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Floristic Composition and Taxonomic Diversity of the Federal University of Environment and Technology, Ogoni, Nigeria: A Baseline Inventory

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Abstract

University campuses can retain remnant vegetation and support spontaneous, cultivated, medicinal and ornamental plants, yet their biodiversity is often poorly documented before construction accelerates. This study reports a baseline floristic inventory of the Federal University of Environment and Technology (FUET), Koroma/Saakpenwa, Ogoni, Rivers State, Nigeria. Field observations were undertaken between July and September 2026 across both campuses, including building surroundings, roadsides, open areas, gardens and residential spaces. Plant identification was supported by the PlantNet mobile application and observable vegetative and reproductive characteristics. The source inventory records 110 plant species, 89 genera and 40 families. Asteraceae was the most species-rich family (17 species; 15.5%), followed by Poaceae and Fabaceae (13 species each; 11.8% each). Lamiaceae contributed six species (5.5%), Euphorbiaceae five (4.5%), and Onagraceae four (3.6%). The recorded flora included trees, shrubs, herbs, climbers, grasses, sedges and geophytes. These findings establish an initial reference for campus biodiversity management and future ecological monitoring. The study recommends taxonomic quality control, seasonal resampling, georeferenced species records and integration of biodiversity protection into campus development planning.

Keywords: Floristic inventory; Plant diversity; FUET; Ogoniland; PlantNet; Biodiversity baseline.

1. Introduction

Plants underpin terrestrial ecosystem functioning through primary production, nutrient cycling, soil protection, habitat provision and the supply of food, medicines and materials. Floristic inventories translate this broad ecological importance into locally usable evidence by documenting which species occur in a defined area and how they are distributed. Such information is particularly important where land-use change is expected to intensify, because

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a baseline permits subsequent assessment of losses, gains and changes in vegetation composition (Lughadha et al., 2016; Stuessy, 2009).

University campuses are useful settings for this work. Their landscapes may combine remnant vegetation, planted trees, ornamental beds, cultivated food plants, unmanaged grassland and ruderal species. The resulting flora reflects both ecological processes and institutional choices about landscaping, land clearance and maintenance. Campus inventories can also support teaching and field-based research, turning the grounds into a living laboratory for taxonomy, ecology and conservation.

Published inventories from Nigerian universities demonstrate that campus floras can be taxonomically diverse, although the reported totals differ with sampling design, campus size, habitat coverage and the inclusion of herbs and other non-tree growth forms. For example, Ogbevire et al. (2025) documented 173 species at Ambrose Alli University, while Mudasiru et al. (2024) recorded 269 vascular plant species at the Federal University of Agriculture, Abeokuta. Chukwuma et al. (2023) reported 150 angiosperm species at Federal University Oye-Ekiti. These studies show the value of systematic inventories while cautioning against direct comparison of species totals without considering methods.

This research directly advances global biodiversity and environmental restoration objectives by operationalizing key peer-reviewed conservation mechanisms across international environmental agreements. By establishing a foundational baseline inventory of floral diversity in the historically oil-degraded landscape of Ogoniland, the study directly fulfills the core mandates of the UN Convention on Biological Diversity through systematic species monitoring and biodiversity loss mitigation (Rands et al., 2010). Furthermore, cataloging native species alongside cultivated food crops and 18 medicinal plants reinforces the strategic directives of the International Treaty on Plant Genetic Resources for Food and Agriculture, highlighting the necessity of documenting local phytogenetic resources to protect regional food security and ethnobotanical knowledge (Esquinas-Alcázar, 2005). As a reference point for green infrastructure and spatial planning at a newly established university, the inventory aligns with the Kunming-Montreal Global Biodiversity Framework targets for biodiversity-inclusive spatial development and urban greening (Obura, 2023). Finally, executing this assessment within a Niger Delta setting marked by extensive pollution legacies advances the practical goals of the UN Decade on Ecosystem Restoration, providing the baseline evidence needed to guide and monitor long-term habitat recovery (Fischer et al., 2021).

The present paper addresses a basic knowledge gap by describing the taxonomic composition recorded in the FUET plant inventory. It asks: (a) how many plant species, genera and families were reported; (b) which families contributed most to recorded species richness; and (c) what do the findings imply for campus biodiversity planning and future monitoring? The paper deliberately treats the inventory as a baseline dataset.

