

## **A preliminary survey of plant diversity in the campus of Bejoy Narayan Mahavidyalaya, Itachuna, Hooghly, W.B.**

**Parasuram Kamilya<sup>1</sup>, Vinoy Kumar Mishra<sup>1</sup>, Ratul Mandal<sup>2</sup>, Rahul Dey<sup>2</sup>, Ayan Das<sup>2</sup>**

1. Department of Botany, Taxonomy and Plant Systematics Laboratory, Bejoy Narayan Mahavidyalaya, Hooghly-712147, e-mail: pkamilya.in@gmail.com
2. Research Fellow

---

### **Abstract**

A preliminary survey of flora (except fungi) has been done on the campus of Bejoy Narayan Mahavidyalaya, Itachuna, Hooghly. The survey record depicts approximately 188 flora, of which 173 angiosperms, 3 gymnosperms, 9 pteridophytes and 3 bryophytes. An artificial key has been made for their identification. Of total taxa, 79% natural and 21% are cultivated. The plants are protected as in situ conservation in the college boundary. The campus has also been selected for the ex-situ conservation of some threatened, endangered and rare taxa through a project funded by the West Bengal Biodiversity Board recently.

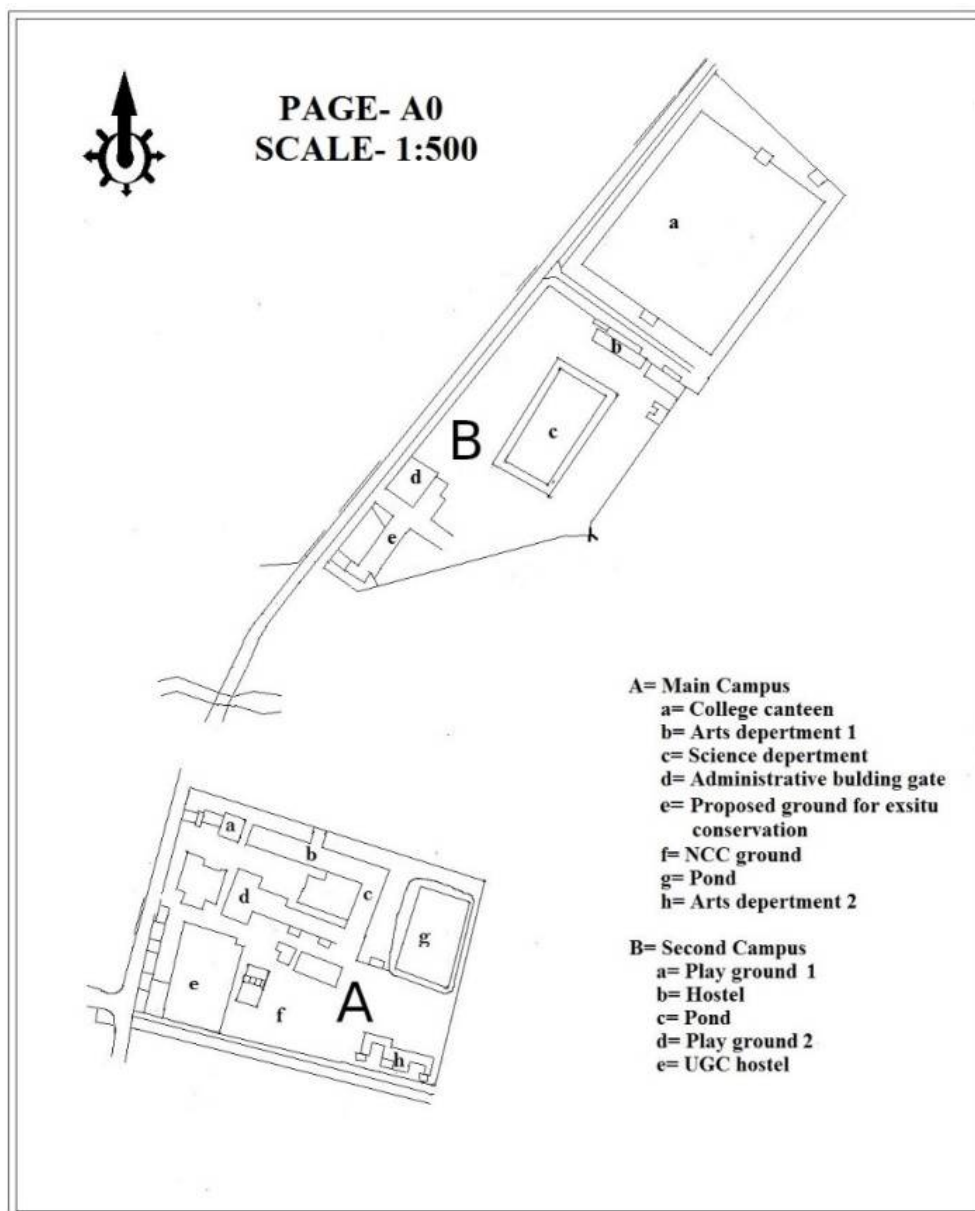
**Keywords:** Plant diversity, artificial key, plant habits

