

GREEN AUDIT REPORT
OF
UNIVERSITY OF NORTH BENGAL



University of North Bengal, Siliguri, West Bengal, 734013

Prepared by

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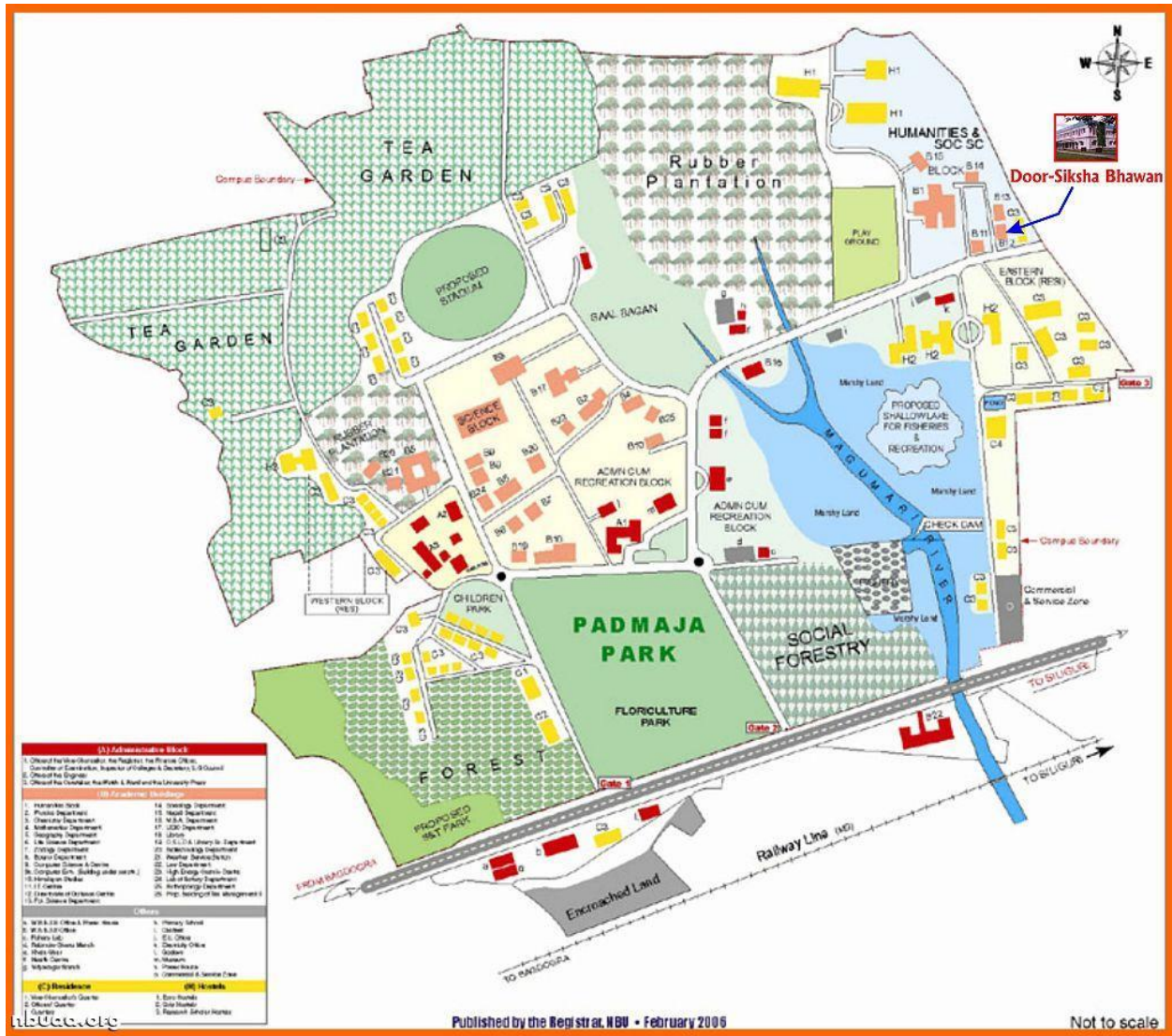
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SUMMARY

Green auditing or environmental auditing are the interchangeable terms. Green auditing is the process of identification and determination of an institutions' practices are benign to environment and sustainable. Objective to carry out a green audit is to formulate eco-friendly practices to be followed by the university authority and by its stake holders. A well-studied audit report helps to understand, where actually the existing practices of the University stand in an environment-friendly scale. The said report thus can identify the areas of improvement in the light of eco-friendly sustainable goal. University of North Bengal has taken the initiative to conduct green audit of the University Campus. The green audit was based on the guidelines, rules, acts, and formats set by the Government of India, Ministry of Environment and Forest, New Delhi, and Central Pollution Control Board, New Delhi.

Landscape & Land Use





University of North Bengal Campus

Location

The North Bengal University Campus is situated at the Mechi-Balason interfluvies and is traversed by the river Magurmari along the east central part and by the river Lachka along the western boundary. The NBU Campus presently occupies an area of 133.381 hectare (1.3338 sq.km.) of Bairatishal (J.L. No. 79) and Bara Mohan Singh (J.L. No. 96) mauza of Siliguri Police Station in Darjeeling district of West Bengal. The location extents of the NBU campus is from 26° 42' 18.73" to 26° 43' 0.32" latitudes and 88° 20' 37.09" to 88° 21' 42.68" longitudes. The geographic set-up of the North Bengal University campus in the midst of the undulating Terai not far from the Himalayan foothills is unique of its kind. The rivulet Magurmari which meanders diagonally through the campus along with its wide channel added landscape diversity of aesthetic value.

Climate/Weather Conditions:

Climate of the NBU Campus is dominated by two seasons i.e., winter and rainy. However, another two relatively short spanned seasons namely spring and autumn are also noticed.

Seasonal Temperature:

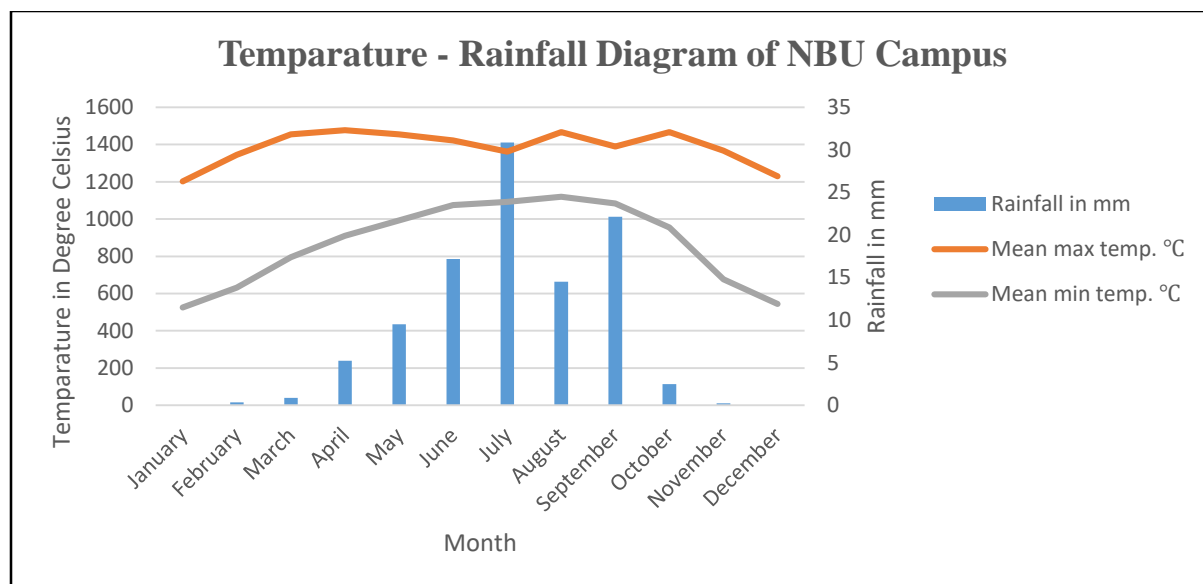
Winter starts from mid-November and continue till mid-March with mid-December to mid-January being the coldest period. This is followed by a rather short-lived spring from mid-March to May. Rainy season the most prolonged season in NBU Campus starts from June and continues till early October and July in the rainiest month. Early October to mid-November is autumn, the shortest season noticed in NBU Campus area.

Seasons	*Mean Temperature in °C			Seasonal Rainfall	
	Maximum	Minimum	Mean	In Millimetre	In Percent
Winter	28.3	13.2	20.8	55	1.16
Spring	31.9	20.1	26.0	677	14.33
Rainy	30.9	23.8	27.4	3965	83.90
Autumn	31.4	18.2	24.8	29	0.61

*Based on Weather data collected at the NBU Weather Service Station since March 2000.

Seasonal Rainfall:

Being situated not far from the Himalayan mountains and the powerful impact of the south western monsoon over the imposing natural barrier, the weather condition of the NBU Campus area displays the unique atmospheric condition for yielding heavy rainfall of 4726 mm per annum (as per NBUWSS record since the year 2000). Seasonal distribution of rainfall displays that 83.90% of the total annual rainfall occurs during the rainy season (Monsoon). This is followed by Spring which contributes 14.33% of the total, which is mostly contributed by local thunderstorms. Winter season contribute only 1.16% of the total annual rainfall which is mostly caused by Western disturbances.



Climate of the NBU Campus is dominated by two seasons i.e., winter and rainy. However, another two relatively short spanned seasons namely spring and autumn are also noticed.

Seasonal Temperature

Winter starts from mid-November and continues till mid-March with mid-December to mid-January being the coldest period. This is followed by a rather short-lived spring from mid-March to May. Rainy season the most prolonged season in NBU Campus starts from June and continues till early October and July is the rainiest month. Early October to mid-November is autumn, the shortest season noticed in NBU Campus area.

Table No. 1: Average weather records (up to March 2021)

Months	Mean Maximum Temp. (°C)	Mean Minimum temp. (°C)	Mean humidity (%)	Rainfall (in mm)
January	26.3	11.5	71	0
February	29.4	13.8	69.52	16
March	31.8	17.4	62.1	39
April	32.3	19.9	72.63	239
May	31.8	21.7	78.2	435
June	31.1	23.5	82.54	786
July	29.8	23.9	86.78	1411
August	32.1	24.5	84.39	664

September	30.4	23.7	82.16	1012
October	32.1	20.9	75.49	114
November	29.9	14.8	73.82	10
December	26.9	11.9	69.13	0
Mean	30.3	18.9		Total: 4726

*Based on Weather data collected at the NBU Weather Service Station since March 2000.

Table No. 2. Seasonal Temperature and Rainfall*

Seasons	*Mean Temperature in ⁰ C			Seasonal Rainfall	
	Maximum	Minimum	Mean	In millimeter	In Percent
Winter	24.3	10.1	17.2	43.5	1.3
Spring	31.2	19.3	25.25	417.5	12.33
Rainy	32.3	25.3	28.8	2895.6	85.54
Autumn	29.9	19.4	24.65	28.5	0.84

*Based on Weather data collected at the NBU Weather Service Station since March 2000

Seasonal Rainfall:

Being situated not far from the Himalayan mountains and the powerful impact of the south western monsoon over the imposing natural barrier, the weather condition of the NBU Campus area displays the unique atmospheric condition for yielding heavy rainfall of 3385.1 mm per annum (as per NBUWSS record since the year 2000). Seasonal distribution of rainfall displays that 85.54% of the total annual rain total during the rainy season (Monsoon). This is followed by Spring which contributes 12.33% of the total, which mostly contributed by local thunderstorms. Winter season contribute only 1.3% of the total annual which is mostly caused by Western disturbances.

Land Use

The existing land use/land cover of North Bengal University Campus is very interesting to note as it contains a complex mosaic of diverse kind of utilisation (Fig. 2). These include natural Forest, Tea Gardens, Rubber plantations, Wetlands, Recreational, Transports, Academic, Administrative and Residential sectors Table 3). The uniqueness of the campus is its vast greenery an emerald green landscape 37.43% dedicated green areas and another 52.26% area of partial greenery makes the NBU campus as an ideal Green Campus. In fact, the “Salkunja”, the natural Sal forest, aquatic and semi-aquatic Magurmari valley along with its great flora and faunal diversity tempted to have the unique bio-diversity reserve within the NBU campus which might be treated as the backbone of the futuristic land use management plan.

Table No. 3 Land use/Land cover pattern of NBU campus

<i>Sl No</i>	<i>Land Use Category</i>	<i>Area in hectare</i>	<i>Area in Acre</i>	<i>Area in Percent</i>
1	Covered area (Buildings)	6.0913	15.052	4.57
2	Road Network	5.0781	12.548	3.8
3	Wetlands	2.5933	6.408	1.94
4	Playground	3.1179	7.704	2.34
5	Parks & Gardens	9.6234	23.779	7.22
6	Tea Garden	21.5384	53.221	16.15
7	Rubber Plantation	10.984	27.142	8.24
8	Forest	17.3962	42.986	13.04
9	Open Space (Vacant & Marginal Land)	56.9584	140.744	42.70
10	Total	133.381	329.584	100

WATER & SOIL

The soil analysis from different spots shows expected values and tap water is also within normal range.

Soil testing Report (Received from Soil testing laboratory, NBU)

Region	pH	Organic carbon (%)	Nitrogen (%)	Potassium (K ₂ O) ppm.	Phosphorus (P ₂ O ₅)ppm
Tea Plantation	5.0	2.026	0.25	25.2	9.8

Rubber Plantation	5.15	1.916	0.17	18.3	3.2
Mixed Forest	5.04	2.118	0.24	23.6	4.7
<i>Shorea</i> Plantation	5.7	3.646	0.39	27.9	3.9

Water Testing Report

Region	pH
Tap Water (Tea Science)	6.3

Waste Management

- A. The Medical waste disposal is through an agency called Greenzon Bio Pvt. Ltd. The house hold waste has no proper disposal system.
- B. The liquid waste is disposed through Drainage into the Magurmari River.
- C. There is no proper disposal system for solid waste at present however collaboration with the Siliguri Municipal Corporation is being carried on for a better outcome.

Greenscape

The term “Green” means eco-friendly or not damaging the environment. This can acronymically be called as “Global Readiness in Ensuring Ecological Neutrality” (GREEN). Green accounting can be defined as systematic identification, quantification, recording, reporting and analysis of components of ecological diversity and expressing the same in financial or social terms. “Green Auditing”, an umbrella term, is known by another name “Environmental Auditing”. There is a

provision of green audit in University campus. Estate Dept. has been formed to monitor the proper conservation and plantation of the plants in the campus. As per the suggestions made by IQAC and various committee. Estate Department has been given the responsibility to do green with cooperation of the environmental experts of the University and locality.

