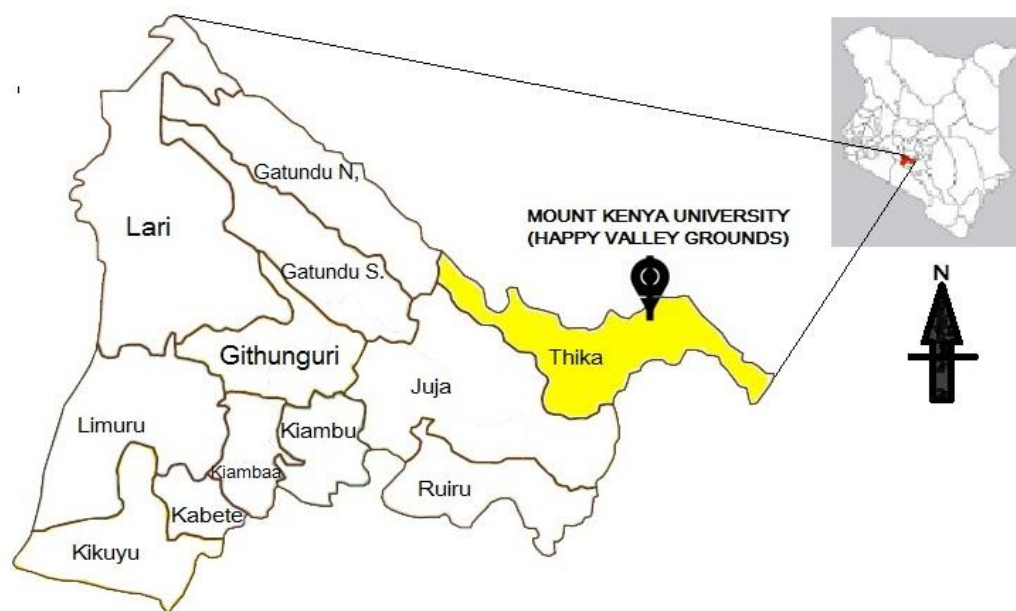
The study was carried out at the Mount Kenya University botanic garden in Thika, Kiambu County (Figure 1). The garden covers an area of 78 000 m<sup>2</sup> (19.27 acres). The site is geo-referenced with the GPS coordinates: 1°3'2"S, 37°8'9"E, 1°3'4"S, 37°8'22"E, 1°3'8"S, 37°8'6"E and 1°3'9"S, 37°8'24"E. The Botanical Garden lies at elevations between 1432.56 meters to 1459.38 meters above the sea level and has a bimodal rainfall pattern. The average annual rainfall in Thika and its environs ranges between 900 mm and 1250 mm per annum. The climate is moderate tropical with sunshine most of the year round and typical average temperatures of 25 °C during the day, with the hottest period in January - February leading to the long rains, March - May and a spell of cold weather in July. The land has a gradual slope from South to the North. Although the vegetation zoning of Kiambu County is largely characterized by highlands climate, the outskirts of Thika sub-county, where the Botanical garden is situated, is notably a gradual transition into the wooded bushed grasslands vegetation type towards the semi-arid South East of the country.

### Topography, geology and soils

Thika sub-county lies at the Athi-Kapiti plains (Masai plateau), close to the central highlands. The Mount Kenya University botanic garden is situated in the Eastern part of Thika Town. The topography of the town is characterized by relatively flat plains with a gentle slope of between 5°-10° from East to West at an altitude of 1200 - 1360 meters above sea level. There are small valleys on the western and northern edges following the Chania and Thika Rivers that have waterfalls and meet on the northwestern edge of Thika Town. The soils are dissected and easily eroded. Moreover, they are low fertility sandy and clay soils (County Government of Kiambu in Collaboration with Ministry of Land Housing and Urban Development, 2015).