2. Materials and Methods

2.1 Study area.

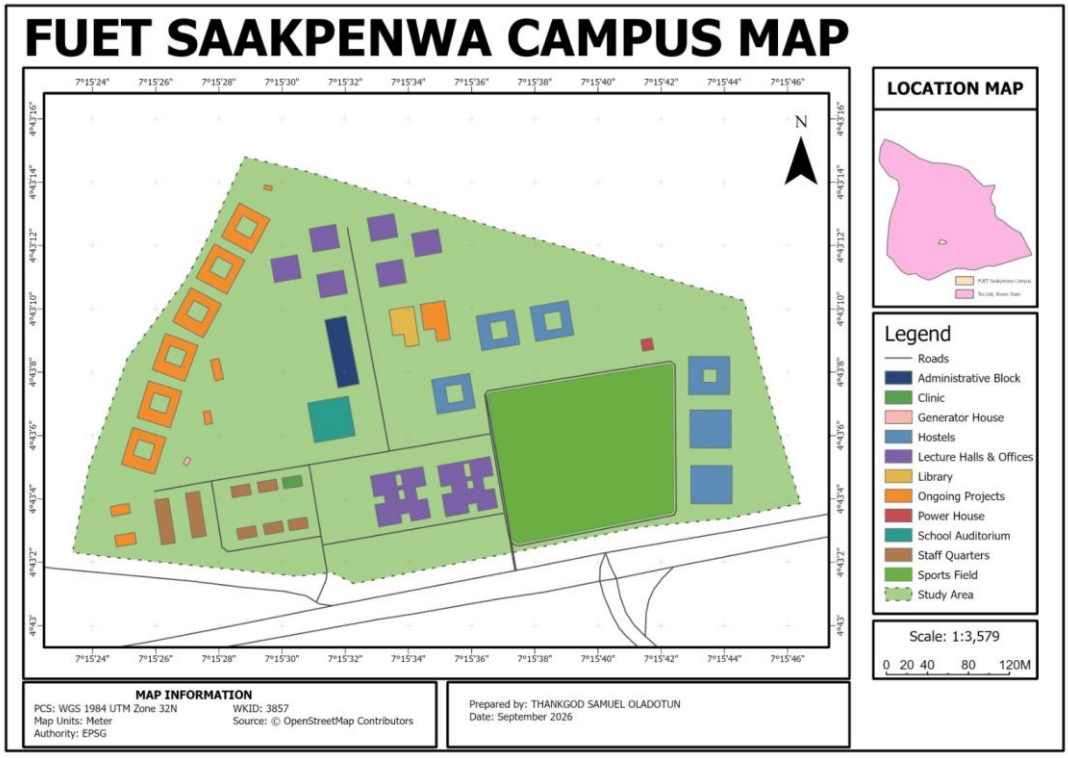


Figure 1: Map of the Federal University of Environment and Technology, Koroma/Sakpenwa, Ogoni

The Federal University of Environment and Technology (FUET) is situated in Ogoniland, a Niger Delta landscape with a long history of environmental pressure associated with oil exploration and pollution. The study covered the Koroma and Saakpenwa campuses of FUET in Ogoniland, Rivers State, Nigeria. The United Nations Environment Programme (UNEP, 2011) documented extensive contamination of land and groundwater in parts of Ogoniland. In this context, documenting campus vegetation has both local and regional value: it creates an ecological reference point and provides evidence that can inform the development of a new environmental institution. The source document describes a tropical setting with wet and dry seasons and a landscape containing secondary vegetation, disturbed ground, gardens and agricultural land uses. The university is in an early development phase, making baseline information relevant to decisions about buildings, roads, landscaping and retained green space. The study was conducted at the Federal University of Environment and Technology (FUET), Koroma/Sakpenwa, Ogoni, Rivers State, Nigeria.

FUET was established by an Act of Parliament signed into law on 3 February 2025, making it Nigeria's first specialised university dedicated to environmental sciences (Daily Post, 2025). The university operates two campuses: the Koroma campus, which hosts Agriculture, Allied Health Sciences, and Information and Communication centres; and the Saakpenwa campus, which hosts Management Technology, Engineering Technology, and Environmental Sciences. The university was gifted 99.3 hectares of land by the Koroma community and an additional

1,065 plots by the Kira community for its development. The study area is located in Ogoniland, within the Niger Delta region of Nigeria. Ogoniland has experienced decades of environmental degradation from oil exploration activities, with the 2011 United Nations Environment Programme (UNEP) report documenting extensive contamination of land and groundwater (UNEP, 2011). The region is characterised by a tropical climate with distinct wet and dry seasons, and supports a diverse range of vegetation types including rainforest remnants, secondary forests, and agricultural landscapes. Ogoniland is an oil-rich area situated in Rivers State, southern Nigeria, covering around 1,000 km², with four local governments, namely: Tai, Eleme, Gokana and Khana. It has been the site of oil industry operations since the late 1950s and has a tragic history of pollution from oil spills and oil well fires, although no systematic scientific information has been available about the ensuing contamination.

2.2 Field survey and identification.

The source study reports field observations during July–September 2026 at accessible locations, including the campus entrance, administrative and examination buildings, entrepreneurship centre, auditorium, hostel and staff quarters, roads, faculty buildings and classrooms. Plants were observed in landscaped or naturally occurring settings. Identification was supported by the PlantNet mobile application and comparison of visible characteristics, including leaves and, where available, flowers or cones. The reported protocol also refers to classification by family, genus, species and growth form.

2.3 Data compilation and analysis.

The manuscript dataset was compiled into a checklist and summarised by family. Family-level percentages were interpreted against the reported total of 110 species. The source also provides growth-form summaries and lists 17 tree species, 14 shrub species, 13 grass species, 18 medicinal plants and 16 ornamental plants. These categories are retained as reported, but they are not assumed to be mutually exclusive: a species may have medicinal or ornamental value and also be classified by growth form.

2.4 Data-quality considerations.

Inspection of the supplied inventory shows repeated species entries and inconsistencies between some rows, stated totals and family-level counts. For that reason, the analysis uses the aggregate figures explicitly reported in the results section and flags them for validation.

3. Results

The source inventory reports 110 plant species belonging to 89 genera and 40 families. This is the first systematic floristic documentation reported for the institution in the supplied research work. The assemblage spans multiple growth forms, indicating that campus vegetation is not limited to planted trees or ornamental landscaping but includes herbaceous and grass-dominated vegetation and climbing plants.