The University was established in 1962 and reaccredited with Grade 'B ++' by NAAC, Bangalore, in the year 2022. Total area of the University main campus is 335.013 acres of which 34 percent is covered by herbs, shrubs and trees, including valuable medicinal plants. The plant has been systematically identified by the Divisional Forest Officer, Social Forestry and classified by the system of Benthem and Hooker. There are more than 538 plant species. Ecological importance of plants is studied; diseases of plants are also studied. Tree census of campus was carried out, Birds, insects, fungi and overall the biodiversity of the campus is studied. Along with topographic study of the campus measurement of the campus is also taken. Green spot of the of the campus identified. Tree plantation and environmental awareness programmes of the university also remarkable which is mentioned by the NAAC Peer team in their last visit in the year 2016. To increase greenery in campus. Extra efforts have been taken by the University to create environment consciousness amongst students / Scholars and Campus dwellers. Our Jalpaiguri Campus (2nd Campus) at Jalpaiguri 50 K.M. distance from here. Total area is 31.50 acres. Development and other works are going on. 40.54 acres of land given on lease to M/S Greenol Laboratories Pvt. Ltd for Tea Plantation and 17.00 acres of land in Eastern Sector and 5.5 acres of land in Western Sector are being used for Rubber Plantation.

List of Trees in the University Campus

According to Tree Card issued by the Divisional Forest Officer (D.F.O.), Social Forestry

Sl. No.	Name of the Tree	Qty
1.	Sal	841 nos.
2.	Sishu	1320 nos.
3.	Gamar	140 nos.
4.	Chap	35 nos.
5.	Segun	125 nos.
6.	Meheguni	30 nos.
7.	Kukath	4272 nos.
8	Kadam	73 nos.
9	Ghora neem	23 nos.
Total No. of Tree		6859 nos.

BIODIVERSITY OF THE CAMPUS

The lush green campus of NBU is very in biodiversity and housing mostly sub-Himalayan flora and faunal species. The existing Forested, grassland and aquatic ecosystems diversity boost the specific diversity along with genetic diversity by allowing balanced ecosystem within the campus. The species richness in various plantation areas shows high species diversity whereas other natural patches showing significant diversity. The campus is rich with various plants groups including flowerings plants, Gymnosperms, ferns, mosses and different fungal species.

Tree diversity

The campus harbor more than 700 plant species, including major plant life forms, viz., tree, shrubs, herbs, climbers, and epiphytes. These are not only contributing to aesthetic beauty, but

also help reducing carbon emission. The largest canopy is provided by the tree diversity; and it includes more than 142 tree species (Table 1).

Table 1: Checklist of trees of the campus

Taxon	Family	Habit
<i>Acacia catechu</i> (L.f.) Willd.	Fabaceae	Tree
<i>Adenantha pavonina</i> L.	Fabaceae	Tree
<i>Aegle marmelos</i> (L.) Corrêa	Rutaceae	Tree
<i>Alangium chinense</i> (Lour.) Harms	Cornaceae	Tree
<i>Albizia lebeck</i> (L.) Benth.	Fabaceae	Tree
<i>Albizia chinensis</i> (Osbeck) Merr.	Fabaceae	Tree
<i>Alstonia macrophylla</i> Wall. ex G.Don	Apocynaceae	Tree
<i>Alstonia scholaris</i> (L.) R. Br.	Apocynaceae	Tree
<i>Alstonia neriifolia</i> D.Don	Apocynaceae	Tree
<i>Anacardium occidentale</i> L.	Anacardiaceae	Tree
<i>Annona reticulata</i> L.	Annonaceae	Tree
<i>Annona squamosa</i> L.	Annonaceae	Tree
<i>Aquilaria malaccensis</i> Lam.	Thymelaeaceae	Tree
<i>Areca triandra</i> Roxb. ex Buch.-Ham.	Arecaceae	Tree
<i>Areca catechu</i> L.	Arecaceae	Tree
<i>Artocarpus chama</i> Buch.-Ham.	Moraceae	Tree
<i>Artocarpus lacucha</i> Buch.-Ham.	Moraceae	Tree
<i>Averrhoa carambola</i> L.	Oxalidaceae	Tree
<i>Azadirachta indica</i> A.Juss.	Meliaceae	Tree
<i>Baccaurea ramiflora</i> Lour.	Phyllanthaceae	Tree
<i>Bauhinia acuminata</i> L.	Fabaceae	Tree
<i>Bauhinia purpurea</i> L.	Fabaceae	Tree
<i>Bauhinia scandens</i> L.	Fabaceae	Tree
<i>Berchemia floribunda</i> (Wall.) Brongn.	Rhamnaceae	Tree
<i>Bischofia javanica</i> Blume	Phyllanthaceae	Tree
<i>Bixa orellana</i> L.	Bixaceae	Tree
<i>Bombax ceiba</i> L.	Malvaceae	Tree
<i>Bridelia retusa</i> (L.) A.Juss.	Phyllanthaceae	Tree
<i>Butea buteiformis</i> (Voigt) Mabb.	Fabaceae	Tree
<i>Butea monosperma</i> (Lam.) Taub.	Fabaceae	Tree
<i>Careya arborea</i> Roxb.	Lecythidaceae	Tree
<i>Carica papaya</i> L.	Caricaceae	Tree
<i>Caryota urens</i> L.	Arecaceae	Tree
<i>Cascabela thevetia</i> (L.) Lippold	Apocynaceae	Tree
<i>Cassia fistula</i> L.	Fabaceae	Tree
<i>Ceiba pentandra</i> (L.) Gaertn.	Malvaceae	Tree

<i>Cinnamomum bejolghota</i> (Buch.-Ham.) Sweet	Lauraceae	Tree
<i>Cinnamomum camphora</i> (L.) J.Presl	Lauraceae	Tree
<i>Cinnamomum glaucescens</i> (Nees) Hand.-Mazz.	Lauraceae	Tree
<i>Cinnamomum tamala</i> (Buch.-Ham.) T.Nees & Eberm.	Lauraceae	Tree
<i>Cinnamomum verum</i> J.Presl	Lauraceae	Tree
<i>Coccoloba diversifolia</i> Jacq.	Polygonaceae	Tree
<i>Cornus capitata</i> Wall.	Cornaceae	Tree
<i>Corypha</i> sp.	Arecaceae	Tree
<i>Crateva religiosa</i> G.Forst.	Capparaceae	Tree
<i>Crescentia cujete</i> L.	Bignoniaceae	Tree
<i>Dalbergia sissoo</i> DC.	Fabaceae	Tree
<i>Dalbergia latifolia</i> Roxb.	Fabaceae	Tree
<i>Dillenia indica</i> L.	Dilleniaceae	Tree
<i>Diospyros malabarica</i> (Desr.) Kostel.	Ebenaceae	Tree
<i>Dipterocarpus retusus</i> Blume	Dipterocarpaceae	Tree
<i>Dipterocarpus turbinatus</i> C.F.Gaertn	Dipterocarpaceae	Tree
<i>Duabanga grandiflora</i> (DC.) Walp.	Lythraceae	Tree
<i>Dysoxylum excelsum</i> Blume	Meliaceae	Tree
<i>Elaeis guineensis</i> Jacq.	Arecaceae	Tree
<i>Elaeocarpus</i> sp.	Elaeocarpaceae	Tree
<i>Elaeocarpus floribundus</i> Blume	Elaeocarpaceae	Tree
<i>Elaeocarpus serratus</i> L.	Elaeocarpaceae	Tree
<i>Ensete superbum</i> (Roxb.) Cheesman	Musaceae	Tree
<i>Erythrina variegata</i> L.	Fabaceae	Tree
<i>Ficus benghalensis</i> L.	Moraceae	Tree
<i>Ficus benjamina</i> L.	Moraceae	Tree
<i>Ficus hirta</i> Vahl	Moraceae	Tree
<i>Ficus hispida</i> L.f.	Moraceae	Tree
<i>Ficus racemosa</i> L.	Moraceae	Tree
<i>Ficus religiosa</i> L.	Moraceae	Tree
<i>Ficus semicordata</i> Buch.-Ham. ex Sm.	Moraceae	Tree
<i>Firmiana colorata</i> (Roxb.) R.Br.	Malvaceae	Tree
<i>Flacourtia jangomas</i> (Lour.) Raeusch.	Salicaceae	Tree
<i>Gmelina arborea</i> Roxb.	Lamiaceae	Tree
<i>Gynocardia odorata</i> R.Br.	Achariaceae	Tree
<i>Holarrhena pubescens</i> Wall. ex G.Don	Apocynaceae	Tree
<i>Ilex godajam</i> Colebr. ex Hook.f.	Aquifoliaceae	Tree
<i>Knema erratica</i> (Hook. f. & Thomson) J. Sinclair	Myristicaceae	Tree
<i>Lagerstroemia speciosa</i> (L.) Pers.	Lythraceae	Tree
<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae	Tree
<i>Litchi chinensis</i> Sonn.	Sapindaceae	Tree

<i>Litsea glutinosa</i> (Lour.) C.B.Rob.	Lauraceae	Tree
<i>Litsea monopetala</i> (Roxb.) Pers.	Lauraceae	Tree
<i>Magnolia grandiflora</i> L.	Magnoliaceae	Tree
<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Magnoliaceae	Tree
<i>Mangifera indica</i> L.	Anacardiaceae	Tree
<i>Manihot esculenta</i> Crantz	Euphorbiaceae	Tree
<i>Manilkara zapota</i> (L.) P.Royen	Sapotaceae	Tree
<i>Melia azedarach</i> L.	Meliaceae	Tree
<i>Mesua ferrea</i> L.	Calophyllaceae	Tree
<i>Mimusops elengi</i> L.	Sapotaceae	Tree
<i>Morinda angustifolia</i> Roxb.	Rubiaceae	Tree
<i>Moringa oleifera</i> Lam.	Moringaceae	Tree
<i>Morus alba</i> L.	Moraceae	Tree
<i>Myristica fragrans</i> Houtt.	Myristicaceae	Tree
<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Rubiaceae	Tree
<i>Nyctanthes arbor-tristis</i> L.	Oleaceae	Tree
<i>Nypa fruticans</i> Wurmb.	Arecaceae	Tree
<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae	Tree
<i>Persea glaucescens</i> (Nees) D.G. Long	Lauraceae	Tree
<i>Phoebe attenuata</i> (Nees) Nees	Lauraceae	Tree
<i>Phyllanthus acidus</i> (L.) Skeels	Phyllanthaceae	Tree
<i>Phyllanthus emblica</i> L.	Phyllanthaceae	Tree
<i>Pimenta dioica</i> (L.) Merr.	Myrtaceae	Tree
<i>Podocarpus rumphii</i> Blume	Podocarpaceae	Tree
<i>Podocarpus neriifolius</i> D.Don	Podocarpaceae	Tree
<i>Pongamia pinnata</i> (L.) Pierre	Fabaceae	Tree
<i>Premna mollissima</i> Roth.	Lamiaceae	Tree
<i>Psidium guajava</i> L.	Myrtaceae	Tree
<i>Punica granatum</i> L.	Lythraceae	Tree
<i>Putranjiva roxburghii</i> Wall.	Putranjivaceae	Tree
<i>Pyrus pyraeaster</i> (L.) Burgsd.	Rosaceae	Tree
<i>Quercus</i> sp.	Fagaceae	Tree
<i>Rhododendron arboreum</i> Sm.	Ericaceae	Tree
<i>Salix tetrasperma</i> Roxb.	Salicaceae	Tree
<i>Santalum album</i> L.	Santalaceae	Tree
<i>Sapindus rarak</i> DC.	Salicaceae	Tree
<i>Saraca asoca</i> (Roxb.) Willd.	Fabaceae	Tree
<i>Saraca indica</i> L.	Fabaceae	Tree
<i>Schima wallichii</i> Choisy	Theaceae	Tree
<i>Sesbania grandiflora</i> (L.) Pers.	Fabaceae	Tree
<i>Shorea assamica</i> Dyer	Dipterocarpaceae	Tree

<i>Shorea robusta</i> Gaertn.	Dipterocarpaceae	Tree
<i>Simarouba amara</i> Aubl.	Simaroubaceae	Tree
<i>Spathodea campanulata</i> P.Beauv.	Bignoniaceae	Tree
<i>Spondias pinnata</i> (L. f.) Kurz	Anacardiaceae	Tree
<i>Streblus asper</i> Lour.	Moraceae	Tree
<i>Strychnos nux-vomica</i> L.	Loganiaceae	Tree
<i>Syzygium jambos</i> (L.) Alston	Myrtaceae	Tree
<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Tree
<i>Syzygium kurzii</i> (Duthie) N.P.Balacr.	Myrtaceae	Tree
<i>Tamarindus indica</i> L.	Fabaceae	Tree
<i>Tectona grandis</i> L.f.	Lamiaceae	Tree
<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Combretaceae	Tree
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Tree
<i>Terminalia chebula</i> Retz.	Combretaceae	Tree
<i>Terminalia myriocarpa</i> Van Heurck & Müll. Arg.	Combretaceae	Tree
<i>Theobroma cacao</i> L.	Malvaceae	Tree
<i>Toona ciliata</i> M.Roem.	Meliaceae	Tree
<i>Trema orientalis</i> (L.) Blume	Cannabaceae	Tree
<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Araliaceae	Tree
<i>Wrightia arborea</i> (Dennst.) Mabb.	Apocynaceae	Tree
<i>Xylocarpus</i> sp.	Meliaceae	Tree
<i>Zanthoxylum budrunga</i> DC.	Rutaceae	Tree
<i>Ziziphus jujuba</i> Mill.	Rhamnaceae	Tree
<i>Ziziphus oenopolia</i> (L.) Mill.	Rhamnaceae	Tree

Shrubs, Climbers and Herbaceous species diversity:

More than 92 species of shrubs are also reported from the campus. This include ex-situ conservation of *Rouvolfia serpentina* (Rubiaceae), *Withania somnifera* (Solanaceae), etc. A large number of herbs are also recorded from the campus. More than 315 species of herbs include a large number of grasses and sedges, members of Polygonaceae, Linderniaceae, Solanaceae, Rubiaceae, and Lamaceae.