### Local population and vegetation

Thika town is an industrial and business town of Kenya. According to the census of 2019, Thika has a population about 200,000 people (<http://worldpopulationreview.com/countries/kenya-population>, 2019). The Mount Kenya University botanic garden is situated next to Happy valley and Landless estates in Thika. The estates are medium density residential area with about 32 dwellings per hectare. The site for the botanical garden was neglected quarry land after mining of building stones. The botanical garden therefore was a landscape restoration strategy that was meant to create long standing habitat protection and provision of human insecurity against landslides. The vegetation is found as patches of grassland, woodlands and riparian. Generally, the vegetation surrounding the area of study is persistently threatened by land subdivisions, quarrying, and clearance for settlements, agriculture and exploitation for medicinal plants (County Government of Kiambu in Collaboration with Ministry of Land Housing and Urban Development, 2015).



**Figure 1.** Map of Thika Constituency Showing the position of Mount Kenya University Botanic Garden at Happy Vally in the Left and map of Kenya showing the position of Kiambu County on the Right

## Study design

Observational design was used in this study. Regular field trips were conducted to the study site for a period of five years from January 2012 to December 2017. Two methods were used to develop the list of plants. First, physical identification and enumeration of the plants, which was done by walking around the botanic garden and secondly, line transect and point centered quadrant (Misonge *et al.*, 2016).

## Plant identification and documentation

Reconnaissance survey was done before actual study for this work. It was necessary for general familiarization and understanding of the vegetation of the study site. It also formed a basis for deciding the suitable methods of data collection. Regular field trips were conducted in the study area for a period of five years from January 2012 to December 2017. Two methods were used to develop a list of plants, physical identification a group and counting of the plants, which was done by walking in the botanical garden. The identity of the plant specimens was confirmed at the East African Herbarium, National Museums of Kenya.

## 3. Results and Discussion

### Floristic analysis

A total of 223 plant species in 57 families of seed-bearing plants, comprising trees, shrubs and herbs were recorded (Table 1). Out of the total number of families recorded, only three had more than 10 species while 21 families had one species each. The class Gymnospermae (cone-bearing plants) was represented by a single, exotic species, *Cupressus lusitanica*. Angiospermae (flowering plants) had 57 families; 51 dicotyledons and 6 monocotyledons. Poaceae, the grass family, dominated the herb layer with 30 species followed by Asteraceae (sunflower family) with 18 species. Trees were dominated by the genus *Acacia* with 8 species followed by *Ficus* with 6 species. Three species namely *Ficus scassellatii* ssp. *thikaensis* voucher number KMB002/2019 is known to be ENDEMIC in Thika (Kenya) (van Noort & Rasplus 2019), *Pavetta teitana* voucher number KMBU003/2019 and *Combretum tanaense* with voucher number KMB01/2019 are reported as RARE and VULNERABLE (Walter & Gillett, 1998) respectively, and therefore require to be prioritized for conservation.

**Table 1.** Frequency of species per family

Species per family	Families (number of species in brackets)
>10	Poaceae (30), Asteraceae (18), Mimosaceae (16), Fabaceae (14) Euphorbiaceae (11)
7-9	Lamiaceae (8), Malvaceae (7),
4-6	Acanthaceae (6), Celastraceae (6), Moraceae (6), Rubiaceae (6), Rutaceae (6), Solanaceae (6)
2-5	Amaranthaceae (5), Anacardiaceae (5), Verbenaceae (5), Meliaceae (3), Bignoniaceae (4), Boraginaceae (4), Rhamnaceae (4), Sterculiaceae (4), Vitaceae (4), Capparaceae (3), Combretaceae (3), Myrtaceae (3), Asclepiadaceae (2), Chenopodiaceae (2), Flacourtiaceae (2), Moringaceae (2), Oleaceae (2), Polygonaceae (2), Tiliaceae (2) Commelinaceae (3)
1	Apocynaceae, Araliaceae, Burseraceae, Cactaceae, Cannelaceae, Casuarinaceae, Cucurbitaceae, Ebenaceae, Lythraceae, Papaveraceae, Passifloraceae, Phytolacaceae, Pittosporaceae, Proteaceae, Thymelaeaceae, Ulmaceae, Agavaceae, Aloaceae, Asparagaceae, Musaceae, Cupressaceae.