### **Introduction**

Bejoy Narayan Mahavidyalaya (formerly Itachuna college) situated 56 km from Kolkata in the lap of the huge area of plain land donated by Bejoy Narayan Kundu, Landlord of Itachuna village of Hooghly District, West Bengal, India, lies between 23° 02'14.67" N latitude and 88°18'82.04" E longitude. The main campus of the college including Girl's hostel (A) and the second campus – the UGC hostel campus including playground (B) cover an area of approximately 11 acres (Fig. 1). Within the village, a famous Shiva temple and Rajbari attract visitors throughout the world. The soil of this part of the Gangetic delta is alluvial having pH of 5.5-6.5 and temperature ranges between 21 °C to 26 °C. Entire Hooghly district is famous for the production of various kinds of crops due to its suitable climate and edaphic factors. These factors also encourage the natural habitat for various wild relatives in protected areas of college premises having some wastelands.

There were some workers (Prain-1903, Culshaw-1952, Chakravarty-1957) who

contributed to the flora of West Bengal in various ways. The perusal of literatures reveals that there is no published record on the flora of college campus, established in 1950, although it represents an interesting semi-natural composition of Hooghly District. Therefore, an attempt has been made to study the plant diversity of this unique area. The blueprint of the survey area is given in Fig. No.1.



**Fig. 1:** The study area

## Materials and Methods

The detailed floristic survey has been conducted from August, 2019 to December, 2020. Only the weed species are processed for the preparation of herbarium sheets following standard technique and they are deposited in the college herbarium section. The specimens are identified with the help of literatures-viz. Prain, 1903; Basak and Guha Bakshi, 1977; Hooker, 1854a, 1872-1897; Malick, 1966; Chakravarty, 1957; Datta and Maity, 1963; Guha, 1967, 1968; Basak, 1968a, 1968b, 1979; Sanyal, 1973; Hazra, 1997; Paul *et al.* 2015; Vinay Ranjan, *et al.* 2016; Lakshiminarasimhan *et al.* 2019 and BSI, Shibpur, Howrah.

The angiosperm taxa are arranged according to Takhtajan's system of classification (1997) along with their author's citation, habit, cultivated/natural, phenology and plate with figure number of some taxa (Table No. 1).

In the systematic enumeration part, the artificial key has been made from Bryophytes to Angiosperms with morphological traits only. The families and genera having only one taxon are represented in the parenthesis. The genera and species are highlighted in bold, italics in the key.

**Table No. 1:** Arrangement of taxa according to Takhtajan's system of classification-1997

Class	Name of the Families	Name of the species	Naturalized (N) or Cultivated (C)	Phenology	Habit
	Piperaceae	<i>Peperomia pellucida</i> (L.) Kunth (Pl. 2, Fig. A)	N	Throughout the year	He.
		<i>Piper longum</i> L.	N	June-Sept.	He.
	Menispermaceae	<i>Cocculus hirsutus</i> (L.) W. Theob.	N	Dec.-Mar.	Cl.
		<i>Stephania japonica</i> (Thunb.) Miers	N	Feb.-Apr.	Cl.
		<i>Tiliacora racemosa</i> Colebr. (Pl. 2, Fig. B)	N	Apr.-Dec.	Cl.
		<i>Tinospora cordifolia</i> (Willd.) Miers	N	May-June	Cl.
	Nyctaginaceae	<i>Boerhavia repens</i> L.	N	Throughout the year	He.
		<i>Bougainvillea</i>	C	Throughout	Sh.