Table 2: Checklist of shrub flora of the campus

Taxon	Family	Habit
<i>Abroma augusta</i> (L.) L.f.	Malvaceae	Shrub
<i>Ardisia solanacea</i> (Poir.) Roxb.	Primulaceae	Shrub
<i>Boehmeria hamiltoniana</i> Wedd.	Urticaceae	Shrub
<i>Breynia vitis-idaea</i> (Burm.f.) C.E.C.Fisch.	Phyllanthaceae	Shrub
<i>Brugmansia suaveolens</i> (Humb. & Bonpl.ex Willd.) Bercht. & J.Presl.	Solanaceae	Shrub

<i>Buddleja asiatica</i> Lour.	Scrophulariaceae	Shrub
<i>Caesalpinia bonduc</i> (L.) Roxb.	Fabaceae	Shrub
<i>Caesalpinia pulcherrima</i> (L.) Sw.	Fabaceae	Shrub
<i>Cajanus scarabaeoides</i> (L.) Thouars	Fabaceae	Shrub
<i>Cajanus cajan</i> (L.) Millsp.	Fabaceae	Shrub
<i>Calotropis gigantea</i> (L.) Dryand.	Apocynaceae	Shrub
<i>Calotropis procera</i> (Aiton) Dryand.	Apocynaceae	Shrub
<i>Camellia japonica</i> L.	Theaceae	Shrub
<i>Camellia sinensis</i> (L.) Kuntze	Theaceae	Shrub
<i>Carapichea ipecacuanha</i> (Brot.) L.Andersson	Rubiaceae	Shrub
<i>Cereus repandus</i> (L.) Mill.	Cactaceae	Shrub
<i>Chloranthus elatior</i> Link	Chloranthaceae	Shrub
<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	Asteraceae	Shrub
<i>Cinchona pubescens</i> Vahl	Rubiaceae	Shrub
<i>Citrus limon</i> (L.) Osbeck	Rutaceae	Shrub
<i>Citrus maxima</i> (Burm.) Merr.	Rutaceae	Shrub
<i>Citrus medica</i> L.	Rutaceae	Shrub
<i>Clerodendrum chinense</i> (Osbeck) Mabb.	Lamiaceae	Shrub
<i>Clerodendrum indicum</i> (L.) Kuntze	Lamiaceae	Shrub
<i>Clerodendrum infortunatum</i> L.	Lamiaceae	Shrub
<i>Clerodendrum japonicum</i> (Thunb.) Sweet	Lamiaceae	Shrub
<i>Coffea arabica</i> L.	Rubiaceae	Shrub
<i>Coffea benghalensis</i> B.Heyne ex Schult.	Rubiaceae	Shrub
<i>Commiphora mukul</i> (Hook. ex Stocks) Engl.	Burseraceae	Shrub
<i>Crotalaria retusa</i> L.	Fabaceae	Shrub
<i>Croton tiglium</i> L.	Euphorbiaceae	Shrub
<i>Datura metel</i> L.	Solanaceae	Shrub
<i>Datura innoxia</i> Mill.	Solanaceae	Shrub
<i>Datura stramonium</i> L.	Solanaceae	Shrub
<i>Elaeagnus conferta</i> Roxb.	Elaeagnaceae	Shrub
<i>Euphorbia neriifolia</i> L.	Euphorbiaceae	Shrub
<i>Euphorbia pulcherrima</i> Willd. ex Klotzsch	Euphorbiaceae	Shrub
<i>Euphorbia royleana</i> Boiss.	Euphorbiaceae	Shrub
<i>Euphorbia tirucalli</i> L.	Euphorbiaceae	Shrub
<i>Euphorbia tithymaloides</i> L.	Euphorbiaceae	Shrub
<i>Flacourtia indica</i> (Burm.f.) Merr.	Salicaceae	Shrub
<i>Flemingia strobilifera</i> (L.) W.T.Aiton	Fabaceae	Shrub
<i>Flueggea virosa</i> (Roxb. ex Willd.) Royle	Phyllanthaceae	Shrub
<i>Gardenia jasminoides</i> J.Ellis	Rubiaceae	Shrub
<i>Glycosmis pentaphylla</i> (Retz.) DC.	Rutaceae	Shrub
<i>Gossypium arboreum</i> L.	Malvaceae	Shrub

<i>Hibiscus fragrans</i> Roxburgh	Malvaceae	Shrub
<i>Hibiscus mutabilis</i> L.	Malvaceae	Shrub
<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Shrub
<i>Hibiscus schizopetalus</i> (Dyer) Hook.f.	Malvaceae	Shrub
<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton	Apocynaceae	Shrub
<i>Indigofera tinctoria</i> L.	Fabaceae	Shrub
<i>Jasminum lanceolaria</i> Roxb.	Oleaceae	Shrub
<i>Jasminum sambac</i> (L.) Aiton	Oleaceae	Shrub
<i>Jatropha curcas</i> L.	Euphorbiaceae	Shrub
<i>Jatropha gossypifolia</i> L.	Euphorbiaceae	Shrub
<i>Justicia adhatoda</i> L.	Acanthaceae	Shrub
<i>Kopsia fruticosa</i> (Roxb.) A.DC.	Apocynaceae	Shrub
<i>Lantana × aculeata</i> L.	Verbenaceae	Shrub
<i>Lawsonia inermis</i> L.	Lythraceae	Shrub
<i>Maesa indica</i> (Roxb.) A. DC.	Primulaceae	Shrub
<i>Melastoma malabathricum</i> L.	Melastomataceae	Shrub
<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae	Shrub
<i>Murraya paniculata</i> (L.) Jack	Rutaceae	Shrub
<i>Musa × paradisiaca</i> L.	Musaceae	Shrub
<i>Mussaenda roxburghii</i> Hook.f.	Rubiaceae	Shrub
<i>Nandina domestica</i> Thunb.	Berberidaceae	Shrub
<i>Opuntia ficus-indica</i> (L.) Mill.	Cactaceae	Shrub
<i>Osbeckia nepalensis</i> Hook. f.	Melastomataceae	Shrub
<i>Pandanus amaryllifolius</i> Roxb.	Pandanaceae	Shrub
<i>Pandanus tectorius</i> Parkinson ex Du Roi	Pandanaceae	Shrub
<i>Pandanus unguifer</i> Hook.f.	Pandanaceae	Shrub
<i>Pereskia aculeata</i> Mill.	Cactaceae	Shrub
<i>Petrea volubilis</i> L.	Verbenaceae	Shrub
<i>Rauvolfia tetraphylla</i> L.	Apocynaceae	Shrub
<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Apocynaceae	Shrub
<i>Ricinus communis</i> L.	Euphorbiaceae	Shrub
<i>Rothea serrata</i> (L.) Steane & Mabb.	Lamiaceae	Shrub
<i>Rubus buergeri</i> Miq.	Rosaceae	Shrub
<i>Rubus calycinus</i> Wall. ex D.Don	Rosaceae	Shrub
<i>Rubus ellipticus</i> Sm.	Rosaceae	Shrub
<i>Rubus lineatus</i> Reinw. ex Blume	Rosaceae	Shrub
<i>Rubus paniculatus</i> Sm.	Rosaceae	Shrub
<i>Rubus treutleri</i> Hook.f.	Rosaceae	Shrub
<i>Rubus wardii</i> Merr.	Rosaceae	Shrub
<i>Senna alata</i> (L.) Roxb.	Fabaceae	Shrub
<i>Sesbania sesban</i> (L.) Merr.	Fabaceae	Shrub

<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult.	Apocynaceae	Shrub
<i>Tephrosia candida</i> (Roxb.) DC.	Fabaceae	Shrub
<i>Uncaria macrophylla</i> Wall.	Rubiaceae	Shrub
<i>Vitex negundo</i> L.	Lamiaceae	Shrub
<i>Withania somnifera</i> (L.) Dunal	Solanaceae	Shrub

Table 3: Checklist of herbaceous flora of the campus

Taxon	Family	Habit
<i>Abelmoschus moschatus</i> Medik.	Malvaceae	Herb
<i>Abrus precatorius</i> L.	Fabaceae	Herb
<i>Abutilon indicum</i> (L.) Sweet	Malvaceae	Herb
<i>Acalypha indica</i> L.	Euphorbiaceae	Herb
<i>Acanthus caudatus</i> Lindau	Acanthaceae	Herb
<i>Acanthus leucostachyus</i> Wall. ex Nees	Acanthaceae	Herb
<i>Achyranthes aspera</i> L.	Amaranthaceae	Herb
<i>Achyranthes bidentata</i> Blume	Amaranthaceae	Herb
<i>Acmella calva</i> (DC.) R.K.Jansen	Asteraceae	Herb
<i>Acmella uliginosa</i> (Sw.) Cass.	Asteraceae	Herb
<i>Acorus calamus</i> L.	Acoraceae	Herb
<i>Aerva lanata</i> (L.) Juss.	Amaranthaceae	Herb
<i>Aerva sanguinolenta</i> (L.) Blume	Amaranthaceae	Herb
<i>Agave americana</i> L.	Asparagaceae	Herb
<i>Ageratina adenophora</i> (Spreng.) R.M.King & H.Rob.	Asteraceae	Herb
<i>Ageratum conyzoides</i> (L.) L.	Asteraceae	Herb
<i>Ageratum houstonianum</i> Mill.	Asteraceae	Herb
<i>Allium cepa</i> L.	Amaryllidaceae	Herb
<i>Allium hookeri</i> Thwaites	Amaryllidaceae	Herb
<i>Allium hypsistum</i> Stearn	Amaryllidaceae	Herb
<i>Allium sativum</i> L.	Amaryllidaceae	Herb
<i>Allium stracheyi</i> Baker	Amaryllidaceae	Herb
<i>Alocasia fallax</i> Schott	Araceae	Herb
<i>Alocasia macrorrhizos</i> (L.) G.Don	Araceae	Herb
<i>Aloe jucunda</i> Reynolds	Xanthorrhoeaceae	Herb
<i>Aloe vera</i> (L.) Burm.f.	Xanthorrhoeaceae	Herb
<i>Alpinia galanga</i> (L.) Willd.	Zingiberaceae	Herb
<i>Alpinia malaccensis</i> (Burm.f.) Roscoe	Zingiberaceae	Herb
<i>Alpinia nigra</i> (Gaertn.) Burt	Zingiberaceae	Herb
<i>Alpinia zerumbet</i> (Pers.) B.L.Burt & R.M.Sm.	Zingiberaceae	Herb
<i>Alternanthera philoxeroides</i> (Mart.) Griseb.	Amaranthaceae	Herb
<i>Alternanthera paronychioides</i> A.St.-Hil.	Amaranthaceae	Herb

<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Amaranthaceae	Herb
<i>Amaranthus blitum</i> subsp. <i>oleraceus</i> (L.) Costea.	Amaranthaceae	Herb
<i>Amaranthus spinosus</i> L.	Amaranthaceae	Herb
<i>Amaranthus viridis</i> L.	Amaranthaceae	Herb
<i>Amischotolype hookeri</i> (Hassk.) H.Hara	Commelinaceae	Herb
<i>Amomum dealbatum</i> Roxb.	Zingiberaceae	Herb
<i>Amomum subulatum</i> Roxb.	Zingiberaceae	Herb
<i>Amorphophallus bulbifer</i> (Roxb.) Blume	Araceae	Herb
<i>Amorphophallus napalensis</i> (Wall.) Bogner & Mayo	Araceae	Herb
<i>Ananas comosus</i> (L.) Merr.	Bromeliaceae	Herb
<i>Andrographis paniculata</i> (Burm.f.) Nees	Acanthaceae	Herb
<i>Anisomeles indica</i> (L.) Kuntze	Lamiaceae	Herb
<i>Argemone mexicana</i> L.	Papaveraceae	Herb
<i>Artemisia annua</i> L.	Asteraceae	Herb
<i>Artemisia indica</i> Willd.	Asteraceae	Herb
<i>Artemisia vulgaris</i> L.	Asteraceae	Herb
<i>Astilbe rivularis</i> Buch.-Ham. ex D.Don	Saxifragaceae	Herb
<i>Axonopus compressus</i> (Sw.) P.Beauv.	Poaceae	Herb
<i>Ayapana triplinervis</i> (Vahl) R.M.King & H.Rob.	Asteraceae	Herb
<i>Bacopa monnieri</i> (L.) Wettst.	Plantaginaceae	Herb
<i>Barleria cristata</i> L.	Acanthaceae	Herb
<i>Barleria lupulina</i> Lindl.	Acanthaceae	Herb
<i>Barleria strigosa</i> Willd.	Acanthaceae	Herb
<i>Bergenia ciliata</i> (Haw.) Sternb.	Saxifragaceae	Herb
<i>Bidens pilosa</i> L.	Asteraceae	Herb
<i>Biophytum reinwardtii</i> (Zucc.) Klotzsch	Oxalidaceae	Herb
<i>Blumea hieracifolia</i> Hayata	Asteraceae	Herb
<i>Blumea lacera</i> (Burm.f.) DC.	Asteraceae	Herb
<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Herb
<i>Brassica juncea</i> (L.) Czern.	Brassicaceae	Herb
<i>Brassica rapa</i> L.	Brassicaceae	Herb
<i>Bryophyllum pinnatum</i> (Lam.) Oken	Crassulaceae	Herb
<i>Bulbostylis barbata</i> (Rottb.) C.B.Clarke	Cyperaceae	Herb
<i>Caladium bicolor</i> (Aiton) Vent.	Araceae	Herb
<i>Canna indica</i> L.	Cannaceae	Herb
<i>Cannabis sativa</i> L.	Cannabaceae	Herb
<i>Catharanthus roseus</i> (L.) G.Don	Apocynaceae	Herb
<i>Celosia argentea</i> L.	Amaranthaceae	Herb
<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Herb
<i>Chamaecrista mimosoides</i> (L.) Greene	Fabaceae	Herb
<i>Cheilocostus speciosus</i> (J.Koenig) C.D.Specht	Costaceae	Herb