## Plant checklist

A checklist of trees, shrubs and herbs of the proposed Mount Kenya University Botanic Garden was compiled as the major output of this study (appendix 1). The checklist is arranged alphabetically by family and then by genus and species under each family. Synonyms are in square brackets. The list was compiled using multiple taxonomic data available (Beentje, 1994; Dharani *et al.*, 2010; Gachathi, 2007; Gibbs Russell *et al.*, 1991; Graf, 1978; Ivens, 1967; Kokwaro, 2009, Turill, W.B. & Milne-Redh. & others (eds.) 1952-2015 and later confirmed at the East African Herbarium, National Museums of Kenya, Nairobi and the African Plants Database.

## Identification of unique plants

*Pavetta teitana*, *Ficus scassellatii* ssp. *thikaensis* and *Combretum tanaense*, were recorded in this study as unique because they are rare, endemic or threatened. In a study done by Malombe & Mutangah (2005) at thirteen sites in Thika district, *Pavetta teitana*, *Ficus scassellatii* ssp. *thikaensis*

were identified in habitats that were away from Thika or Chania river. *Pavetta teitana* and *Ficus scassellatii* ssp. *thikaensis* were recorded in three sites that were David Harries and Kuraiha forests. On the other hand, *Combretum tanaense*, a vulnerable plant species, which is endemic and indigenous in Kenya (Walter & Gillett, 1998) was recorded for the first time as a riparian vegetation along Chania River. The listing of *C. tanaense* among other plants at Mount Kenya University botanic garden flora provides an additional site where this unique species occurs in Thika.

## 4. Conclusions

It was concluded that the botanical garden Mount Kenya University botanic garden support the goal of the county in protecting, preserving and managing environmental and natural resources for socio-economic development. The list also provides a basis for research and conservation of indigenous plants.

## ACKNOWLEDGEMENTS

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## Appendix

**Appendix 1.** A Plant Checklist arranged alphabetically by families

<b>CLASS: ANGIOSPERMAE – Sub-class -Dicotyledonae</b>	
<b>Family: Acanthaceae</b>	
1	<i>Asystasia mysorensis</i> (Roth) T. Anders. [ <i>A. schimperi</i> T. Anders.]
2	<i>Dyschoriste thunbergiiflora</i> (S.Moore) Lindau
3	<i>Justicia flava</i> Vahl
4	<i>Justicia bracteata</i> (Hochst.) Zarb [ <i>Monechma debile</i> (Forsk.) Nees]
5	<i>Ruellia prostrata</i> (Nees) T.Anders.
6	<i>Thunbergia alata</i> Sims
<b>Family: Amaranthaceae</b>	
7	<i>Achyranthes aspera</i> L.
8	<i>Aerva lanata</i> (L.) Schultes
9	<i>Amaranthus hybridus</i> L.
10	<i>Cyathula cylindrica</i> Moq.
11	<i>Pappalia lappacea</i> (L.) A. Juss.
<b>Anacardiaceae</b>	
12	<i>Lannea rivae</i> (Chiov.) Sacl. [ <i>L. floccosa</i> Sacl.]
13	<i>Ozoroa insignis</i> Del. ssp. <i>reticulata</i> (Bak.f.) Gillett [ <i>Heeria reticulata</i> (Bak.f.) Engl.]
14	<i>Pistacia aethiopica</i> Kokwaro
15	<i>Searsia natalensis</i> Krauss
16	<i>Searsia vulgaris</i> Meikle
17	<i>Sclerocarya birrea</i> (A. Rich.) Hochst.
<b>Family: Apocynaceae</b>	
18	<i>Carissa spinarum</i> L. [ <i>C. edulis</i> (Forssk.) Vahl]
<b>Family: Araliaceae</b>	
19	<i>Cussonia spicata</i> Thunb.
<b>Family: Asclepiadaceae</b>	
20	<i>Gomphocarpus semilunatus</i> A. Rich.
21	<i>Pergularia daemia</i> (Forssk.) Chiov.
<b>Family: Asteraceae (Compositae)</b>	
22	<i>Acanthospermum hispidum</i> DC.
23	<i>Ageratum conyzoides</i> L.
24	<i>Aspilota mossambicensis</i> (Oliv.) Wild
25	<i>Bidens pilosa</i> L.
26	<i>Brachylaena huillensis</i> O. Hoffm. [ <i>B. hutchinsii</i> Hutch.]
27	<i>Conyza stricta</i> Willd.
28	<i>Galinsoga parviflora</i> Cav.
29	<i>Gutenburgia cordifolia</i> Oliv.
30	<i>Helichrysum glumaceum</i> DC.