3.1 Family representation

Asteraceae was the most species-rich family, with 17 reported species (15.5%). Poaceae and Fabaceae each contributed 13 species (11.8%). Lamiaceae accounted for six species (5.5%),

Euphorbiaceae for five (4.5%), and Onagraceae for four (3.6%). Amaranthaceae, Malvaceae and Cucurbitaceae were each reported with three species (2.7%). A further 20 families were each represented by one species (18.2% collectively).

Table 3.1: Distribution of Plant Species by Family at FUET, Koroma/Saakpenwa, Ogoni

Family	Number of Species	Percentage (%)
Asteraceae	17	15.5
Poaceae	13	11.8
Fabaceae	13	11.8
Lamiaceae	6	5.5
Euphorbiaceae	5	4.5
Onagraceae	4	3.6
Amaranthaceae	3	2.7
Malvaceae	3	2.7
Cucurbitaceae	3	2.7
Acanthaceae	2	1.8
Araceae	2	1.8
Commelinaceae	2	1.8
Convolvulaceae	2	1.8
Cyperaceae	2	1.8
Linderniaceae	2	1.8
Moraceae	2	1.8
Myrtaceae	2	1.8
Phyllanthaceae	2	1.8
Plantaginaceae	2	1.8
Rubiaceae	2	1.8
Urticaceae	2	1.8
Other 20 families (1 species each)	20	18.2
Total	**110**	**100**

Table 3.2: Plant and tree species identified at the Federal University of Environment and Technology, Koroma/Sakpenwa, Ogoni

SN	Family	Species	Total no
1	Acanthaceae	*Asystasia gangetica* (L.) T. Anderson, *Thunbergia erecta* (Benth.) T. Anderson	2
	Acoraceae	*Acorus calamus* L.	1
3	Amaranthaceae	*Alternanthera brasiliana* (L.) Kuntze, *Alternanthera pungens* Kunth	3
4	Amaranthaceae	*Alternanthera pungens* Kunth	1
5	Anacardiaceae	*Mangifera indica* L.	1
6	Annonaceae	*Annona reticulata* L.	1
7	Araceae	*Caladium andreanum* Bogner, *Xanthosoma sagittifolium* (L.) Schott	2
8	Arecaceae	*Cocos nucifera* L.	1
9	Asteraceae	*Cocos nucifera* L, *Aspilia africana* (Pers.) C.D. Adams, *Aspilia mossambicensis* (Oliv.) Wild, *Aspilia mossambicensis* (Oliv.) Wild, *Chromolaena odorata* (L.) R.M. King & H. Rob, *Chromolaena odorata* (L.) R.M. King & H.Rob, *Cyrtocymura scorpioides* (Lam.) H.Rob., *Cyanthillium cinereum* (L.) H. Rob, *Eleutheranthera ruderalis* (Sw.) Sch.Bip, *Emilia praetermissa* Milne-Redh, *Emilia sonchifolia* (L.) DC, *Gymnanthemum amygdalinum* (Delile) Sch.Bip, *Helianthus* × *laetiflorus* Pers, *Sonchus oleraceus* L, *Helianthus decapetalus* L, *Praxelis clematidea* (Hieron. ex Kuntze) R.M. King & H. Rob, *Synedrella nodiflora* (L.) Gaertn, *Tridax procumbens* L	17
10	Caricaceae	*Carica papaya* L.	1
11	Cleomaceae	*Cleome rutidosperma* DC.	1
12	Commelinaceae	*Commelina benghalensis* L, *Commelina diffusa* Burm.f.	2
13	Convolvulaceae	*Ipomoea aquatica* Forssk, *Ipomoea indica* (Burm.) Merr.	2
14	Cucurbitaceae	*Luffa aegyptiaca* Mill, *Melothria pendula* L, *Momordica charantia* L	3
15	Cyperaceae	*Cyperus brevifolius* (Rottb.) Hassk, *Cyperus erectus* (Schumach.) Mattf. & Kük, *Cyperus rotundus* L	2
16	Dioscoreaceae	*Dioscorea communis* (L.) Caddick & Wilkin	1
17	Euphorbiaceae	*Alchornea cordifolia* (Schumach. & Thonn.) Müll.Arg, *Astraea lobata* (L.) Klotzsch, *Euphorbia heterophylla* L, *Euphorbia hirta* L, *Manihot esculenta* Crantz	5