<i>Chenopodium album</i> L.	Amaranthaceae	Herb
<i>Chenopodium giganteum</i> D.Don	Amaranthaceae	Herb
<i>Chlorophytum arundinaceum</i> Baker	Asparagaceae	Herb
<i>Chrysopogon aciculatus</i> (Retz.) Trin.	Poaceae	Herb
<i>Chrysopogon zizanioides</i> (L.) Roberty	Poaceae	Herb
<i>Cleome rutidosperma</i> DC.	Cleomaceae	Herb
<i>Cleome viscosa</i> L.	Cleomaceae	Herb
<i>Codariocalyx motorius</i> (Houtt.) H.Ohashi	Fabaceae	Herb
<i>Coix lacryma-jobi</i> L.	Poaceae	Herb
<i>Coleus forskohlii</i> (Willd.) Briq.	Lamiaceae	Herb
<i>Colocasia affinis</i> Schott	Araceae	Herb
<i>Colocasia esculenta</i> (L.) Schott	Araceae	Herb
<i>Colocasia fallax</i> Schott	Araceae	Herb
<i>Commelina benghalensis</i> L.	Commelinaceae	Herb
<i>Commelina longifolia</i> Lam.	Commelinaceae	Herb
<i>Commelina suffruticosa</i> Blume	Commelinaceae	Herb
<i>Coriandrum sativum</i> L.	Apiaceae	Herb
<i>Costus erythrophyllus</i> Loes.	Costaceae	Herb
<i>Costus malortieanus</i> H.Wendl.	Costaceae	Herb
<i>Crinum amoenum</i> Ker Gawl. ex Roxb.	Amryllidaceae	Herb
<i>Crinum asiaticum</i> L.	Amryllidaceae	Herb
<i>Crotalaria alata</i> D.Don	Fabaceae	Herb
<i>Crotalaria cytisoides</i> DC.	Fabaceae	Herb
<i>Crotalaria pallida</i> Aiton	Fabaceae	Herb
<i>Croton bonplandianus</i> Baill.	Euphorbiaceae	Herb
<i>Cuphea micropetala</i> Kunth	Lythraceae	Herb
<i>Cuphea viscosissima</i> Jacq.	Lythraceae	Herb
<i>Curculigo orchioides</i> Gaertn.	Hypoxidaceae	Herb
<i>Curcuma amada</i> Roxb.	Zingiberaceae	Herb
<i>Curcuma aromatica</i> Salisb.	Zingiberaceae	Herb
<i>Curcuma caesia</i> Roxb.	Zingiberaceae	Herb
<i>Curcuma longa</i> L.	Zingiberaceae	Herb
<i>Curcuma zedoaria</i> (Christm.) Roscoe	Zingiberaceae	Herb
<i>Cyanthillium cinereum</i> (L.) H.Rob.	Asteraceae	Herb
<i>Cymbopogon citratus</i> (DC.) Stapf	Poaceae	Herb
<i>Cymbopogon pendulus</i> (Nees ex Steud.) W.Watson	Poaceae	Herb
<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Herb
<i>Cynoglossum lanceolatum</i> Forssk.	Boraginaceae	Herb
<i>Cyperus compressus</i> L.	Cyperaceae	Herb
<i>Cyperus cyperoides</i> (L.) Kuntze	Cyperaceae	Herb
<i>Cyperus distans</i> L.f.	Cyperaceae	Herb

<i>Cyperus haspan</i> L.	Cyperaceae	Herb
<i>Cyperus iria</i> L.	Cyperaceae	Herb
<i>Cyperus rotundus</i> L.	Cyperaceae	Herb
<i>Cyrtococcum patens</i> (L.) A.Camus	Poaceae	Herb
<i>Dactyloctenium aegyptium</i> (L.) Willd.	Poaceae	Herb
<i>Daucus carota</i> L.	Apiaceae	Herb
<i>Deeringia amaranthoides</i> (Lam.) Merr.	Amaranthaceae	Herb
<i>Desmodium gangeticum</i> (L.) DC.	Fabaceae	Herb
<i>Desmodium triflorum</i> (L.) DC.	Fabaceae	Herb
<i>Dicliptera bupleuroides</i> Nees	Acanthaceae	Herb
<i>Digitaria ciliaris</i> (Retz.) Koeler	Poaceae	Herb
<i>Digitaria sanguinalis</i> (L.) Scop.	Poaceae	Herb
<i>Docynia indica</i> (Wall.) Decne.	Rosaceae	Herb
<i>Drosera burmanni</i> Vahl	Droseraceae	Herb
<i>Drymaria cordata</i> (L.) Willd. ex Schult.	Caryophyllaceae	Herb
<i>Dysphania ambrosioides</i> (L.) Mosyakin & Clemants	Amaranthaceae	Herb
<i>Eclipta prostrata</i> (L.) L.	Asteraceae	Herb
<i>Eichhornia crassipes</i> (Mart.) Solms	Pontederiaceae	Herb
<i>Eleocharis dulcis</i> (Burm.f.) Trin. ex Hensch.	Cyperaceae	Herb
<i>Elephantopus scaber</i> L.	Asteraceae	Herb
<i>Elettaria</i> sp.	Zingiberaceae	Herb
<i>Eleusine indica</i> (L.) Gaertn.	Poaceae	Herb
<i>Eleutherine bulbosa</i> (Mill.) Urb.	Iridaceae	Herb
<i>Emilia sonchifolia</i> (L.) DC. ex DC.	Asteraceae	Herb
<i>Enydra fluctuans</i> DC.	Asteraceae	Herb
<i>Eragrostis amabilis</i> (L.) Wight & Arn.	Poaceae	Herb
<i>Eragrostis gangetica</i> (Roxb.) Steud.	Poaceae	Herb
<i>Eragrostis unioides</i> (Retz.) Nees ex Steud.	Poaceae	Herb
<i>Eranthemum griffithii</i> (T.Anderson)	Acanthaceae	Herb
<i>Eryngium foetidum</i> L.	Apiaceae	Herb
<i>Euphorbia hirta</i> L.	Euphorbiaceae	Herb
<i>Euryale ferox</i> Salisb.	Nymphaeaceae	Herb
<i>Euryale ferox</i> Salisb.	Nymphaeaceae	Herb
<i>Fimbristylis aestivalis</i> Vahl	Cyperaceae	Herb
<i>Fimbristylis bisumbellata</i> (Forssk.) Bubani	Cyperaceae	Herb
<i>Floscopa scandens</i> Lour.	Commelinaceae	Herb
<i>Foeniculum vulgare</i> Mill.	Apiaceae	Herb
<i>Fragaria ananassa</i> (Weston) Duchesne	Rosaceae	Herb
<i>Fumaria indica</i> (Hausskn.) Pugsley	Papaveraceae	Herb
<i>Girardinia diversifolia</i> (Link) Friis	Urticaceae	Herb
<i>Glinus oppositifolius</i> (L.) Aug.DC.	Molluginaceae	Herb

<i>Globba andersonii</i> C.B.Clarke ex Baker	Zingiberaceae	Herb
<i>Gloriosa superba</i> L.	Colchicaceae	Herb
<i>Grangea maderaspatana</i> (L.) Poir.	Asteraceae	Herb
<i>Grewia asiatica</i> L.	Malvaceae	Herb
<i>Hedychium coccineum</i> Buch.-Ham. ex Sm.	Zingiberaceae	Herb
<i>Hedychium coronarium</i> J.Koenig	Zingiberaceae	Herb
<i>Hedychium thyriforme</i> Sm.	Zingiberaceae	Herb
<i>Heliconia metallica</i> Planch. & Linden ex Hook.	Heliconiaceae	Herb
<i>Heliconia psittacorum</i> L.f.	Heliconiaceae	Herb
<i>Heliotropium indicum</i> L.	Boraginaceae	Herb
<i>Homalomena rubescens</i> (Roxb.) Kunth	Araceae	Herb
<i>Houttuynia cordata</i> Thunb.	Saururaceae	Herb
<i>Hybanthus enneaspermus</i> (L.) F.Muell.	Violaceae	Herb
<i>Hydrangea macrophylla</i> (Thunb.) Ser.	Hydrangeaceae	Herb
<i>Hydrocotyle himalaica</i> P.K. Mukh.	Apiaceae	Herb
<i>Hydrocotyle sibthorpioides</i> Lam.	Apiaceae	Herb
<i>Hygrophila auriculata</i> (Schumach.) Heine	Acanthaceae	Herb
<i>Hygrophila polysperma</i> (Roxb.) T.Anderson	Acanthaceae	Herb
<i>Hygrophila ringens</i> (L.) R. Br. ex Spreng.	Acanthaceae	Herb
<i>Hygroryza aristata</i> (Retz.) Nees ex Wight & Arn.	Poaceae	Herb
<i>Hyptis suaveolens</i> (L.) Poit.	Lamiaceae	Herb
<i>Imperata cylindrica</i> (L.) Raeusch.	Poaceae	Herb
<i>Justicia gendarussa</i> Burm.f.	Acanthaceae	Herb
<i>Kaempferia galanga</i> L.	Zingiberaceae	Herb
<i>Kaempferia rotunda</i> L.	Zingiberaceae	Herb
<i>Kyllinga brevifolia</i> Rottb.	Cyperaceae	Herb
<i>Kyllinga nemoralis</i> (J.R.Forst. & G.Forst.) Dandy ex Hutch. & Dalziel	Cyperaceae	Herb
<i>Lindernia antipoda</i> (L.) Alston	Linderniaceae	Herb
<i>Lindernia ciliata</i> (Colsm.) Pennell	Linderniaceae	Herb
<i>Lindernia parviflora</i> (Roxb.) Haines	Linderniaceae	Herb
<i>Lippia alba</i> (Mill.) N.E.Br. ex Britton & P.Wilson	Verbenaceae	Herb
<i>Ludwigia adscendens</i> (L.) H.Hara	Onagraceae	Herb
<i>Ludwigia octovalvis</i> (Jacq.) P.H. Raven	Onagraceae	Herb
<i>Ludwigia perennis</i> L.	Onagraceae	Herb
<i>Maranta arundinacea</i> L.	Marantaceae	Herb
<i>Melastoma</i> sp.	Melastomataceae	Herb
<i>Melilotus albus</i> Medik.	Fabaceae	Herb
<i>Mentha × piperita</i> L.	Lamiaceae	Herb
<i>Mentha arvensis</i> L.	Lamiaceae	Herb
<i>Mentha longifolia</i> (L.) L.	Lamiaceae	Herb

<i>Mentha spicata</i> L.	Lamiaceae	Herb
<i>Mimosa himalayana</i> Gamble	Fabaceae	Herb
<i>Mimosa invisa</i> Colla	Fabaceae	Herb
<i>Mimosa pudica</i> L.	Fabaceae	Herb
<i>Mirabilis jalapa</i> L.	Nyctaginaceae	Herb
<i>Molineria capitulata</i> (Lour.) Herb.	Hypoxidaceae	Herb
<i>Monochoria vaginalis</i> (Burm.f.) C.Presl	Pontederiaceae	Herb
<i>Monstera deliciosa</i> Liebm.	Araceae	Herb
<i>Muehlenbeckia platyclados</i> (F.Muell.) Meisn.	Polygonaceae	Herb
<i>Naravelia zeylanica</i> (L.) DC.	Ranunculaceae	Herb
<i>Nelumbo nucifera</i> Gaertn.	Nelumbonaceae	Herb
<i>Nicotiana plumbaginifolia</i> Viv.	Solanaceae	Herb
<i>Nicotiana tabacum</i> L.	Solanaceae	Herb
<i>Nigella sativa</i> L.	Ranunculaceae	Herb
<i>Nymphaea nouchali</i> Burm.f.	Nymphaeaceae	Herb
<i>Ocimum americanum</i> L.	Lamiaceae	Herb
<i>Ocimum basilicum</i> L.	Lamiaceae	Herb
<i>Ocimum campechianum</i> Mill.	Lamiaceae	Herb
<i>Ocimum gratissimum</i> L.	Lamiaceae	Herb
<i>Ocimum kilimandscharicum</i> Gürke	Lamiaceae	Herb
<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Herb
<i>Oenanthe javanica</i> (Blume) DC.	Apiaceae	Herb
<i>Oldenlandia diffusa</i> (Willd.) Roxb.	Rubiaceae	Herb
<i>Oldenlandia corymbosa</i> L.	Rubiaceae	Herb
<i>Oplismenus burmanni</i> (Retz.) P.Beauv.	Poaceae	Herb
<i>Oplismenus compositus</i> (L.) P.Beauv.	Poaceae	Herb
<i>Oxalis corniculata</i> L.	Oxalidaceae	Herb
<i>Oxalis debilis</i> var. <i>corymbosa</i> (DC.) Lourteig	Oxalidaceae	Herb
<i>Oxalis latifolia</i> Kunth	Oxalidaceae	Herb
<i>Paspalum conjugatum</i> P.J.Bergius	Poaceae	Herb
<i>Paspalum distichum</i> L.	Poaceae	Herb
<i>Pennisetum glaucum</i> (L.) R.Br.	Poaceae	Herb
<i>Persicaria barbata</i> (L.) H.Hara	Polygonaceae	Herb
<i>Persicaria capitata</i> (Buch.-Ham. ex D.Don) H.Gross	Polygonaceae	Herb
<i>Persicaria chinensis</i> (L.) H. Gross	Polygonaceae	Herb
<i>Persicaria glabra</i> (Willd.) M.Gómez	Polygonaceae	Herb
<i>Persicaria hydropiper</i> (L.) Delarbre	Polygonaceae	Herb
<i>Persicaria orientalis</i> (L.) Spach	Polygonaceae	Herb
<i>Persicaria strigosa</i> (R.Br.) Nakai	Polygonaceae	Herb
<i>Persicaria tenella</i> (Blume) H. Hara	Polygonaceae	Herb
<i>Phaius tankervilleae</i> (Banks) Blume	Orchidaceae	Herb