31	<i>Launaea cornuta</i> (Oliv. & Hiern) C. Jeffrey
32	<i>Parthenium hysterophorus</i> L.
33	<i>Pluchea ovalis</i> DC.
34	<i>Schkuria pinnata</i> (Lam.) Thell.
35	<i>Sonchus oleraceus</i> L.
36	<i>Tagetes minuta</i> L.
37	<i>Tithonia diversifolia</i> (Hemsl.) Gray
38	<i>Vernonia lasiopus</i> O.Hoffm.
39	<i>Xanthium strumarium</i> L. [ <i>X. pungens</i> Wallroth]

### Family: Bignoniaceae

40	<i>Jacaranda mimosifolia</i> D. Don
41	<i>Kigelia africana</i> (Lam.) Benth.
42	<i>Markhamia lutea</i> (Benth.) K.Schum.
43	<i>Spathodea campanulata</i> P. Beauv. [ <i>S. nilotica</i> Seem.]

### Family: Boraginaceae

44	<i>Cordia africana</i> Lam. [ <i>C. abyssinica</i> R. Br.]
45	<i>Cordia monoica</i> Roxb. [ <i>C. ovalis</i> DC.]
46	<i>Ehretia cymosa</i> Thonn.
47	<i>Trichodesma zeylanicum</i> (Burm.f.) R.Br.

### Family: Burseraceae

48	<i>Commiphora africana</i> (A. Rich.) Engl.
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### Family: Cactaceae

49	<i>Opuntia monacantha</i> Haw. [ <i>O. vulgaris</i> L.]
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### Family: Canellaceae

50	<i>Warburgia ugandensis</i> Sprague
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### Family: Capparaceae

51	<i>Cadaba farinosa</i> Forssk.
52	<i>Capparis tomentosa</i> Lam.
53	<i>Cleome monophylla</i> L.

### Family: Celastraceae

54	<i>Catha edulis</i> (Vahl.) Endl.
55	<i>Maytenus heterophylla</i> (Eckl. & Zeyh.) Robson
56	<i>Maytenus putterlickioides</i> (Loes.) Exell & Mendonca
57	<i>Maytenus senegalensis</i> (Lam.) Exell
58	<i>Maytenus undata</i> (Thumb.) Blakelock
59	<i>Mystroxydon aethiopicum</i> (Thumb.) Loes.

### Family: Casuarinaceae

60	<i>Casuarina cunninghamiana</i> Miq.
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### Family: Chenopodiaceae

61	<i>Chenopodium album</i> L.
62	<i>Chenopodium ambrosioides</i> L.
63	<i>Chenopodium schraderianum</i> Schultes

### Family: Combretaceae

64	<i>Combretum molle</i> G. Don
65	<i>Combretum tanaense</i> J.J. Clark
66	<i>Terminalia brownii</i> Fresen.