18	Fabaceae	*Aeschynomene americana* L, *Centrosema pubescens* Benth, *Centrosema pubescens* Benth, *Crotalaria retusa* L, *Crotalaria spectabilis* Roth, *Desmodium paniculatum* (L.) DC, *Desmodium uncinatum* (Jacq.) DC, *Grona triflora* (L.) H. Ohashi & K. Ohashi, *Indigofera spicata* Forssk, *Mimosa pudica* L, *Neustanthus phaseoloides* (Roxb.) Benth, *Pongamia pinnata* (L.) Pierre, *Senna occidentalis* (L.) Link	13
19	Gentianaceae	*Anthocleista grandiflora* Gilg	1
20	Lamiaceae	*Coleus monostachyus* (P. Beauv.) A.J.Paton, *Coleus monostachyus* (P. Beauv.) A. J. Paton, *Leonotis nepetifolia* (L.) R. Br, *Mentha arvensis* L, *Ocimum americanum* L, *Perilla frutescens* (L.) Britton.	6
21	Lauraceae	*Persea americana* Mill	1
22	Linderniaceae	*Vandellia diffusa* L.	2
23	Lythraceae	*Cuphea carthagenensis* (Jacq.) J.F. Macbr	1
24	Malvaceae	*Sida linifolia* Juss. ex Cav., *Theobroma cacao* L, *Urena lobata* L.	3
25	Melastomataceae	*Heterotis rotundifolia* (Sm.) Jacq.-Fél.	1
26	Meliaceae	*Khaya senegalensis* (Desr.) A. Juss.	1
27	Moraceae	*Ficus exasperata* Vahl, *Ficus sur* Forest	2
28	Myrtaceae	*Eugenia uniflora* L, *Psidium guajava* L.	2
29	Onagraceae	*Ludwigia leptocarpa* (Nutt.) H. Hara, *Ludwigia octovalvis* (Jacq.) P.H. Raven, *Ludwigia octovalvis* (Jacq.) P.H. Raven, *Ludwigia octovalvis* (Jacq.) P.H. Raven	4
30	Passifloraceae	*Passiflora edulis* Sims	1
31	Petiveriaceae	*Petiveria alliacea* L.	1
32	Phyllanthaceae	*Phyllanthus amarus* Schumach. & Thonn, *Phyllanthus urinaria* L.	2
33	Piperaceae	*Peperomia pellucida* (L.) Kunth	1
34	Plantaginaceae	*Callitriche stagnalis* Scop, *Scoparia dulcis* L.	2
35	Poaceae	*Axonopus compressus* (Sw.) P, Beauv.*Bambusa vulgaris* Schrad. ex J.C. Wendl, *Brachypodium sylvaticum* (Huds.) P. Beauv, *Calamagrostis epigejos* (L.) Roth, *Cenchrus longisetus* M.C. Johnst, *Cynodon dactylon* (L.) Pers, *Echinochloa colonum* (L.) Link, *Eleusine indica* (L.) Gaertn, *Megathyrsus maximus* (Jacq.) B.K. Simon & S.W.L. Jacobs, *Paspalum conjugatum* P.J. Bergius, *Sorghum halepense* (L.) Pers, *Stenotaphrum secundatum* (Walter) Kuntze	13
36	Rubiaceae	*Virectaria multiflora* (Sm.) Bremek, *Virectaria multiflora* (Sm.)	2

		Bremek.	
37	Rutaceae	*Citrus* × *aurantiifolia* (Christm.) Swingle	1
38	Solanaceae	*Solanum torvum* Sw.	1
39	Urticaceae	*Laportea aestuans* (L.) Chew, *Laportea aestuans* (L.) Chew, *Parietaria officinalis* L	2
40	Verbenaceae	*Stachytarpheta jamaicensis* (L.) Vahl	1

Note. Values reproduce the aggregate family summary supplied with the source study; the checklist should be taxonomically reconciled before publication of a definitive database.

3.2 Taxonomic breadth and growth forms.

Fabaceae and Poaceae included a range of recorded taxa, while Asteraceae contributed the largest number of species. The source summary identifies herbs as the leading growth form (34.5%), followed by trees (15.5%), shrubs (12.7%), grasses (11.8%) and climbers (10.9%). The same source lists 17 tree species, including fruit and food trees such as Mangifera indica, Psidium guajava, Persea americana, Carica papaya, Citrus × aurantiifolia, Theobroma cacao and Cocos nucifera. This suggests that the campus flora includes both spontaneous vegetation and plants of direct practical value.

3.3 Ornamental Plants

The study identified 16 ornamental plant species across both campuses (Table 3.3). These plants are cultivated primarily for their aesthetic value, including colourful foliage, attractive flowers, or architectural form. They are used for hedging, screening, beautification, and bordering around buildings.

Table 3.3: Ornamental Plants Identified at **Federal University of Environment and Technology, Koroma/Sakpenwa, Ogoni**

Family	Scientific Name	Common Name	Ornamental Use
Amaranthaceae	*Alternanthera brasiliana* (L.) Kuntze	Brazilian joyweed	Colourful foliage
Acanthaceae	*Asystasia gangetica* (L.) T. Anderson	Chinese violet	Ground cover
Araceae	*Caladium andreanum* Bogner	Golden dust caladium	Ornamental leaves
Asteraceae	*Helianthus* × *laetiflorus* Pers.	Perennial sunflower	Garden ornamental
Asteraceae	*Helianthus decapetalus* L.	Thinleaf sunflower	Garden ornamental
Melastomataceae	*Heterotis rotundifolia* (Sm.) Jacq.-Fél.	Pinklady	Ornamental ground cover

Convolvulaceae	*Ipomoea indica* (Burm.) Merr.	Oceanblue morning glory	Ornamental vine
Passifloraceae	*Passiflora edulis* Sims	Purple granadilla	Ornamental vine and fruit
Pteridaceae	*Pityrogramma calomelanos* (L.) Link	Dixie Silverback Fern	Ornamental fern
Acanthaceae	*Thunbergia erecta* (Benth.) T. Anderson	Bush Clockvine	Ornamental shrub
Malvaceae	*Theobroma cacao* L.	Cocoa	Ornamental and economic
Lamiaceae	*Perilla frutescens* (L.) Britton	Perilla	Ornamental and culinary
Poaceae	*Bambusa vulgaris* Schrad. ex J.C. Wendl.	Common bamboo	Ornamental and utilitarian
Araceae	*Xanthosoma sagittifolium* (L.) Schott	Arrowleaf Elephant's Ear	Ornamental and food
Verbenaceae	*Stachytarpheta jamaicensis* (L.) Vahl	Light blue snakeweed	Ornamental and medicinal
Lamiaceae	*Coleus monostachyus* (P. Beauv.) A.J. Paton	Monkey's Potato	Ornamental foliage

The ornamental plant composition at FUET is similar to that reported for other Nigerian universities. Daudu et al. (2022) identified 35 ornamental plant species at the Federal University of Technology Minna, Bosso Campus, with *Ixora coccinea* being the most abundant. The University of Abuja campus was assessed for ornamental tree species, with 22 taxa identified, including *Delonix regia*, *Terminalia mantel*, and *Ficus sycomorus*. At FUET, the ornamental species are primarily herbaceous and shrubby, with fewer ornamental trees. This may reflect the early stage of campus development and the priority given to functional landscaping (hedges, ground cover) over large-scale ornamental tree planting.