<i>Phaulopsis imbricata</i> (Forssk.) Sweet	Acanthaceae	Herb
<i>Phlogacanthus thyrsoformis</i> (Roxb. ex Hardw.) Mabb.	Acanthaceae	Herb
<i>Phyllanthus amarus</i> Schumach. & Thonn.	Phyllanthaceae	Herb
<i>Phyllanthus fraternus</i> G.L.Webster	Phyllanthaceae	Herb
<i>Phyllanthus reticulatus</i> Poir.	Phyllanthaceae	Herb
<i>Phyllanthus urinaria</i> L.	Phyllanthaceae	Herb
<i>Physalis divaricata</i> D. Don	Solanaceae	Herb
<i>Physalis minima</i> L.	Solanaceae	Herb
<i>Plantago asiatica</i> subsp. <i>erosa</i> (Wall.) Z.Yu Li	Plantaginaceae	Herb
<i>Plectranthus amboinicus</i> (Lour.) Spreng.	Lamiaceae	Herb
<i>Plectranthus barbatus</i> Andrews	Lamiaceae	Herb
<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Herb
<i>Pogostemon cablin</i> (Blanco) Benth.	Lamiaceae	Herb
<i>Polygonum pubescens</i> Blume	Polygonaceae	Herb
<i>Polygonum viscosum</i> Buch.-Ham. ex D. Don	Polygonaceae	Herb
<i>Polygonum plebeium</i> R.Br.	Polygonaceae	Herb
<i>Portulaca oleracea</i> L.	Portulacaceae	Herb
<i>Potamogeton octandrus</i> Poir.	Potamogetonaceae	Herb
<i>Pouzolzia</i> sp.	Urticaceae	Herb
<i>Pouzolzia hirta</i> Blume ex Hassk.	Urticaceae	Herb
<i>Pouzolzia zeylanica</i> (L.) Benn.	Urticaceae	Herb
<i>Pycreus flavidus</i> (Retz.) T.Koyama.	Cyperaceae	Herb
<i>Raphanus raphanistrum</i> subsp. <i>sativus</i> (L.) Domin	Brassicaceae	Herb
<i>Rosmarinus officinalis</i> L.	Lamiaceae	Herb
<i>Rotala rotundifolia</i> (Buch.-Ham. ex Roxb.) Koehne	Lythraceae	Herb
<i>Rumex dentatus</i> L.	Polygonaceae	Herb
<i>Rumex maritimus</i> L.	Polygonaceae	Herb
<i>Rungia pectinata</i> (L.) Nees	Acanthaceae	Herb
<i>Ruscus aculeatus</i> L.	Asparagaceae	Herb
<i>Saccharum spontaneum</i> L.	Poaceae	Herb
<i>Sansevieria hyacinthoides</i> (L.) Druce	Asparagaceae	Herb
<i>Sauropus androgynus</i> (L.) Merr.	Phyllanthaceae	Herb
<i>Sauropus compressus</i> Müll.Arg.	Phyllanthaceae	Herb
<i>Schumannianthus dichotomus</i> (Roxb.) Gagnep.	Marantaceae	Herb
<i>Scoparia dulcis</i> L.	Plantaginaceae	Herb
<i>Senna occidentalis</i> (L.) Link	Fabaceae	Herb
<i>Senna sophera</i> (L.) Roxb.	Fabaceae	Herb
<i>Senna tora</i> (L.) Roxb.	Fabaceae	Herb
<i>Sesamum indicum</i> L.	Pedaliaceae	Herb
<i>Setaria palmifolia</i> (J.Koenig) Stapf	Poaceae	Herb
<i>Sida acuta</i> Burm.f.	Malvaceae	Herb

<i>Sida cordata</i> (Burm.f.) Borss.Waalk.	Malvaceae	Herb
<i>Sida cordifolia</i> L.	Malvaceae	Herb
<i>Sida rhombifolia</i> L.	Malvaceae	Herb
<i>Solanum americanum</i> Mill.	Solanaceae	Herb
<i>Solanum sisymbriifolium</i> Lam.	Solanaceae	Herb
<i>Solanum torvum</i> Sw.	Solanaceae	Herb
<i>Solanum viarum</i> Dunal	Solanaceae	Herb
<i>Solanum villosum</i> Mill.	Solanaceae	Herb
<i>Sonchus asper</i> (L.) Hill	Asteraceae	Herb
<i>Sphagneticola calendulacea</i> (L.) Pruski	Asteraceae	Herb
<i>Spinacia oleracea</i> L.	Amaranthaceae	Herb
<i>Sporobolus diandrus</i> (Retz.) P.Beauv.	Poaceae	Herb
<i>Stachytarpheta indica</i> (L.) Vahl	Verbenaceae	Herb
<i>Stellaria media</i> (L.) Vill.	Caryophyllaceae	Herb
<i>Stellaria wallichiana</i> Haines	Caryophyllaceae	Herb
<i>Stevia rebaudiana</i> (Bertoni) Bertoni	Asteraceae	Herb
<i>Swertia chirayita</i> (Roxb. ex Flem.) Karst.	Gentianaceae	Herb
<i>Tacca integrifolia</i> Ker Gawl.	Dioscoreaceae	Herb
<i>Tagetes erecta</i> L.	Asteraceae	Herb
<i>Talinum paniculatum</i> (Jacq.) Gaertn.	Talinaceae	Herb
<i>Thysanolaena latifolia</i> (Roxb. ex Hornem.) Honda	Poaceae	Herb
<i>Tridax procumbens</i> (L.) L.	Asteraceae	Herb
<i>Trigonella foenum-graecum</i> L.	Fabaceae	Herb
<i>Triumfetta pilosa</i> Roth	Malvaceae	Herb
<i>Triumfetta rhomboidea</i> Jacq.	Malvaceae	Herb
<i>Typha elephantina</i> Roxb.	Typhaceae	Herb
<i>Typhonium trilobatum</i> (L.) Schott	Araceae	Herb
<i>Uraria picta</i> (Jacq.) DC.	Fabaceae	Herb
<i>Urena lobata</i> L.	Malvaceae	Herb
<i>Urtica dioica</i> L.	Urticaceae	Herb
<i>Urtica parviflora</i> Roxb.	Urticaceae	Herb
<i>Vallaris solanacea</i> (Roth) Kuntze	Apocynaceae	Herb
<i>Vallisneria spiralis</i> L.	Hydrocharitaceae	Herb
<i>Wahlenbergia marginata</i> (Thunb.) A.DC.	Campanulaceae	Herb
<i>Xanthium strumarium</i> L.	Asteraceae	Herb
<i>Zingiber montanum</i> (J.Koenig) Link ex A.Dietr.	Zingiberaceae	Herb
<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Herb
<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	Zingiberaceae	Herb

Apocynaceae, Convolvulaceae, Cucurbitaceae, Dioscoreaceae, and Menispermaceae, are the most dominant species of climbers. Orchids and few ferns are the dominant epiphytes.

Table 4: Climber flora of the campus

Taxon	Family	Habit
<i>Abrus pulchellus</i> Thwaites	Fabaceae	Climber
<i>Ampelocissus latifolia</i> (Roxb.) Planch.	Vitaceae	Climber
<i>Ampelocissus sikkimensis</i> (M.A.Lawson) Planch.	Vitaceae	Climber
<i>Antigonon leptopus</i> Hook. & Arn.	Polygonaceae	Climber
<i>Argyrea roxburghii</i> (Wall.) Arn. ex Choisy	Convolvulaceae	Climber
<i>Aristolochia indica</i> L.	Aristolochiaceae	Climber
<i>Aristolochia saccata</i> Wall.	Aristolochiaceae	Climber
<i>Aristolochia tagala</i> Cham.	Aristolochiaceae	Climber
<i>Asparagus adscendens</i> Roxb.	Asparagaceae	Climber
<i>Asparagus officinalis</i> L.	Asparagaceae	Climber
<i>Asparagus racemosus</i> Willd.	Asparagaceae	Climber
<i>Cayratia trifolia</i> (L.) Domin	Vitaceae	Climber
<i>Celastrus paniculatus</i> Willd.	Celastraceae	Climber
<i>Cissampelos pareira</i> L.	Menispermaceae	Climber
<i>Cissus adnata</i> Roxb.	Vitaceae	Climber
<i>Cissus quadrangularis</i> L.	Vitaceae	Climber
<i>Citrullus colocynthis</i> (L.) Schrad.	Cucurbitaceae	Climber
<i>Clitoria ternatea</i> L.	Fabaceae	Climber
<i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	Climber
<i>Cocculus hirsutus</i> (L.) W.Theob.	Menispermaceae	Climber
<i>Cryptolepis dubia</i> (Burm.f.) M.R.Almeida	Apocynaceae	Climber
<i>Cuscuta campestris</i> Yunck.	Convolvulaceae	Climber
<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Climber
<i>Dioscorea alata</i> L.	Dioscoreaceae	Climber
<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Climber
<i>Dioscorea deltoidea</i> Wall. ex Griseb.	Dioscoreaceae	Climber
<i>Dioscorea esculenta</i> (Lour.) Burkill	Dioscoreaceae	Climber
<i>Dioscorea pentaphylla</i> L.	Dioscoreaceae	Climber
<i>Dioscorea prazeri</i> Prain & Burkill	Dioscoreaceae	Climber
<i>Diplocyclos palmatus</i> (L.) C.Jeffrey	Cucurbitaceae	Climber
<i>Dischidia bengalensis</i> Colebr.	Apocynaceae	Climber
<i>Gymnema sylvestre</i> (Retz.) R.Br. ex Sm.	Apocynaceae	Climber
<i>Hemidesmus indicus</i> (L.) R. Br. ex Schult.	Apocynaceae	Climber
<i>Hoya parasitica</i> Wall. ex Wight	Apocynaceae	Climber
<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae	Climber

<i>Ipomoea nil</i> (L.) Roth	Convolvulaceae	Climber
<i>Ipomoea quamoclit</i> L.	Convolvulaceae	Climber
<i>Jasminum grandiflorum</i> L.	Oleaceae	Climber
<i>Momordica charantia</i> L.	Cucurbitaceae	Climber
<i>Momordica dioica</i> Roxb. ex Willd.	Cucurbitaceae	Climber
<i>Mucuna pruriens</i> (L.) DC.	Fabaceae	Climber
<i>Paederia foetida</i> L.	Rubiaceae	Climber
<i>Passiflora edulis</i> Sims	Passifloraceae	Climber
<i>Passiflora foetida</i> L.	Passifloraceae	Climber
<i>Passiflora quadrangularis</i> L.	Passifloraceae	Climber
<i>Pergularia daemia</i> (Forssk.) Chiov.	Apocynaceae	Climber
<i>Pericampylus glaucus</i> (Lam.) Merr.	Menispermaceae	Climber
<i>Piper betle</i> L.	Piperaceae	Climber
<i>Piper longum</i> L.	Piperaceae	Climber
<i>Piper nigrum</i> L.	Piperaceae	Climber
<i>Piper retrofractum</i> Vahl	Piperaceae	Climber
<i>Pothos scandens</i> L.	Araceae	Climber
<i>Rubia charifolia</i> Wall. ex G. Don	Rubiaceae	Climber
<i>Rubia manjith</i> Roxb. ex Fleming	Rubiaceae	Climber
<i>Rubus splendidissimus</i> H. Hara	Rosaceae	Climber
<i>Smilax ovalifolia</i> Roxb. ex D. Don	Smilacaceae	Climber
<i>Solena amplexicaulis</i> (Lam.) Gandhi	Cucurbitaceae	Climber
<i>Stephania glabra</i> (Roxb.) Miers	Menispermaceae	Climber
<i>Stephania japonica</i> (Thunb.) Miers	Menispermaceae	Climber
<i>Stephania elegans</i> Hook. f. & Thomson	Menispermaceae	Climber
<i>Teramnus labialis</i> (L.f.) Spreng.	Fabaceae	Climber
<i>Tetracera sarmentosa</i> (L.) Vahl	Dilleniaceae	Climber
<i>Tetrastigma bracteolatum</i> (Wall.) Planch.	Vitaceae	Climber
<i>Tetrastigma campylocarpum</i> (Kurz) Planch.	Vitaceae	Climber
<i>Tetrastigma planicaule</i> (Hook. f.) Gagnep.	Vitaceae	Climber
<i>Tetrastigma serrulatum</i> (Roxb.) Planch.	Vitaceae	Climber
<i>Thunbergia fragrans</i> Roxb.	Acanthaceae	Climber
<i>Thunbergia grandiflora</i> (Roxb. ex Rottl.) Roxb.	Acanthaceae	Climber
<i>Tinospora sinensis</i> (Lour.) Merr.	Menispermaceae	Climber
<i>Tragia involucrata</i> L.	Euphorbiaceae	Climber
<i>Trichosanthes dioica</i> Roxb.	Cucurbitaceae	Climber
<i>Trichosanthes lepiniana</i> (Naudin) Cogn.	Cucurbitaceae	Climber
<i>Trichosanthes tricuspidata</i> Lour.	Cucurbitaceae	Climber
<i>Tylophora indica</i> (Burm. f.) Merr.	Apocynaceae	Climber

Table 5: Orchid flora of the campus

Taxon	Family	Habit
<i>Acampe praemorsa</i> (Roxb.) Blatt. & McCann.	Orchidaceae	Epiphyte
<i>Aerides multiflora</i> Roxb.	Orchidaceae	Epiphyte
<i>Aerides odorata</i> Lour.	Orchidaceae	Epiphyte
<i>Arundina graminifolia</i> (D.Don) Hochr.	Orchidaceae	Epiphyte
<i>Ascocentrum ampullaceum</i> (Roxb.) Schltr.	Orchidaceae	Epiphyte
<i>Bulbophyllum</i> sp.	Orchidaceae	Epiphyte
<i>Bulbophyllum careyanum</i> (Hook.) Spreng.	Orchidaceae	Epiphyte
<i>Coelogyne fuscescens</i> Lindl.	Orchidaceae	Epiphyte
<i>Coelogyne prolifera</i> Lindl.	Orchidaceae	Epiphyte
<i>Cryptochilus luteus</i> Lindl.	Orchidaceae	Epiphyte
<i>Cymbidium aloifolium</i> (L.) Sw.	Orchidaceae	Epiphyte
<i>Dendrobium anceps</i> Sw.	Orchidaceae	Epiphyte
<i>Dendrobium aphyllum</i> (Roxb.) C.E.C.Fisch.	Orchidaceae	Epiphyte
<i>Dendrobium crepidatum</i> Lindl. & Paxton	Orchidaceae	Epiphyte
<i>Dendrobium densiflorum</i> Lindl.	Orchidaceae	Epiphyte
<i>Dendrobium farmeri</i> Paxton	Orchidaceae	Epiphyte
<i>Dendrobium fimbriatum</i> Hook.	Orchidaceae	Epiphyte
<i>Dendrobium fugax</i> Rchb.f.	Orchidaceae	Epiphyte
<i>Dendrobium jenkinsii</i> Wall. ex Lindl.	Orchidaceae	Epiphyte
<i>Dendrobium moschatum</i> (Buch.-Ham.) Sw.	Orchidaceae	Epiphyte
<i>Dendrobium nobile</i> Lindl.	Orchidaceae	Epiphyte
<i>Dendrobium stuposum</i> Lindl.	Orchidaceae	Epiphyte
<i>Dendrobium sulcatum</i> Lindl.	Orchidaceae	Epiphyte
<i>Goodyera procera</i> (Ker Gawl.) Hook.	Orchidaceae	Epiphyte
<i>Micropera obtusa</i> (Lindl.) Tang & F.T.Wang	Orchidaceae	Epiphyte
<i>Panisea uniflora</i> (Lindl.) Lindl.	Orchidaceae	Epiphyte
<i>Paphiopedilum insigne</i> (Wall. ex Lindl.) Pfitzer	Orchidaceae	Epiphyte
<i>Papilionanthe teres</i> (Roxb.) Schltr.	Orchidaceae	Epiphyte
<i>Phalaenopsis mannii</i> Rchb.f.	Orchidaceae	Epiphyte
<i>Pholidota articulata</i> Lindl.	Orchidaceae	Epiphyte
<i>Pholidota imbricata</i> Lindl.	Orchidaceae	Epiphyte
<i>Pinalia bractescens</i> (Lindl.) Kuntze	Orchidaceae	Epiphyte
<i>Pinalia pumila</i> (Lindl.) Kuntze	Orchidaceae	Epiphyte
<i>Rhynchostylis retusa</i> (L.) Blume	Orchidaceae	Epiphyte
<i>Smitinandia micrantha</i> (Lindl.) Holttum	Orchidaceae	Epiphyte
<i>Spiranthes sinensis</i> (Pers.) Ames	Orchidaceae	Epiphyte
<i>Vanda coerulea</i> Griff. ex Lindl.	Orchidaceae	Epiphyte

Vanilla planifolia Jacks. ex Andrews	Orchidaceae	Epiphyte
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Centre for Conservation & Utilization of Medicinal and Aromatic plants (CCUMAP):

The richness of the flora of Eastern Himalaya is well known. It forms the eastern part of the IUCN recognised Himalaya Hotspot for Conservation. This part of Himalayas is ranging from the Eastern Part of Nepal, passing through Sikkim, Darjeeling part of West Bengal, Bhutan, Arunachal Pradesh and ultimately coming down to the plains in Myanmar. This entire region attracts the plant lovers round the year and from round the earth.