### Family: Cucurbitaceae

67	<i>Lagenaria abyssinica</i> (Hook.f.) C.Jeffrey
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### Family: Ebenaceae

68	<i>Euclea divinorum</i> Hiern
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### Family: Euphorbiaceae

69	<i>Acalypha fruticosa</i> Forssk.
70	<i>Bridelia micrantha</i> (Hochst.) Baill.
71	<i>Croton macrostachyus</i> Del.
72	<i>Croton megalocarpus</i> Hutch.
73	<i>Erythrococa bongensis</i> Pax
74	<i>Euphorbia crotonoides</i> Boiss.
75	<i>Euphorbia hirta</i> L.
76	<i>Euphorbia tirucalli</i> L.
77	<i>Jatropha curcas</i> L.
78	<i>Phyllanthus nummulariifolius</i> Poir. [ <i>P. capillaris</i> Schum. & Thonn.]
79	<i>Phyllanthus sepialis</i> Muell. Arg. [ <i>P. meruensis</i> Pax]
80	<i>Ricinus communis</i> L.
<b>Family: Fabaceae</b>	
81	<i>Acrocarpus fraxinifolius</i> Arn.
82	<i>Crotalaria agatiflora</i> Schweinf.
83	<i>Desmodium repandum</i> (Vahl) DC.
84	<i>Indigofera swaziensis</i> Bolus
85	<i>Lonchocarpus eriocalyx</i> Harms
86	<i>Pterolobium stellatum</i> (Forssk.) Brenan
87	<i>Rhynchosia minima</i> (L.) DC.
88	<i>Senna bicapsularis</i> (L.) Roxb. [ <i>Cassia bicapsularis</i> L.]
89	<i>Senna italica</i> Miller [ <i>Cassia italica</i> (Miller) F.W.Ander.]
90	<i>Senna occidentalis</i> (L.) Link [ <i>Cassia occidentalis</i> L.]
91	<i>Senna singueana</i> (Del.) Lock. [ <i>Cassia singueana</i> Del.]
92	<i>Senna spectabilis</i> (DC.) H.S. Irwin & Barneby [ <i>Cassia spectabilis</i> DC.]
93	<i>Sesbania sesban</i> (L.) Merr.
94	<i>Vigna membranacea</i> A.Rich.
<b>Family: Flacourtiaceae</b>	
95	<i>Dovyalis caffra</i> (Hook.f. & Harv.) Hook.f.
96	<i>Scolopia zeyheri</i> (Nees) Harv.
<b>Family: Lamiaceae (Labiatae)</b>	
97	<i>Ajuga integrifolia</i> Buch. -Ham. [ <i>Ajuga remota</i> Benth.]
98	<i>Leucas grandis</i> Vatke
99	<i>Leonotis nepetifolia</i> (L.) Ait.f.
100	<i>Ocimum obovatum</i> Benth. [ <i>Becium obovatum</i> (Benth.) N.E.Br.]
101	<i>Ocimum basilicum</i> L.
102	<i>Ocimum americanum</i> L.
103	<i>Ocimum gratissimum</i> L. [ <i>O. suave</i> Willd.]
104	<i>Plectranthus barbatus</i> Andr.
<b>Family: Lythraceae</b>	
105	<i>Nesaea kilimandscharica</i> Koehne [ <i>N. hispidula</i> Rolfe]
<b>Family: Malvaceae</b>	
106	<i>Abutilon mauritanium</i> (Jacq.) Medic.
107	<i>Abutilon hirtum</i> (Lam.) Sweet
108	<i>Azanza garckeana</i> (F. Hoffm.) Excell & Hillcoat
109	<i>Hibiscus aponeurus</i> Sprague & Hutch.
110	<i>Hibiscus fuscus</i> Garcke
111	<i>Pavonia burchellii</i> (DC.) R.A.Dyer [ <i>Pavonia patens</i> (Andr.) Chiov.]