The majority of ornamental plants at FUET are propagated by stem cuttings, which is a common practice in Nigerian landscaping due to its ease and cost-effectiveness. The aesthetic value of these plants is derived mainly from their brightly coloured and conspicuous flowers (e.g., Thunbergia erecta, Ipomoea indica, Passiflora edulis, Helianthus *spp.)* or colourful foliage (*e.g.,* Alternanthera brasiliana, Caladium andreanum, Coleus monostachyus, Heterotis rotundifolia).

The presence of ornamental plants at FUET serves multiple purposes: beautification of the campus environment, creation of aesthetic appeal for students and staff, provision of shade and screening, and contribution to the overall biodiversity of the campus. However, the dominance of exotic ornamental species (e.g., Caladium andreanum, Helianthus *spp.,* Coleus

monostachyus) suggests that there is scope for incorporating more native ornamental species into campus landscaping, as recommended by Nodza et al. (2014).

3.4 Medicinal Plants

The study identified 18 medicinal plant species across both campuses (Table 3.4). These plants are used in traditional medicine for the treatment of various ailments, and their presence on campus represents a valuable ethnobotanical and pharmacological resource.

Table 3.4: Medicinal Plants Identified at **Federal University of Environment and Technology, Koroma/Sakpenwa, Ogoni**

Family	Scientific Name	Common Name	Medicinal Use
Acoraceae	*Acorus calamus* L.	Sweet flag	Rhizome used medicinally
Asteraceae	*Aspilia africana* (Pers.) C.D. Adams	Tropical sunflower	Traditional medicine
Caricaceae	*Carica papaya* L.	Papaya	Leaves and latex
Euphorbiaceae	*Euphorbia hirta* L.	Asthmaplant	Asthma and other ailments
Asteraceae	*Gymnanthemum amygdalinum* (Delile) Sch.Bip.	Bitterleaf	African traditional medicine
Convolvulaceae	*Ipomoea aquatica* Forssk.	Swamp morning glory	Medicinal and vegetable
Lamiaceae	*Leonotis nepetifolia* (L.) R. Br.	Lion's Ear	Medicinal herb
Cucurbitaceae	*Momordica charantia* L.	Bitter gourd	Antidiabetic
Piperaceae	*Peperomia pellucida* (L.) Kunth	Man to man	Folk medicine
Petiveriaceae	*Petiveria alliacea* L.	Guinea henweed	Medicinal shrub/herb
Phyllanthaceae	*Phyllanthus amarus* Schumach. & Thonn.	Carry me seed	Liver-related
Plantaginaceae	*Scoparia dulcis* L.	Licorice Weed	Medicinal herb
Solanaceae	*Solanum torvum* Sw.	Turkey berry	Medicinal and food
Asteraceae	*Tridax procumbens* L.	Coatbuttons	Wound healing
Malvaceae	*Urena lobata* L.	Caesarweed	Medicinal and fiber
Lamiaceae	*Ocimum americanum* L.	Sweet Basil	Culinary and medicinal
Lamiaceae	*Mentha arvensis* L.	Field mint	Medicinal and culinary
Araceae	*Xanthosoma sagittifolium* (L.)	Arrowleaf	Food and medicinal

	Schott	Elephant's Ear	

The medicinal flora at FUET is diverse and includes species with well-documented pharmacological properties. For example, *Gymnanthemum amygdalinum* (Bitterleaf) is widely used in African traditional medicine for the treatment of diabetes, malaria, and gastrointestinal disorders. *Momordica charantia* (Bitter gourd) is renowned for its antidiabetic properties. *Phyllanthus amarus* (Carry me seed) is used for liver-related ailments and has been shown to have antiviral activity against hepatitis B. *Euphorbia hirta* (Asthmaplant) is used for respiratory ailments, including asthma and bronchitis. *Tridax procumbens* (Coatbuttons) is used for wound healing and has antimicrobial properties. *Petiveria alliacea* (Guinea henweed) is used in folk medicine for its anti-inflammatory and analgesic effects.

The presence of these medicinal plants on campus is significant for several reasons. First, it represents a valuable resource for teaching and research in ethnobotany, pharmacology, and natural product chemistry. Second, it provides an opportunity for the university to document and preserve traditional knowledge associated with these plants. Third, it highlights the potential for developing a medicinal plant garden on campus, which could serve as a living laboratory for students and a conservation repository for threatened medicinal species.

The conservation status of some of these medicinal plants is a concern. For example, *Acorus calamus* (Sweet flag) is not native to Nigeria and is cultivated for its medicinal rhizome. *Gymnanthemum amygdalinum* (Bitterleaf) is widespread but faces pressure from overharvesting in some areas. The university should consider implementing conservation measures for medicinal plants on campus, including sustainable harvesting practices and ex situ conservation in botanical gardens.

3.5 Shrubs and Grasses

The study identified 14 shrub species **and** 13 grass species (including sedges) across both campuses (Table 3.5). These growth forms are ecologically important as they provide ground cover, prevent soil erosion, and contribute to the overall structural diversity of the vegetation.