M A G N O L I O P S I D A		<i>spectabilis</i> Willd.		the year	
	Amaranthaceae	<i>Aerva aspera</i> L. (Pl. 2, Fig. D)	N	Sept.-Apr.	He.
		<i>A. lanata</i> (L.) Juss.	N	May-Oct.	He.
		<i>Alternanthera paronychioides</i> A. St.-Hil.	N	June-Aug.	He.
		<i>A. philoxeroides</i> (Mart.) Griseb. (Pl. 2, Fig. C)	N	Dec.-Apr.	He.
		<i>A. sessilis</i> (L.) R.Br. ex. Dc.	N	Throughout the year	He.
		<i>Amaranthus tricolor</i> L.	N	Throughout the year	He.
		<i>A. spinosus</i> L.	N	July-May	He.
		<i>A. viridis</i> L. (Pl. 2, Fig. E)	N	Throughout the year	He.
	Polygonaceae	<i>Antigonon leptopus</i> Hook. & Arn.	N	Throughout the year	He.
		<i>Persicaria hydropiper</i> (L.) Delarbre	N	Apr.-Sept.	He.
		<i>P. orientalis</i> (L.) Spach	N	June-October.	He.
	Lecythidaceae	<i>Couropita guianensis</i> Aubl.	C	Jan.-onwards	Tr.
	Passifloraceae	<i>Passiflora caerulea</i> L. (Pl. 2, Fig. F)	C	Feb.-Sept.	Cl.
	Cucurbitaceae	<i>Cucumis melo</i> L.	N	Sept.-Nov.	Cl.
		<i>Coccinia grandis</i> (L.) Voigt	N	July-Sept.	Cl.
		<i>Diplocyclos palmatus</i> (L.) C. Jeffrey	N	Aug.-Oct.	Cl.
		<i>Luffa cylindrica</i> (L.) M. Roem. (Pl. 2, Fig. G)	N	July-Sept.	Cl.
		<i>Mukia maderaspatana</i> (L.) M. Roem. (Pl. 2, Fig. H)	N	July-Oct.	Cl.
		<i>Solena amplexicaulis</i> (Lam.) Gandhi	N	June-Dec.	Cl.
<i>Trichosanthes cucumerina</i> L.		C	July-Oct.	Cl.	
Tiliaceae	<i>Corchorus aestuans</i>	N	Sept.	He.	

		L.			
Sterculiaceae		<i>Melochia corchorifolia</i> L.	N	July-Oct.	He.
		<i>Pentapetes phoenicea</i> L.	N	Aug.-Nov.	He.
Bombaceae		<i>Bombax ceiba</i> L.	N	Feb-May	Tr.
Malvaceae		<i>Abutilon indicum</i> (L.) Sweet	C	Throughout the year	Sh.
		<i>A. theophrasti</i> Medik.	N	Aug.-Sept.	Sh.
		<i>Fioria vitifolia</i> L. (Pl. 2, Fig. I)	N	Throughout the year	Sh.
		<i>Hibiscus sabdariffa</i> L.	N	Oct.-Dec.	Sh.
		<i>Sida acuta</i> Burm.f.	N	Sept.-Dec.	He.
		<i>S. cordata</i> (Burm.f.) Borss Waalk.	N	Oct.-Nov.	He.
		<i>S. rhombifolia</i> L.	N	Oct.-Dec.	Sh.
Ulmaceae		<i>Trema orientalis</i> (L.) Blume	C	Aug.-Jan.	Tr.
Moraceae		<i>Artocarpus heterophyllus</i> Lam.	C	Jan.-March	Tr.
		<i>Ficus benghalensis</i> L.	N	Nov.-Jan.	Tr.
		<i>F. racemosa</i> L.	N	Nov.- Jan	Tr.
		<i>F. hispida</i> L.	N	June-july	Sh.
		<i>Streblus asper</i> Lour.	C	Jan.-March	Tr.
Urticaceae		<i>Pilea microphylla</i> (L.) Liebm. (Pl. 2, Fig. J)	N	Aug.-Nov.	He.
		<i>Pouzolzia zeylanica</i> (L.) Benn.	N	June-Oct.	He.
Euphorbiaceae		<i>Acalypha indica</i> L.	N	June-Dec.	He.
		<i>Codiaeum variegatum</i> (L.) Rumph. ex A. Juss.	C	Sept.-Dec.	Sh.
		<i>Croton bonplandianus</i> Baill. (Pl. 2, Fig. K)	N	Sept.-Nov.	He.
		<i>Euphorbia hirta</i> L.	N	Throughout the year	He.
		<i>Jatropha gossypifolia</i> L. (Pl. 2, Fig. L)	N	Aug.-Nov	Sh.
		<i>Mallotus repandus</i> (Willd.) Müll. Arg.	C	Nov.-Jan.	Sh.