112	<i>Sida alba</i> L.
<b>Family: Meliaceae</b>	
113	<i>Azadirachta indica</i> A. Juss.
114	<i>Ekebergia capensis</i> Sparrm.
115	<i>Melia azedarach</i> L.
<b>Family: Mimosoaceae</b>	
116	<i>Acacia drepanolobium</i> Sjostedt
117	<i>Acacia gerrardii</i> Benth.
118	<i>Acacia hockii</i> De Wild.
119	<i>Acacia nilotica</i> (L.) Del.
120	<i>Acacia polyacantha</i> Willd.
121	<i>Acacia senegal</i> (L.) Willd.
122	<i>Acacia tortilis</i> (Forssk.) Hayne
123	<i>Acacia xanthophloea</i> Benth.
124	<i>Dichrostachys cinerea</i> (L.) Wight & Arn.
<b>Family: Moraceae</b>	
125	<i>Ficus lutea</i> Vahl
126	<i>Ficus natalensis</i> Hochst.
127	<i>Ficus scassellatii</i> Pamp. ssp. <i>thikaensis</i> C.C. Berg
128	<i>Ficus sur</i> Forssk.
129	<i>Ficus sycomorus</i> L.
130	<i>Ficus thonningii</i> Bl.
<b>Family: Moringaceae</b>	
131	<i>Moringa oleifera</i> Lam
132	<i>Moringa stenopetala</i> (Bak.f.) Cuf.
<b>Family: Myrtaceae</b>	
133	<i>Callistemon citrinus</i> (Burt.) Stapf
134	<i>Eucalyptus globulus</i> Labill.
135	<i>Syzygium guineense</i> (Willd.) DC.
136	<i>Jasminum floribundum</i> Fres.
<b>Family: Oleaceae</b>	
137	<i>Olea europaea</i> L. ssp. <i>cuspidata</i> (G.Don) Ciferri [ <i>O. africana</i> Mill.]
<b>Family: Papaveraceae</b>	
138	<i>Argemone mexicana</i> L.
<b>Family: Passifloraceae</b>	
139	<i>Passiflora subpeltata</i> Ortega
<b>Family: Phytolaccaceae</b>	
140	<i>Phytolacca dodecandra</i> L'Herit.
<b>Family: Pittosporaceae</b>	
141	<i>Pittosporum viridiflorum</i> Sims
<b>Family: Polygonaceae</b>	
142	<i>Polygonum salicifolium</i> Willd.
143	<i>Oxygonum sinuatum</i> (Meisn.) Dammer
<b>Family: Proteaceae</b>	
144	<i>Grevillea robusta</i> Cunn.
<b>Family: Rhamnaceae</b>	
145	<i>Helinus mystacinus</i> (Ait.) Steud.
146	<i>Rhamnus staddo</i> A.Rich.
147	<i>Scutia myrtina</i> (Burm.f.) Kurz
148	<i>Ziziphus mucronata</i> Willd.

**Family: Rosaceae**

- 149 *Prunus africana* (Hook.f.) Kalkm. [*Pygeum africanum* Hook.f.]

**Family: Rubiaceae**

- 150 *Breonadia microcephala* (Del.) Ridsdale  
 151 *Pavetta teitana* K.Shum.  
 152 *Pentas longiflora* Oliv.  
 153 *Richardia brasiliensis* Gomes  
 154 *Rubia cordifolia* L.  
 155 *Vangueria madagascariensis* Gmel.

**Family: Rutaceae**

- 156 *Clausena anisata* (Willd.) Benth.  
 157 *Fagaropsis hildebrandtii* (Engl.) Milne-Redh.  
 158 *Vepris simplicifolia* (Engl.) Mziray [*Teclea simplicifolia* (Engl.) Verdoorn]  
 159 *Vepris nobilis* (Delile) Mziray [*Teclea nobilis* Del.]  
 160 *Zanthoxylum chalybeum* Engl.  
 161 *Zanthoxylum gillettii* (De Wild.) Waterman

**Family: Santalaceae**

- 162 *Osyris lanceolata* Hochst & Steud.

**Family: Sapindaceae**

- 163 *Allophylus rubifolius* (Hochst.) Engl.  
 164 *Pappea capensis* Eckl. & Zeyh.