Table 3.5: Shrubs and Grasses Identified at **Federal University of Environment and Technology, Koroma/Sakpenwa, Ogoni**

Family	Scientific Name	Common Name	Growth Form
Poaceae	*Axonopus compressus* (Sw.) P. Beauv.	Carpet grass	Grass
Poaceae	*Brachypodium sylvaticum* (Huds.) P. Beauv.	False Brome	Grass
Poaceae	*Calamagrostis epigejos* (L.) Roth	Wood small reed	Grass
Poaceae	*Cenchrus longisetus* M.C. Johnst.	Feathertop	Grass
Asteraceae	*Chromolaena odorata* (L.) R.M. King & H. Rob.	Siam weed	Shrub

Poaceae	*Cynodon dactylon* (L.) Pers.	Bermuda grass	Grass
Cyperaceae	*Cyperus rotundus* L.	Nutgrass	Sedge
Poaceae	*Eleusine indica* (L.) Gaertn.	Yard grass	Grass
Poaceae	*Megathyrsus maximus* (Jacq.) B.K. Simon & S.W.L. Jacobs	Guineagrass	Grass
Poaceae	*Paspalum conjugatum* P.J. Bergius	Sour paspalum	Grass
Fabaceae	*Senna occidentalis* (L.) Link	Septicweed	Shrub
Poaceae	*Sorghum halepense* (L.) Pers.	Johnson Grass	Grass
Poaceae	*Stenotaphrum secundatum* (Walter) Kuntze	St. Augustine grass	Grass
Lamiaceae	*Coleus monostachyus* (P. Beauv.) A.J. Paton	Monkey's Potato	Shrub/Herb
Amaranthaceae	*Alternanthera pungens* Kunth	Khakiweed	Prostrate herb/shrub

The grass flora is dominated by species that are commonly used for lawns and landscaping in Nigeria, including *Axonopus compressus* (Carpet grass), *Cynodon dactylon* (Bermuda grass), and *Stenotaphrum secundatum* (St. Augustine grass). These species are well-adapted to regular mowing and trampling, making them ideal for lawns, sports fields, and recreational areas. The presence of *Megathyrsus maximus* (Guineagrass) and *Paspalum conjugatum* (Sour paspalum) indicates areas of less intensive management, such as roadsides and open grasslands.

The shrub flora includes both native and exotic species. *Chromolaena odorata* (Siam weed) is a highly invasive exotic shrub that dominates disturbed areas and is known to suppress native vegetation. Its widespread presence on campus is a concern for biodiversity conservation and should be monitored and managed. *Senna occidentalis* (Septicweed) is a native shrub with medicinal properties. *Coleus monostachyus* (Monkey's Potato) is a herbaceous shrub with ornamental foliage. *Alternanthera pungens* (Khakiweed) is a prostrate herb/shrub that is often considered a weed but has medicinal uses.

The ecological roles of shrubs and grasses on campus include soil stabilization, reduction of surface runoff, provision of habitat for small animals and insects, and contribution to the aesthetic quality of the landscape. Grasses, in particular, are important for carbon sequestration and soil organic matter accumulation. The maintenance of diverse grass and shrub communities on campus is therefore essential for sustaining ecosystem services and promoting environmental sustainability.

3.6 Tree Species

The study identified 17 tree species across both campuses (Table 3.6). These trees provide essential ecosystem services including carbon sequestration, shade, soil stabilization, habitat for wildlife, and food production.

Table 3.6: Tree Species Identified at **Federal University of Environment and Technology, Koroma/Sakpenwa, Ogoni**

Family	Scientific Name	Common Name	Notes
Annonaceae	*Annona reticulata* L.	Custard apple	Fruit tree
Gentianaceae	*Anthocleista grandiflora* Gilg	Forest fever tree	Large tree, medicinal
Euphorbiaceae	*Alchornea cordifolia* (Schumach. & Thonn.) Müll.Arg.	Christmasbush	Treelet/shrub, medicinal
Poaceae	*Bambusa vulgaris* Schrad. ex J.C. Wendl.	Common bamboo	Tree-like grass
Caricaceae	*Carica papaya* L.	Papaya	Small tree, fruit
Rutaceae	*Citrus* × *aurantiifolia* (Christm.) Swingle	Lime	Small tree, fruit
Arecaceae	*Cocos nucifera* L.	Coconut palm	Palm tree, food
Myrtaceae	*Eugenia uniflora* L.	Surinam cherry	Shrub/small tree, fruit
Moraceae	*Ficus exasperata* Vahl	Forest sandpaper fig	Tree
Moraceae	*Ficus sur* Forssk.	Broom Cluster Fig	Tree
Meliaceae	*Khaya senegalensis* (Desr.) A. Juss.	Senegal Mahogany	Timber tree
Anacardiaceae	*Mangifera indica* L.	Mango	Large tree, fruit
Euphorbiaceae	*Manihot esculenta* Crantz	Cassava	Shrub/small tree, root crop
Lauraceae	*Persea americana* Mill.	Avocado	Tree, fruit
Fabaceae	*Pongamia pinnata* (L.) Pierre	Karanj	Tree, medicinal
Myrtaceae	*Psidium guajava* L.	Guava	Small tree, fruit
Malvaceae	*Theobroma cacao* L.	Cocoa	Small tree, chocolate

The tree flora at FUET is dominated by fruit and food trees, particularly in the orchard area of the Saakpenwa campus. *Mangifera indica* (Mango) is the most abundant tree species, followed by *Psidium guajava* (Guava), *Persea americana* (Avocado), *Carica papaya* (Papaya), *Citrus* × *aurantiifolia* (Lime), *Theobroma cacao* (Cocoa), and *Cocos nucifera* (Coconut palm). These trees contribute to food security, nutrition, and income generation for the university community.