Man also inhabits this region since long. They are living in innumerable far flung areas and almost detached from the so called civilized society. All the resources for their survival are coming from the vegetation around them. The resources include food, fodder, medicine, house building materials etc.

The Centre for Conservation & Utilization of Medicinal and Aromatic Plants earlier known as NBU medicinal plant garden is one of important centre at University and is Located almost at middle part of the Campus opposite to Akshay Dham museum. The Garden is spread over an area of 5 acre land and is with well boundary with concrete and iron wear in all the side. This medicinal plant garden was established with financial assistance from NMPB and RKVY. The garden having one big entry gate along with the sports board and one small gate on Health centre side. The garden is divided into three parts viz., a. Block A, b. Block B and c. Block C. The garden having two net houses and one temporary Orchid rescue net house for shade loving species. A Good environment for all groups like aquatic plants, terrestrial, epiphytes, orchids, ferns, gymnosperms are maintaining using various upgraded scientific techniques. Specimens of aromatic, medicinal and rare or threatened category with taken from various wilderness of Himalaya, western Ghats, Eastern Ghats and other various states of India. Sometimes we purchase the plantlets and seeds from various reputed nurseries and also bring through specimens exchange with various Botanical gardens, Universities and centres on request.

Medicinal Plant resources: The medicinal plant garden of N.B.U contributes a great resource towards the conservation and utilisation of over 625 species of medicinally important plants. Presently, this garden harbours the following medicinal plants: *Ambroma augusta*, *Andrographis paniculata*, *Asparagus racemosus*, *Azadirachta indica*, *Bacopa monnieri*, *Caesalpinia bonduc*, *Cissus quadrangularis*, *Coccinia grandis*, *Costus speciosus*, *Eclipta prostrata*, *Enydra fluctuens*, *Hemidesmus indicus*, *Holarrhena pubescens*, *Kaempferia galanga*, *Kalanchoe pinnata*, *Mesua ferrea*, *Mucuna pruriens*, *Phlogacanthus thyrsiformis*, *Phyllanthus emblica*, *Rauvolfia serpentina*, *Stevia rabaudiana*, *Terminalia bellirica*, *Terminalia chebula*, *Tinospora cordifolia*, *Vitex negundo*, *Withania somnifera* etc.

Aromatic Plant Resources: Aromatic plants form the major domain in the medicinal plant world. The medicinal plant garden is now conserving quite a good number (around 40 species) of aromatic plants: *Aloe jucunda*, *Aloe vera*, *Artemisia annua*, *Artemisia indica*, *Bacopa monnieri*, *Cassia mimosoides*, *Centella asiatica*, *Cinnamomum camphora*, *Cinnamomum glaucescens*,

Cinnamomum tamala, *Cinnamomum zaylanicum*, *Citrus maxima*, *Cymbopogon citrates*, *Cymbopogon pendulus*, *Gloriosa superb*, *Mentha arvensis*, *Mentha piperita*, *Ocimum basilicum*, *Ocimum camechianum*, *Ocimum sanctum*, *Piper betle*, *Piper longum*. *Zingiber cassumunar*, *Zingiber officinale*, *Zingiber zerumbet* etc.

Rare and threatened Plant resources: The medicinal plant garden of University of North Bengal has been playing a pivotal role in conserving the rare and threatened plant species. It can be considered as a major *ex-situ* conservatory not only of university but also for North Bengal as a whole. Some of them are *Angiopteris erecta*, *Agathis sp.*, *Cinchona sp.*, *Gingo biloba*, *Gnetum ula*, *Gnetum gnemon*, *Helminhostachys zeylanica*, *Salvinia cucullata*, *Psilotum sp.*, *Podocarpus sp.*

Facilities Available in the Garden:

There are nearly three hundred demarcated beds for growing medicinal plants. Many plants are maintained in pots and many others are growing outside the demarcated plots. However following facilities in the garden can be recognised:

1. Conservation Beds
2. Tank for growing aquatic plants
3. Net houses for conservation of rare and shade loving plants
4. Hydropit Propagation Chamber
5. Mist Chamber for Propagation
6. Humus & FYM pits
7. Vermicompost Pit
8. Nursery Beds
9. Store Room
10. Dug well with submersible pump
11. Irrigation system with water taps and sprinkles
12. Demonstration Plots for the cultivation of Medicinal Plants etc.

It is expected that some other facilities like (i) a quality assessment laboratory, (ii) one more net house, (iii) a training room etc will be introduced in future.

Activities of the Garden:

Though the main purpose of this garden is the conservation of Medicinal Plants of North Bengal and nearby areas, but a large number of plants procured from different parts of India and many interesting exotics are also now growing and preserved in this garden. At this moment, there are over 625 species of plants growing the garden. However, activities based on this garden can be summarised as follows:

1. Conservation of Medicinal Plants
2. Propagation of rare and endangered plants
3. Mass propagation of commercially viable Medicinal Plants for cultivation
4. Training programs for interested farmers
5. Field training in Demonstration Plots
6. Assisting in marketing of crude drug
7. Quality assessment of harvested products
8. Arranging regular awareness programs etc.

Earlier Project run on garden: The garden was established with financial assistance of several funding agencies like NMPB, DST, State Horticulture Ministry, etc.

Annual Budget: After the completion of the projects on Garden, University authority allotted a fund of Rs 480000/- per annum (increase 10% every year) to maintenance of this herbal garden. Two daily wage labours and one supervisor are working and nurturing each of plants and part of the garden under able guidance of Dr. Monoranjan Chowdhury (Garden-in-charge).

Beneficiary Groups: The garden generate a good number of seeds, seedling, cutting of various aromatic and medicinal plants regularly and provide in limited numbers to the various groups (Students, teachers, researchers, farmers, Agricultural department, general people) who are interested to plant or used as medicines or for research purposes.

UG student of Botany and School students as visitors: During excursion several college group of Botany (Students & teachers) are regularly visit this garden and teachers allow them to enrich the knowledge about the aromatic & medicinal plants and also found them them excited when they see the rare species like *Gingo biloba*, *Gnetum ula*, *Gnetum gnemon*, *Psilotum* sp, various rare Orchids, ferns etc in this garden. The school students of nearby schools are also the regular visitors of the garden and they are very much recharge with live medicinal and rare such plant species.

Provide assistance to developing Herbal Garden in Schools and Colleges: We are also visited various UG colleges who are inspired with our garden and are requesting us for establishing such

herbal garden in their college campus or school campus. After visit we suggest them the planning of the garden and probable plants that can be easily grown in the campus climate. After preparation of plots we provide them all the specimens in sufficient quantity, so they can make their herbal garden along with nourishing protocol for each species. We are also visit their garden on their request and tried to get feedbacks. Till date several educational institute like colleges/ schools were develop their herbal garden and /or enrich their garden taking the suggestions and specimens from our gardens.

Training and Workshop for students: Occasionally we are arranging the workshop cum training programs for farmers, students and research scholars who are interested to cultivation and propagation of Medicinal and aromatic plants. We arrange the lectures of various experts of medicinal plant, agricultural and forest officers to exchange their valuable information to farmers for the cultivation of medicinal plants as alternating crops in waste lands.

Providing live samples to researchers: Live samples of various species of aromatic and medicinal plant with sufficient quantity they required are regularly provided to research scholars and researchers who are working on medicinal potentiality of those plant drugs.

Academic Staff College allot one class for each batch of RC in life science/OP participants: UGC-ASC of this university arrange at least one full class for RC in life sciences and each batch of OP participants. One half all the participant visits this garden and enriches themselves with importance of plant drugs and also about the rare plant species. Sometimes they were takes few live seedling of various species for herbal gardens of their college and universities.

Table 6: Checklist of medicinal plants from the campus

Plant species	Plant species
Abelmoschus moschatus Medik.	Ichnocarpus frutescens (L.) W.T.Aiton
Abroma augusta (L.) L.f.	Imperata cylindrica (L.) Raeusch.
Abrus precatorius L.	Indigofera tinctoria L.
Abutilon indicum (L.) Sweet	Ipomoea aquatica Forssk.
Acacia catechu (L.f.) Willd.	Ipomoea nil (L.) Roth
Acalypha indica L.	Ipomoea quamoclit L.
Acampe praemorsa (Roxb.) Blatt. & McCann.	Jasminum grandiflorum L.
Achyranthes aspera L.	Jasminum sambac (L.) Aiton
Achyranthes bidentata Blume	Jatropha curcas L.
Acmella uliginosa (Sw.) Cass.	Jatropha gossypifolia L.
Acorus calamus L.	Justicia adhatoda L.

Adenanthera pavonina L.
Aegle marmelos (L.) Corrêa
Aerides odorata Lour.
Aerva lanata (L.) Juss.
Agave americana L.
Ageratum conyzoides (L.) L.
Alangium chinense (Lour.) Harms
Albizia lebbek (L.) Benth.

Allium cepa L.
Allium sativum L.
Alocasia macrorrhizos (L.) G.Don
Aloe vera (L.) Burm.f.
Alpinia galanga (L.) Willd.
Alpinia malaccensis (Burm.f.) Roscoe
Alpinia zerumbet (Pers.) B.L.Burt & R.M.Sm.
Alstonia scholaris (L.) R. Br.
Alternanthera sessilis (L.) R.Br. ex DC.
Amaranthus blitum subsp. *oleraceus* (L.)
Costea.
Amaranthus spinosus L.
Amomum subulatum Roxb.
Anacardium occidentale L.
Ananas comosus (L.) Merr.
Andrographis paniculata (Burm.f.) Nees
Anisomeles indica (L.) Kuntze
Annona reticulata L.
Annona squamosa L.

Justicia gendarussa Burm.f.
Kaempferia galanga L.
Kaempferia rotunda L.
Lagerstroemia speciosa (L.) Pers.
Lannea coromandelica (Houtt.) Merr.
Lantana × *aculeata* L.
Lawsonia inermis L.
Lippia alba (Mill.) N.E.Br. ex Britton & P.Wilson

Litchi chinensis Sonn.
Litsea glutinosa (Lour.) C.B.Rob.
Litsea monopetala (Roxb.) Pers.
Maesa indica (Roxb.) A. DC.
Magnolia grandiflora L.
Magnolia champaca (L.) Baill. ex Pierre
Mangifera indica L.
Manilkara zapota (L.) P.Royen
Melastoma malabathricum L.
Melia azedarach L.

Melilotus albus Medik.
Mentha × *piperita* L.
Mentha arvensis L.
Mentha longifolia (L.) L.
Mesua ferrea L.
Mimosa himalayana Gamble
Mimusops elengi L.
Mirabilis jalapa L.

Aquilaria malaccensis Lam.
Areca catechu L.
Argemone mexicana L.
Aristolochia indica L.
Artemisia vulgaris L.
Artocarpus lacucha Buch.-Ham.
Asparagus adscendens Roxb.
Asparagus officinalis L.
Asparagus racemosus Willd.
Averrhoa carambola L.
Ayapana triplinervis (Vahl) R.M.King & H.Rob.
Azadirachta indica A.Juss.
Bacopa monnieri (L.) Wettst.
Barleria cristata L.
Barleria strigosa Willd.
Bauhinia acuminata L.
Bauhinia purpurea L.
Bergenia ciliata (Haw.) Sternb.
Bidens pilosa L.
Biophytum reinwardtii (Zucc.) Klotzsch
Bixa orellana L.
Blumea lacera (Burm.f.) DC.
Boerhavia diffusa L.
Bombax ceiba L.
Brassica juncea (L.) Czern.
Brassica rapa L.
Bridelia retusa (L.) A.Juss.
Momordica charantia L.
Momordica dioica Roxb. ex Willd.
Monochoria vaginalis (Burm.f.) C.Presl
Morinda angustifolia Roxb.
Moringa oleifera Lam.
Morus alba L.
Murraya koenigii (L.) Spreng.
Murraya paniculata (L.) Jack
Musa × paradisiaca L.
Myristica fragrans Houtt.
Naravelia zeylanica (L.) DC.
Nelumbo nucifera Gaertn.
Neolamarckia cadamba (Roxb.) Bosser
Nicotiana tabacum L.
Nigella sativa L.
Nyctanthes arbor-tristis L.
Nymphaea nouchali Burm.f.
Ocimum americanum L.
Ocimum basilicum L.
Ocimum gratissimum L.
Ocimum kilimandscharicum Gürke
Ocimum tenuiflorum L.
Oenanthe javanica (Blume) DC.
Oldenlandia corymbosa L.
Oroxylum indicum (L.) Kurz
Oxalis corniculata L.
Paederia foetida L.