**Family: Solanaceae**

- 165 *Datura stramonium* L.  
 166 *Nicandra physalodes* (L.) Gaertn.  
 167 *Physalis peruviana* L.  
 168 *Solanum campylacanthum* A.Rich  
 169 *Solanum mauritanium* Scop.  
 170 *Withania somnifera* (L.) Dunal

**Family: Sterculiaceae**

- 171 *Dombeya torrida* (J.F.Gmel.) P.Bamps  
 172 *Dombeya rotundifolia* (Hochst.) Planch.  
 173 *Melhanian ovata* (Cav.) Spreng.  
 174 *Waltheria indica* L.

**Family: Tiliaceae**

- 175 *Corchorus trilocularis* L.  
 176 *Triumfetta rhomboidea* Jacq.

**Family: Thymelaeaceae**

- 177 *Gnidia latifolia* (Oliv.) Gilg.

**Family: Ulmaceae**

- 178 *Trema orientalis* (L.) Blume

**Family: Verbenaceae**

- 179 *Rotheca myricoides* (Hochst.) Steane & Mabb. [*Clerodendrum myriodes* (Hochst.) Vatke]  
 180 *Lantana camara* L.  
 181 *Lippia javanica* (Burm.f.) Spreng  
 182 *Vitex keniensis* Turrill  
 183 *Vitex strickeri* Vatke & Hildebr.

**Family: Vitaceae**

- 184 *Cissus quadrangularis* L.

- 185 *Cyphostemma adenocaulis* (A.Rich.) Wild & Drum.

- 186 *Cyphostemma cyphopetalum* (Fresen.) Wild & Drum.

- 187 *Rhoicissus revoilii* Planch.

**CLASS: Sub-class (monocotyledonae)****Family: Agavaceae**

- 188 *Agave sisalana* Perrine

**Family: Aloaceae**

- 189 *Aloe secundiflora* Engl.

**Family: Asparagaceae**

- 190 *Asparagus racemosus* Willd.

**Family: Commelinaceae**

- 191 *Commelina africana* L.  
 192 *Commelina benghalensis* L.  
 193 *Commelina reptans* Brenan

**Family: Musaceae**

- 194 *Musa sapientum*

**Family: Poaceae (gramineae)**

- 195 *Andropogon distachyos* L.  
 196 *Aristida adoensis* Hochst.  
 197 *Aristida congesta* Roem. & Schult.  
 198 *Bambusa vulgaris* Wendl.  
 199 *Bothriochloa insculpta* (A.Rich.) A.Camus  
 200 *Brachiaria brizantha* (A.Rich.) Stapf  
 201 *Brachiaria leersoides* (Hochst.) Stapf  
 202 *Bracharia semiundulata* (A.Rich.) Stapf  
 203 *Cynodon dactylon* (L.) Pers.  
 204 *Digitaria abyssinica* (A.Rich.) Stapf [*D. scalarum* (Schweinf.) Chiov.]  
 205 *Digitaria diagonalis* (Nees) Stapf  
 206 *Echinochloa haploclada* (Stapf) Stapf  
 207 *Eragrostis superba* Peyr.  
 208 *Eragrostis cilianensis* (All.) Lut.  
 209 *Eragrostis ciliaris* (L.) R.Br.  
 210 *Eragrostis hispida* K. Schum.  
 211 *Heteropogon contortus* (L.) Roem. & Schult.  
 212 *Hypertheria filipendula* (Hochst.) Stapf  
 213 *Panicum maximum* Jacq.  
 214 *Pennisetum mezianum* Leeke  
 215 *Pennisetum purpureum* Schumach.  
 216 *Perotis patens* Gand.  
 217 *Melinis repens* (Willd.) Zizka [*Rhynchelytrum repens* (Willd.) C.E.Hubb.]  
 218 *Setaria sphacelata* (Schumach.) Moss  
 219 *Setaria verticillata* (L.) P.Beauv.  
 220 *Sporobolus pyramidalis* P.Beauv.  
 221 *Themeda triandra* Forsk.  
 222 *Tragus berteronianus* Schult.

**GYMNOSPERMAE****Family: Cupressaceae**

- 223 *Cupressus lusitanica* Mill.

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