The presence of timber and medicinal trees such as *Khaya senegalensis* (Senegal Mahogany), *Pongamia pinnata* (Karanj), *Ficus exasperata* (Forest sandpaper fig), *Ficus sur* (Broom Cluster

Fig), and *Anthocleista grandiflora* (Forest fever tree) adds ecological and economic value to the campus landscape. *Khaya senegalensis* is a valuable timber species, while *Pongamia pinnata* is known for its medicinal properties and its ability to fix nitrogen. *Ficus* species are keystone species that provide food and habitat for a wide range of wildlife, including birds, bats, and insects.

The relatively low tree diversity (17 species) compared to other Nigerian universities (e.g., 67 species at University of Lagos, 83 at FUNAAB) suggests that FUET's campuses are still in the early stages of landscape development. However, the presence of a diverse orchard and scattered native trees indicates that there is a foundation for enhancing tree diversity through deliberate planting and conservation efforts.

The spatial distribution of trees is influenced by land use. The orchard area in Saakpenwa campus is the most tree-rich zone, followed by the woodland/forest remnants and residential areas. The academic and administrative areas have fewer trees, mainly ornamental species and shade trees. Roadsides and pathways are largely treeless, dominated by grasses and herbs. There is significant potential for increasing tree cover along roadsides and in open areas to enhance shade, carbon sequestration, and aesthetic appeal.



Figure 2: Morphological pictorials of: Acorus calamus L., Aeschynomene americana L., Alchornea cordifolia (Schumach. & Thonn.) Müll.Arg., Alternanthera brasiliana (L.) Kuntze., Alternanthera pungens Kunth., Annona reticulata L., Brachypodium sylvaticum (Huds.) P.Beauv., Centrosema pubescens Benth.



Figure 3: Morphological pictorials of: Carica papaya L., Cocos nucifera L., Mangifera indica L.



Figure 4: Morphological pictorials of: Manihot esculenta Crantz., Persea americana Mill., Pongamia pinnata (L.) Pierre

4. Discussion

The reported total of 110 species places the FUET inventory within the range of floristic diversity documented in several Nigerian university campuses. The total is lower than the 173 species reported by Ogbevire et al. (2025) at Ambrose Alli University, the 269 species reported by Mudasiru et al. (2024) at FUNAAB, and the 333 species, 223 genera and 80 families documented by Ajuru et al. (2022) at Rivers State University, including herbs, trees, shrubs, ferns and lianas. These comparisons demonstrate the importance of quantitative growth-form analysis, but such differences cannot be attributed to ecological conditions alone. Campus area, intensity of sampling, habitat heterogeneity, the inclusion of herbs and climbers, survey season and taxonomic verification all influence the observed species count.

The prominence of Asteraceae, Poaceae and Fabaceae is ecologically plausible in a landscape that includes open ground, roadsides, disturbed plots, grass cover and secondary vegetation. Asteraceae commonly includes herbs capable of occupying disturbed sites; Poaceae are conspicuous in grasslands and maintained open areas; and Fabaceae includes herbs, shrubs and trees that occur in a wide range of habitats. The family pattern is consistent with the source study's interpretation that campus vegetation includes substantial spontaneous and disturbance-associated flora. Nevertheless, family richness alone cannot establish ecosystem integrity or indicate whether a site is in good ecological condition.

The reported dominance of herbs also matters for campus management. Herbaceous plants may be overlooked in development planning because they are less visually prominent than mature trees. Yet they contribute to ground cover, habitat complexity and soil protection. A management programme that records only trees would therefore fail to represent much of the documented flora. At the same time, the presence of a species does not automatically imply that it should be retained in every location; management decisions should consider native status, invasiveness, habitat value, safety and the intended use of each campus zone.

The source reports that native species account for 56.4% of the inventory and exotic species 34.5%, with the remainder presumably requiring clarification or falling outside the reported categories. These proportions suggest that the campus has a meaningful native component, but the figures need checking against species-level origin data before firm conclusions are drawn. A defensible native–exotic analysis requires a consistent reference authority and explicit treatment of naturalised, cultivated and uncertain-status taxa.

Comparison with other Nigerian campuses supports the need for a local baseline rather than assuming that one campus represents another. Nodza et al. (2014), for example, reported 67 woody tree species on the University of Lagos Akoka campus and found that 64.17% were native to Nigeria and West Africa. Chukwuma et al. (2023) recorded a broader range of growth forms at Federal University Oye-Ekiti. These studies underline the importance of recording both taxonomic identity and functional or growth-form attributes.

The setting in Ogoniland increases the practical importance of consistent monitoring. UNEP's (2011) environmental assessment documented serious pollution legacies in the region, but the FUET inventory alone does not establish that any particular campus species is an indicator of oil contamination or that campus soils are contaminated. Such claims require linked soil, water or tissue measurements and appropriate comparison sites. The present results are best used as a baseline against which future vegetation surveys can be compared.