Brugmansia suaveolens (Humb. & Bonpl. ex Willd.) Bercht. & J.Presl.	Pandanus tectorius Parkinson ex Du Roi
Bryophyllum pinnatum (Lam.) Oken	Passiflora edulis Sims
Butea monosperma (Lam.) Taub.	Passiflora foetida L.
Caesalpinia bonduc (L.) Roxb.	Passiflora quadrangularis L.
Caesalpinia pulcherrima (L.) Sw.	Pergularia daemia (Forssk.) Chiov.
Cajanus cajan (L.) Millsp.	Pericampylus glaucus (Lam.) Merr.
Calotropis gigantea (L.) Dryand.	Persicaria glabra (Willd.) M.Gómez
Camellia sinensis (L.) Kuntze	Persicaria hydropiper (L.) Delarbre
Canna indica L.	Phaius tankervilleae (Banks) Blume
Careya arborea Roxb.	Phlogacanthus thyriformis (Roxb. ex Hardw.) Mabb.
Carica papaya L.	Pholidota articulata Lindl.
Cascabela thevetia (L.) Lippold	Pholidota imbricata Lindl.
Cassia fistula L.	Phyllanthus acidus (L.) Skeels
Catharanthus roseus (L.) G.Don	Phyllanthus amarus Schumach. & Thonn.
Cayratia trifolia (L.) Domin	Phyllanthus emblica L.
Ceiba pentandra (L.) Gaertn.	Phyllanthus fraternus G.L.Webster
Celastrus paniculatus Willd.	Phyllanthus urinaria L.
Celosia argentea L.	Physalis minima L.
Centella asiatica (L.) Urb.	Pimenta dioica (L.) Merr.
Cheilocostus speciosus (J.Koenig) C.D.Specht	Pinus kesiya Royle ex Gordon
Chenopodium album L.	Piper betle L.
Chlorophytum arundinaceum Baker	Piper longum L.
Cinnamomum camphora (L.) J.Presl	Piper nigrum L.
Cinnamomum tamala (Buch.-Ham.) T.Nees & Eberm.	Pistia stratiotes L.
Cinnamomum verum J.Presl	Platyclusus orientalis (L.) Franco
	Plumbago zeylanica L.

Cissampelos pareira L.
Cissus quadrangularis L.
Citrullus colocynthis (L.) Schrad.
Citrus limon (L.) Osbeck
Citrus maxima (Burm.) Merr.
Citrus medica L.
Cleome viscosa L.
Clerodendrum indicum (L.) Kuntze
Clerodendrum infortunatum L.
Clitoria ternatea L.
Cocculus hirsutus (L.) W.Theob.
Coffea arabica L.
Coix lacryma-jobi L.
Coleus forskohlii (Willd.) Briq.
Colocasia esculenta (L.) Schott
Commelina benghalensis L.
Coriandrum sativum L.
Crinum asiaticum L.
Curculigo orchioides Gaertn.
Curcuma amada Roxb.
Curcuma aromatica Salisb.
Curcuma caesia Roxb.
Curcuma longa L.
Curcuma zedoaria (Christm.) Roscoe
Cuscuta reflexa Roxb.
Cymbidium aloifolium (L.) Sw.
Cymbopogon citratus (DC.) Stapf
Pogostemon cablin (Blanco) Benth.
Polygonum plebeium R.Br.
Pongamia pinnata (L.) Pierre
Portulaca oleracea L.
Pothos scandens L.
Psidium guajava L.
Punica granatum L.
Putranjiva roxburghii Wall.
Rauvolfia tetraphylla L.
Rauvolfia serpentina (L.) Benth. ex Kurz
Rhododendron arboreum Sm.
Rhynchosyilis retusa (L.) Blume
Ricinus communis L.
Rosmarinus officinalis L.
Rubus ellipticus Sm.
Rumex dentatus L.
Rumex maritimus L.
Rungia pectinata (L.) Nees
Ruscus aculeatus L.
Saccharum spontaneum L.
Salix tetrasperma Roxb.
Sansevieria hyacinthoides (L.) Druce
Santalum album L.
Saraca asoca (Roxb.) Willd.
Sauropus androgynus (L.) Merr.
Schima wallichii Choisy
Scoparia dulcis L.

Cynodon dactylon (L.) Pers.
Cyperus rotundus L.
Dalbergia sissoo DC.
Dalbergia latifolia Roxb.
Datura metel L.
Datura stramonium L.
Daucus carota L.
Dendrobium aphyllum (Roxb.) C.E.C.Fisch.
Dendrobium densiflorum Lindl.
Dendrobium nobile Lindl.
Desmodium gangeticum (L.) DC.
Desmodium triflorum (L.) DC.
Dillenia indica L.
Dioscorea alata L.
Dioscorea bulbifera L.
Dioscorea deltoidea Wall. ex Griseb.
Dioscorea esculenta (Lour.) Burkill
Dioscorea pentaphylla L.
Dioscorea prazeri Prain & Burkill
Diospyros malabarica (Desr.) Kostel.
Dipterocarpus turbinatus C.F.Gaertn
Eclipta prostrata (L.) L.
Elaeocarpus floribundus Blume
Elaeocarpus serratus L.
Elephantopus scaber L.
Emilia sonchifolia (L.) DC. ex DC.
Enydra fluctuans DC.
Senna alata (L.) Roxb.
Senna occidentalis (L.) Link
Senna sophera (L.) Roxb.
Senna tora (L.) Roxb.
Sesamum indicum L.
Sesbania grandiflora (L.) Pers.
Sesbania sesban (L.) Merr.
Shorea robusta Gaertn.
Sida acuta Burm.f.
Sida cordifolia L.
Sida rhombifolia L.
Simarouba amara Aubl.
Smilax ovalifolia Roxb. ex D.Don
Solanum americanum Mill.
Solanum torvum Sw.
Sonchus asper (L.) Hill
Spathodea campanulata P.Beauv.
Spinacia oleracea L.
Spondias pinnata (L. f.) Kurz
Stachytarpheta indica (L.) Vahl
Stellaria media (L.) Vill.
Stephania glabra (Roxb.) Miers
Stephania japonica (Thunb.) Miers
Streblus asper Lour.
Strychnos nux-vomica L.
Swertia chirayita (Roxb. ex Flem.) Karst.
Syzygium jambos (L.) Alston

Eryngium foetidum L.
Erythrina variegata L.

Euphorbia hirta L.
Euphorbia neriifolia L.
Euphorbia royleana Boiss.
Euphorbia tirucalli L.
Euryale ferox Salisb.
Ficus benghalensis L.
Ficus benjamina L.
Ficus hispida L.f.
Ficus racemosa L.

Ficus religiosa L.
Ficus semicordata Buch.-Ham. ex Sm.
Flacourtia indica (Burm.f.) Merr.
Flacourtia jangomas (Lour.) Raeusch.
Foeniculum vulgare Mill.
Gardenia jasminoides J.Ellis
Ginkgo biloba L.
Girardinia diversifolia (Link) Friis
Gloriosa superba L.
Glycosmis pentaphylla (Retz.) DC.
Gmelina arborea Roxb.
Gossypium arboreum L.
Grangea maderaspatana (L.) Poir.
Grewia asiatica L.
Gymnema sylvestre (Retz.) R.Br. ex Sm.

Syzygium cumini (L.) Skeels
Tabernaemontana divaricata (L.) R.Br. ex Roem. & Schult.
Tacca integrifolia Ker Gawl.
Tagetes erecta L.
Tamarindus indica L.
Taxus baccata L.
Tectona grandis L.f.
Terminalia arjuna (Roxb. ex DC.) Wight & Arn.
Terminalia bellirica (Gaertn.) Roxb.
Terminalia chebula Retz.
Terminalia myriocarpa Van Heurck & Müll. Arg.
Tetrastigma serrulatum (Roxb.) Planch.
Theobroma cacao L.
Thunbergia grandiflora (Roxb. ex Rottl.) Roxb.
Tinospora sinensis (Lour.) Merr.
Tragia involucrata L.
Trema orientalis (L.) Blume
Trichosanthes dioica Roxb.
Trichosanthes lepiniana (Naudin) Cogn.
Tridax procumbens (L.) L.
Trigonella foenum-graecum L.
Triumfetta rhomboidea Jacq.
Tylophora indica (Burm. f.) Merr.
Typha elephantina Roxb.
Typhonium trilobatum (L.) Schott
Uraria picta (Jacq.) DC.

<i>Gynocardia odorata</i> R.Br.	<i>Urena lobata</i> L.
<i>Hedychium coronarium</i> J.Koenig	<i>Urtica dioica</i> L.
<i>Heliotropium indicum</i> L.	<i>Urtica parviflora</i> Roxb.
<i>Hemidesmus indicus</i> (L.) R. Br. ex Schult.	<i>Vallaris solanacea</i> (Roth) Kuntze
<i>Hibiscus mutabilis</i> L.	<i>Vitex negundo</i> L.
<i>Hibiscus rosa-sinensis</i> L.	<i>Withania somnifera</i> (L.) Dunal
<i>Holarrhena pubescens</i> Wall. ex G.Don	<i>Wrightia arborea</i> (Dennst.) Mabb.
<i>Houttuynia cordata</i> Thunb.	<i>Xanthium strumarium</i> L.
<i>Hoya parasitica</i> Wall. ex Wight	<i>Zanthoxylum budrunga</i> DC.
<i>Hybanthus enneaspermus</i> (L.) F.Muell.	<i>Zingiber montanum</i> (J.Koenig) Link ex A.Dietr.
<i>Hygrophila auriculata</i> (Schumach.) Heine	<i>Zingiber officinale</i> Roscoe
<i>Hyptis suaveolens</i> (L.) Poit.	<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.

PLANT DISEASES OF THE CAMPUS

Scientific study of plant diseases is known as plant pathology, diseases caused to plants by pathogens (infectious organism) and environmental conditions (physical factors). Organisms that cause infectious disease include fungi, Bacteria, viruses, protozoa, nematodes and parasitic plants also. Plant diseases also involve the study of pathogen identification, disease etiology, disease cycles, economic impact, plant disease epidemiology, plant disease resistance and management of plant disease.

In the campus of the University 6859 plants (tree, shrubs, climbers and herbs) are present, out of these only few plants are infected by some diseases. The observations of present investigation found only 72 plants are diseased by different pathogens and remaining plants are found disease free. Fungi like *Fusarium*, *Phytophthora*, and *Alternaria* causes disease like leaf spot, leaf blight, canker disease to certain plants, some *Mycorrhiza* found causes diseases to root of some tree species, *Mycoplasmal* diseases are also found to *Santalum albu*, little leaf of *Santalum*, economically and medicinally important plant. Some tree species are found to cause root diseases by soil fungi, *Gmelina arborea* causes to disease by *Fusarium oxysporum*.

Result of the present investigation is out of 6859 trees only 72 plants are found infected by pathogens, remaining plants are disease free.

In this connection, the Dept. of Botany and the experts of Uttarbanga Krishi Viswavidyalaya (U.B.K.V.) help us time to time.

Faunal Diversity

The faunal diversity of the campus includes a good number of birds, a large number of insects (including butterflies, cicadas, dragonflies and damselflies, grasshoppers, plants hoppers, hoppers, lattern flies, mantis, etc.). *Graphium doson*, *Graphium agamemnon*, *Papilio prexaspes*, *Papilio polytes*, *Pachliopta aristolochiae*, *Pseudocoladenia dan*, *Ampittia dioscorides*, *Oriens goloides*, *Catopsilia pyranthe*, *Eurema hecabe*, *Euploea core*, etc. are most common species of butterflies. A total 79 species of birds have been recorded recently. *Atretium schistosum*, *Xenochrophis piscator*, *Enhydris enhydris*, *Ptyas korros*, *Python molurus*, *Chrysopelea ornate*, etc. are common snakes in the campus. Rodents, *Herpestes edwardsii*, and bats are most seen mammals. A paper reported total 69 species of damselflies and dragonflies (odonata).

Table 7: Bird fauna of the campus

Sl. No.	Family	Species	Common Name
1	Accipitridae	Accipiter badius (J.F. Gmelin, 1788)	Shikra
2	Accipitridae	Gyps bengalensis (J.F. Gmelin, 1788)	White-rumped Vulture
3	Accipitridae	Pernis ptilorhynchus (Temminck, 1821)	Oriental Honey Buzzard
4	Accipitridae	Spilornis cheela (Latham, 1790)	Crested Serpent Eagle
5	Aegithinidae	Aegithina tiphia (Linnaeus, 1758)	Common Iora
6	Alcedinidae	Alcedo atthis (Linnaeus, 1758)	Common Kingfisher
7	Alcedinidae	Halcyon smyrnensis (Linnaeus, 1758)	White-throated Kingfisher
8	Anatidae	Dendrocygna javanica (Horsfield, 1821)	Lesser Whistling Duck
9	Ardeidae	Ardeola grayii (Sykes, 1832)	Indian Pond Heron
10	Ardeidae	Bubulcus ibis (Linnaeus, 1758)	Cattle Egret
11	Ardeidae	Egretta garzetta (Linnaeus, 1766)	Little Egret
12	Ardeidae	Ixobrychus cinnamomeus (J.F. Gmelin, 1789)	Cinnamon Bittern
13	Ardeidae	Nycticorax nycticorax (Linnaeus, 1758)	Black-crowned Night Heron
14	Artamidae	Artamus fuscus Vieillot, 1817	Ashy Woodswallow
15	Bucerotidae	Anthracoceros albirostris (Shaw, 1808)	Oriental Pied Hornbill
16	Bucerotidae	Ocyrceros birostris (Scopoli, 1786)	Indian Grey Hornbill
17	Campephagidae	Pericrocotus sp.	Minivet
18	Charadriidae	Charadrius dubius Scopoli, 1786	Little Ringed Plover
19	Chloropseidae	Chloropsis aurifrons (Temminck, 1829)	Golden-fronted Leafbird
20	Ciconiidae	Leptoptilos javanicus (Horsfield, 1821)	Lesser Adjutant
21	Cisticolidae	Orthotomus sutorius (Pennant, 1769)	Common Tailorbird
22	Columbidae	Columba livia J.F. Gmelin, 1789	Rock Dove
23	Columbidae	Ducula aenea (Linnaeus, 1766)	Green Imperial Pigeon