A further distinction is needed between field identification and remote sensing. Remote sensing can support vegetation mapping, but imagery does not automatically identify every species. Species-level discrimination depends on image resolution, spectral separability, canopy structure, season, training data and field validation. UAV imagery and object-based approaches have shown promise in vegetation studies (Akinbiola et al., 2023; Chang et al., 2025), while remote-sensing indicators have been investigated for biodiversity monitoring in oil-impacted regions (Onyia et al., 2018). At FUET, these methods should be presented as a next phase, not as a completed result.

5. Conclusion and Recommendations

The FUET inventory provides an important first account of campus plant diversity, reporting 110 species across 40 families and 89 genera. Asteraceae, Poaceae and Fabaceae were the leading families in the reported summary. The range of growth forms and the presence of food, medicinal and ornamental plants give the inventory relevance for ecological research, campus education and landscape planning. However, taxonomic duplication and inconsistencies mean that the list requires validation before it is used as an authoritative checklist. The university should establish a verified digital plant register with accepted scientific names, family, growth

form, origin status, location, date, photograph and identifier confidence. Also, voucher specimens of uncertain taxa should be checked by a qualified taxonomist or at a herbarium. Permanent sampling plots and georeferenced transects should be established across both campuses and resurveyed in wet and dry seasons. Biodiversity safeguards should be incorporated into the campus master plan before vegetation is cleared for construction. These actions would transform a preliminary checklist into a defensible long-term monitoring resource. The study's central conclusion is not that the current inventory is exhaustive, but that it provides a necessary starting point for evidence-based biodiversity management at a new environmental university.

6. Contribution to Knowledge

This paper documents the first reported baseline floristic inventory for FUET and places its family-level composition within the context of Nigerian university campus studies. It identifies the leading reported families and highlights the need to include herbs, grasses and climbers in campus biodiversity assessment rather than focusing exclusively on trees. It also makes an explicit methodological distinction between a field-based inventory and a remote-sensing analysis, setting out the data-quality and validation steps needed for a robust integrated monitoring system.

References

Ajuru, M. G., Ibiye, A., & Princewill-Ukot, E. C. (2022). Flora of Rivers State University, Rivers State, Nigeria: A preliminary checklist. Asian Journal of Plant and Soil Sciences, 7(1), 116–135. https://doi.org/10.56557/ajopss/2022/v7i176

Akinbiola, S., Salami, A. T., Awotoye, O. O., Popoola, S. O., & Olusola, J. A. (2023). Application of UAV photogrammetry for the assessment of forest structure and species network in the tropical forests of Southern Nigeria. Geocarto International, 38(1), Article 2190621.

Chang, B., Li, F., Hu, Y., Yin, H., Feng, Z., & Zhao, L. (2025). Application of UAV remote sensing for vegetation identification: A review and meta-analysis. Frontiers in Plant Science, 16, Article 1452053.

Chukwuma, M. D., Chukwuma, E. C., Ayodele, A. E., Oluwajobi, A. O., Ajewole, T. O., Adekoya, M. A., et al. (2023). Angiosperm flora of Federal University Oye-Ekiti, Oye Campus—A preliminary checklist. Nigerian Journal of Botany, 36(1), 69–84.

Esquinas-Alcázar, J. (2005). Protecting crop genetic diversity for food security: Political, ethical and technical challenges. Nature Reviews Genetics, 6(12), 946–953. https://doi.org/10.1038/nrg1729

Fischer, J., Riechers, M., Loos, J., Martin-Lopez, B., & Temperton, V. M. (2021). Making the UN Decade on Ecosystem Restoration a success for biodiversity and people. Restoration Ecology, 29(3), e13355. https://doi.org/10.1111/rec.13355

Lughadha, E. N., et al. (2016). Counting counts: Revised estimates of numbers of accepted species of flowering plants, seed plants, vascular plants and land plants with a review of other recent estimates. Phytotaxa, 272(1), 82–88.

Mudasiru, O. M., Sanni, R. O., Muftaudeen, T. K., Oyelakin, A. S., Ayodele, A. E., & Balogun, S. O. (2024). A broad floristic diversity of Federal University of Agriculture Abeokuta Campus, Ogun State. Nigerian Journal of Basic and Applied Sciences, 32(2).

Nodza, G. I., Onuminya, T. O., & Ogundipe, O. T. (2014). A checklist of tree species growing on Akoka Campus of University of Lagos, Nigeria. International Journal of Science, Environment and Technology, 3(3), 1021–1034.

Obura, D. O. (2023). The Kunming-Montreal Global Biodiversity Framework: Business as usual or a turning point? One Earth, 6(2), 77–80. https://doi.org/10.1016/j.oneear.2023.01.013

Ogbevire, P., Obadoni, B. O., Eseigbe, D. A., Ogie-Odia, E. A., & Ehilen, O. E. (2025). An inventory of angiospermic flora of Ambrose Alli University Main Campus, Ekpoma, Edo State, Nigeria. Nigerian Journal of Science and Environment, 23(1), 77–91.

Onyia, N. N., Balzter, H., & Berrio, J. C. (2018). Normalized Difference Vegetation Vigour Index: A new remote sensing approach to biodiversity monitoring in oil polluted regions. Remote Sensing.

Rands, M. R. W., Adams, W. M., Bennun, L., Butchart, S. H. M., Clements, A., et al. (2010). Biodiversity conservation: Challenges beyond 2010. Science, 329(5997), 1298–1303. https://doi.org/10.1126/science.1189138

Stuessy, T. F. (2009). Plant taxonomy: The systematic evaluation of comparative data (2nd ed.). Columbia University Press.

United Nations Environment Programme. (2011). Environmental assessment of Ogoniland. UNEP.