24	Columbidae	<i>Spilopelia chinensis</i>	Spotted Dove
25	Columbidae	<i>Streptopelia decaocto</i> (Frisvaldszky, 1838)	Eurasian Collared Dove
26	Columbidae	<i>Streptopelia tranquebarica</i> (Hermann, 1804)	Red Collared Dove
27	Corvidae	<i>Corvus macrorhynchos</i> Wagler, 1827	Large-billed Crow
28	Corvidae	<i>Corvus splendens</i> Vieillot, 1817	House Crow
29	Corvidae	<i>Dendrocitta vagabunda</i> (Latham, 1790)	Rufous Treepie
30	Cuculidae	<i>Centropus sinensis</i> (Stephens, 1815)	Greater Coucal
31	Cuculidae	<i>Cuculus canorus</i> Linnaeus, 1758	Common Cuckoo
32	Cuculidae	<i>Eudynamys scolopaceus</i> (Linnaeus, 1758)	Asian Koel
33	Cuculidae	<i>Hierococcyx varius</i> (Vahl, 1797)	Common Hawk Cuckoo
34	Cuculidae	<i>Phaenicophaeus tristis</i> (Lesson, 1830)	Green-billed Malkoha
35	Dicruridae	<i>Dicrurus macrocercus</i> Vieillot, 1817	Black Drongo
36	Dicruridae	<i>Dicrurus paradiseus</i> (Linnaeus, 1766)	Greater Racket-tailed Drongo
37	Estrildidae	<i>Lonchura punctulata</i> (Linnaeus, 1758)	Scaly-breasted Munia
38	Falconidae	<i>Falco tinnunculus</i> Linnaeus, 1758	Common Kestrel
39	Laniidae	<i>Lanius cristatus</i> Linnaeus, 1758	Brown Shrike
40	Laniidae	<i>Lanius tephronotus</i> (Vigors, 1831)	Grey-backed Shrike
41	Megalaimidae	<i>Psilopogon asiaticus</i> (Latham, 1790)	Blue-throated Barbet
42	Megalaimidae	<i>Psilopogon haemacephalus</i> (Statius Muller, 1776)	Coppersmith Barbet
43	Megalaimidae	<i>Psilopogon lineatus</i> (Vieillot, 1816)	Lineated Barbet
44	Meropidae	<i>Merops leschenaulti</i> Vieillot, 1817	Chestnut-headed Bee-eater
45	Meropidae	<i>Merops orientalis</i> Latham, 1801	Green Bee-eater
46	Monarchidae	<i>Terpsiphone paradisi</i> (Linnaeus, 1758)	Indian Paradise-flycatcher
47	Motacillidae	<i>Anthus hodgsoni</i> Richmond, 1907	Olive-backed Pipit
48	Motacillidae	<i>Motacilla alba</i> Linnaeus, 1758	White Wagtail
49	Muscicapidae	<i>Copsychus saularis</i> (Linnaeus, 1758)	Oriental Magpie Robin
50	Muscicapidae	<i>Myophonus caeruleus</i> (Scopoli, 1786)	Blue Whistling Thrush
51	Nectariniidae	<i>Cinnyris asiaticus</i> (Latham, 1790)	Purple Sunbird
52	Oriolidae	<i>Oriolus xanthornus</i> (Linnaeus, 1758)	Black-hooded Oriole
53	Paridae	<i>Parus cinereus</i> Vieillot, 1818	Cinereous Tit
54	Paridae	<i>Passer domesticus</i> (Linnaeus, 1758)	House Sparrow
55	Phalacrocoracidae	<i>Microcarbo niger</i> (Vieillot, 1817)	Little Cormorant
56	Phasianidae	<i>Pavo cristatus</i> Linnaeus, 1758	Indian Peafowl
57	Picidae	<i>Dendrocopos macei</i> (Vieillot, 1818)	Fulvous-breasted Pied Woodpecker
58	Picidae	<i>Dinopium benghalense</i> (Linnaeus,	Lesser Golden-backed

		1758)	Woodpecker
59	Picidae	<i>Jynx torquilla</i> Linnaeus, 1758	Eurasian Wryneck
60	Psittaculidae	<i>Psittacula alexandri</i> (Linnaeus, 1758)	Red-breasted Parakeet
61	Psittaculidae	<i>Psittacula eupatria</i> (Linnaeus, 1766)	Alexandrine Parakeet
62	Psittaculidae	<i>Psittacula krameri</i> (Scopoli, 1769)	Rose-ringed Parakeet
63	Pycnonotidae	<i>Pycnonotus cafer</i> (Linnaeus, 1766)	Red-vented Bulbul
64	Pycnonotidae	<i>Pycnonotus jocosus</i> (Linnaeus, 1758)	Red-whiskered Bulbul
65	Rallidae	<i>Amauornis phoenicurus</i> (Pennant, 1769)	White-breasted Waterhen
66	Rhipiduridae	<i>Rhipidura</i> sp.	White-throated Fantail
67	Stenostiridae	<i>Culicicapa ceylonensis</i> (Swainson, 1820)	Grey-headed Canary-flycatcher]
68	Strigidae	<i>Athene brama</i> (Temminck, 1821)	Spotted Owlet
69	Strigidae	<i>Glaucidium cuculoides</i> (Vigors, 1831)	Asian Barred Owlet
70	Strigidae	<i>Glaucidium radiatum</i> (Tickell, 1833)	Jungle Owlet
71	Strigidae	<i>Ninox scutulata</i> (Raffles, 1822)	Brown Hawk Owl
72	Sturnidae	<i>Acridotheres fuscus</i> (Wagler, 1827)	Jungle Myna
73	Sturnidae	<i>Acridotheres grandis</i> F. Moore, 1858	Great Myna
74	Sturnidae	<i>Acridotheres tristis</i> (Linnaeus, 1766)	Common Myna
75	Sturnidae	<i>Gracula religiosa</i> Linnaeus, 1758	Common Hill Myna
76	Sturnidae	<i>Gracupica contra</i> (Linnaeus, 1758)	Asian Pied Starling
77	Sturnidae	<i>Sturnia malabarica</i> (J.F. Gmelin, 1789)	Chestnut-tailed Starling
78	Threskiornithidae	<i>Pseudibis papillosa</i> (Temminck, 1824)	Indian Black Ibis
79	Tytonidae	<i>Tyto alba</i> (Scopoli, 1769)	Common Barn Owl

Table 8: Checklist of dragonflies and damselflies of the campus

Species name	Species name
Suborder Anisoptera Seyles, 1854	<i>Orthetrum luzonicum</i> (Brauer, 1868)
Aeshnidae	<i>Orthetrum pruinatum</i> (Burmeister, 1839)
<i>Anaciaeschna jaspidea</i> (Burmeister, 1839)	<i>Orthetrum sabina</i> (Drury, 1770)
<i>Anax guttatus</i> (Burmeister, 1839)	<i>Palpopleura sexmaculata</i> (Fabricius, 1787)
<i>Anax indicus</i> Lieftinck, 1942	<i>Pantala flavescens</i> (Fabricius, 1798)
<i>Gynacantha dravida</i> Lieftinck, 1960	<i>Potamarcha congener</i> (Rambur, 1842)
<i>Gynacantha khasiaca</i> MacLachlan, 1896	<i>Rhodothemis rufa</i> (Rambur, 1842)

Gomphidae

Ictinogomphus rapax (Rambur, 1842)

Paragomphus lineatus (Selys, 1850)

Macromiidae

Epopthalmia sp.

Libellulidae

Acisoma panorpoides Rambur, 1842

Aethriamanta brevipennis (Rambur, 1842)

Agrionoptera insignis (Rambur, 1842)

Brachydiplax chalybea Brauer, 1868

Brachydiplax farinosa Krüger, 1902

Brachydiplax sobrina (Rambur, 1842)

Brachythemis contaminata (Fabricius, 1793)

Bradinyoga geminata (Rambur, 1842)

Crocothemis servilia (Drury, 1770)

Diplacodes nebulosa (Fabricius, 1793)

Diplacodes trivialis (Rambur, 1842)

Hydrobasileus croceus (Brauer, 1867)

Lathrecista asiatica (Fabricius, 1798)

Neurothemis fulvia (Drury, 1773)

Neurothemis intermedia (Rambur, 1842)

Neurothemis tullia (Drury, 1773)

Orthetrum chrysis (Selys, 1891)

Orthetrum glaucum (Brauer, 1865)

Rhyothemis plutonia Selys, 1883

Rhyothemis variegata (Linnaeus, 1763)

Tholymis tillarga (Fabricius, 1798)

Tramea basilaris (Palisot de Beauvois, 1805)

Tramea limbata (Desjardins, 1832)

Trithemis aurora (Burmeister, 1839)

Trithemis festiva (Rambur, 1842)

Trithemis pallidinervis (Kirby, 1889)

Urothemis signata (Rambur, 1842)

Zyxomma petiolatum Rambur, 1842

Suborder Zygoptera Seules, 1854**Calopterygidae**

Neurobasis chinensis (Linnaeus, 1758)

Chlorocyphidae

Libellago lineata (Burmeister, 1839)

Coenagrionidae

Aciagrion approximans (Selys, 1876)

Aciagrion pallidum Selys, 1891

Agriocnemis clauseni Fraser, 1922

Agriocnemis femina (Brauer, 1868)

Agriocnemis kalinga Nair & Subramanian, 2014

Agriocnemis lacteola Selys, 1877

Agriocnemis pygmaea (Rambur, 1842)

Amphiallagma parvum (Selys, 1876)

NBU Herbarium:

University of North Bengal herbarium (NBU) stores around 12000 herbarium specimens, including Angiosperm, Gymnosperm and Pteridophytes. The herbarium is initially established in

1991 by the department of Botany, University of North Bengal. Recently in April, 2019 the Herbarium is upgraded along with modern facilities and shifted to a new separate building for easy access of in-house and global users. The acronym of this herbaria is NBU and the herbarium specimens are arranged as per APG IV. The Herbarium also contains a well oriented seed and fruit collections brought from various wilderness of India by different researchers, an organized pollen bank in the form of permanent slides of various angiosperms collected from different part of Himalaya, sub-Himalaya and plains of various agro-climatic zones of India. The herbarium a part of global herbarium network by registering under index herbariarum (Herbarium Details | University of North Bengal (nybg.org)).



Nymphaea nouchali



Caprinopsis sp.



Net House



NBU Herbarium





Black Drongo



Red-naped Ibis



Oriental Pied Hornbill



House Sparrow



White-breasted Waterhen



Oriens sp.



Black Kite



Cattle Egret



Cattle Egret



Lagerstroemia speciosa



Bixa orientalis



Bixa monosperma



Camellia sinensis



Cuscuta campestris



Camellia sinensis



Cycas pectinata



Bambusa sp.

PLANTATION OF TREES LAST FIVE YEARS IN THE UNIVERSITY CAMPUS

- 2016-2017 : i) 25 nos. Fruits planted by the Law Students in the Law Deptt. Complex.
ii) 30 nos. Fruits plants planted in “Aranya Saptaha”
- 2017-2018 : i) 20 nos. Fruits plants planted by the North Bengal University Alumni Association.
ii) Garden Developed infront of the Auditorium (R.B. Manch)
- 2018-2019 : i) Developed the garden infront of the H.R.D.C.
ii) 15 nos. Fruit plants planted by the Golden Jubilee Committee of the Dept. of Commerce.
- 2019-2020: i) 15 nos. Fruits and avenue trees planted in campus during “Aranya Saptaha”
ii) 10 nos. Fruit plants planted by the NSS volunteers.
iii) 4 nos. Medicinal tree planted in NBU Medicinal Plant Garden by Botany Department.
- 2020-2021: i) 25 nos. Fruits and avenue trees planted in campus during “Aranya Saptaha”
ii) 20 nos. Fruit plants planted by the NSS volunteers by various units.
iii) 5 nos. Medicinal tree planted in NBU Medicinal Plant Garden & Departmental premises by Botany Department.

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BUDGET ALLOCATION TO KEEP CAMPUS “GREEN”

NAME OF THE HEAD OF ACCOUNT: “CAMPUS MAINTENANCE & BEAUTIFICATION”

Year	Amount
2014-2015	Rs. 9,32,000.00 (Rupees Nine Lakh Thirty Two Thousand Only)
2015-2016	Rs. 12,30,000.00 (Rupees Twelve Lakh Thirty Thousand Only)
2016-2017	Rs. 13,55,000.00 (Rupees Thirteen Lakh Five Thousand Only)
2017-2018	Rs. 18,65,000.00 (Rupees Eighteen Lakh Sixty Five Thousand Only)
2018-2019	Rs. 20,50,000.00 (Rupees Twenty Lakh Fifty Thousand Only)
<u>2019-2020</u>	Rs. 22,55,000.00 (Rupees Twenty Two Lakh Fifty Five Thousand Only)
<u>2020-2021</u>	Rs. 23,68,000.00 (Rupees Twenty Three Lakh sixty eight Thousand Only)

IRRIGATIONAL FACILITIES

University Estate Department have different types pump sets. Moveable and immovable sets for watering purpose. Many places of growing plants are being watered manually.



External ambience of the Auditorium of the University



Internal ambience of Central library of the University with sufficient ventilation, and day light supplemented with lights and fans.



Circle garden in the road crossing



External ambience of the Gymnasium of the University



External ambience of Central library of the University



Circle garden in the road crossing.



COFAM, NBU



CONCLUSIONS:

1. The objectives of carrying out a green audit was to check the green practices followed by the university and to conduct a well-defined audit report to understand whether the university is on the track of sustainable development.
2. University takes efforts to dispose of majority of waste by proper methods.
3. Online computing i.e. Online payment systems, online circulars, etc. are helpful for reducing the use of papers and ultimately reducing carbon footprint.
4. The sound levels on the campus are good. As most of the Departments are in different buildings spreaded throughout the the campus which is more than 300 acres. Although main Campus is near the high way but most of the buildings are more then 500 m away from the Highway. Pasmaja Park snd Social forest areas cover the 500 m streatch which keeps the noise level at a significantly low level.
5. 'Green Chemistry to reduce chemical waste' is followed in all the Science departments of University.
6. Like many other Institutions development is an important aspect of University of North Bemgal. This development by the University is always being achieved at the expense of environmental rehabilitation. This is to note with pride that University of North Bemgal is an environment-friendly university. Several green development projects/ processes are in the pipeline to be adopted by the University.

Recommendations

1. The ratio of covered space to open space seems to be satisfactory. However, university for any future expansion of covered space should plan for vertical rise after soil testing so that open space is not compromised.
2. Green spots should be planned, preferably on the basis of 3D modelling based on contour map. For maintenance of campus there is a scope of further mechanization.
3. Waste management policy is non-existent. A planned waste segregation, disposal and removal by ULB is necessary.
4. Gymnosperm and palm plants should be planted in the campus.
5. Irrigation facilities are needed to be modernized.

6. Water supply system needs through planning. The surface water drawn from wells is becoming insufficient and boring work by PHE is yet to become successful. Hence University should plan for wetland preservation and rainwater harvesting.

References and acknowledgement

1. We acknowledge the help received from different Departments of the University of North Bengal.
2. Specially we acknowledge the help of Soil testing laboratory of Department of Tea science, NBU.
3. Special thanks are also due to Department of Botany, NBU herbarium and medicinal plants garden for listing of different plants.
4. Thanks are due to Weather station data from the Department of Geography.
5. We also thank Development officer of NBU for providing some information.
6. Partial help received from the previous 'Green audit report 2020-2021' is also greatly acknowledged.
7. Several photographs of NBU taken from different sources of University of North Bengal are also being acknowledged.

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