		<i>Micrococca mercurialis</i> (L.) Benth. (Pl. 2, Fig. M)	N	Dec.-July	He.
		<i>Phyllanthus fraternus</i> G.L. Webster	N	July-Sept.	He.
		<i>P. reticulatus</i> Poir.	N	May-Nov.	Sh.
		<i>P. virgatus</i> G. Forst.	N	July-Nov.	He.
		<i>P. urinaria</i> L.	N	July-Octo.	He.
		<i>Ricinus communis</i> L. (Pl. 2, Fig. N)	N	Throughout the year	Sh.
	Combretaceae	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn. (Pl. 2, Fig. O)	C	Apr.-May	Tr.
		<i>T. chebula</i> Retz.	C	Apr.-June	Tr.
	Lythraceae	<i>Lagerstroemia speciosa</i> (L.) Pers.	C	Apr.-July	Tr.
	Onagraceae	<i>Ludwigia perennis</i> L.	N	Throughout the year	He.
	Myrtaceae	<i>Eucalyptus globulus</i> Labill.	C	Mar.-May	Tr.
		<i>Psidium guajava</i> L.	C	Apr.-May	Tr.
	Fabaceae	<i>Acacia auriculiformis</i> Benth.	C	Mar.-Dec.	Tr.
		<i>Alysicarpus vaginalis</i> (L.) DC.	N	July-Dec.	He.
		<i>Caesalpinia pulcherrima</i> (L.) Sw.	C	Mar.-Jan.	Tr.
		<i>Clitoria ternatea</i> L.	N	July-Jan.	Cl.
		<i>Crotalaria pallida</i> Aiton (Pl. 2, Fig. P)	N	Sept.-May	He.
		<i>C. spectabilis</i> Roth (Pl. 2, Fig. Q)	N	Sept.-Nov.	He.
		<i>Dalbergia sissoo</i> Craib	C	Mar.-June	Tr.
		<i>Erythrina variegata</i> L.	C	Mar.-May	Tr.
		<i>Leucaena leucocephala</i> (Lam.) de Wit	N	Jan.-Dec.	Tr.
		<i>Mimosa pudica</i> L.	N	Jan.-May.	He.
		<i>Peltophorum pterocarpum</i> (DC.) K.	N	Mar.-Nov.	Tr.

		Heyne			
		<i>Sesbania sesban</i> (L.) Merr.	N	Sept.-Nov.	Sh.
		<i>Senna sophera</i> (L.) Roxb.	N	Sept.-Oct.	Sh.
		<i>S. tora</i> (L.) Roxb.	N	Oct.-Feb.	Sh.
		<i>Tephrosia purpurea</i> (L.) Pers.	N	Sept.-Oct.	Sh.
Sapindaceae		<i>Allophylus serratus</i> (Hiern) Kurz	N	July-Oct.	Sh.
		<i>Cardiospermum</i> <i>halicacabum</i> L. (Pl. 2, Fig. R)	N	Sept.-Dec.	Cl.
Rutaceae		<i>Aegle marmelos</i> (L.) Correa	N	Jan.-May	Tr.
		<i>Glycosmis</i> <i>pentaphylla</i> (Retz.) DC. (Pl. 2, Fig. S)	N	Aug.-Apr.	Tr.
		<i>Murraya koenigii</i> (L.) Spreng. (Pl. 2, Fig. T)	C	Feb.-Apr.	Sh.
		<i>M. paniculata</i> (L.) Jack (Pl. 2, Fig. U)	C	June-Oct.	Tr.
Anacardiaceae		<i>Mangifera indica</i> L.	C	Jan.-May	Tr.
		<i>Spondias pinnata</i> (L.f.) Kurz	C	Mar.-Apr.	Tr.
Oxalidaceae		<i>Oxalis corniculata</i> L.	N	Throughout the year	He.
Rhamnaceae		<i>Ziziphus oenoplia</i> (L.) Mill.	N	Oct.-Jan.	Sh.
Vitaceae		<i>Cayratia pedata</i> (Lam.) Gagnep.	N	Mar.-June	Cl.
		<i>C. trifolia</i> (L.) Domin (Pl. 2, Fig. V)	N	Dec.	Cl.
Asteraceae		<i>Acmella ciliata</i> (Kunth) Cass.	N	Throughout the year	He.
		<i>A. uliginosa</i> (Sw.) Cass.	N	Nov.-Dec.	He.
		<i>Ageratum conyzoides</i> (L.) L.	N	Oct.-Dec.	He.
		<i>Blumea lacera</i> (Burm.f.) DC.	N	Dec.-Mar.	He.
		<i>Cyanthillium</i> <i>cinereum</i> (L.) H. Rob.	N	Nov. -Feb.	He.

		(Pl. 3, Fig. A)			
		<i>Eclipta prostrata</i> L. (L.) (Pl. 3, Fig. B)	N	Throughout the year	He.
		<i>Eleutheranthera ruderalis</i> (Sw.) Sch. Bip. (Pl. 3, Fig. C)	N	May-Nov.	He.
		<i>Mikania micrantha</i> Kunth	N	Sept.-Feb	Cl.
		<i>Parthenium hysterophorus</i> L.	N	Oct.-Mar.	He.
		<i>Synedrella nodiflora</i> (L.) Gaertn.	N	July.-Jan.	He.
		<i>Tridax procumbens</i> L.(L) (Pl. 3, Fig. D)	N	Throughout the year	He.
	Rubiaceae	<i>Breonia chinensis</i> (Lam.) Capuron	C	Jun.-Aug.	Tr.
		<i>Dentella repens</i> (L.) J.R.Forst. & G. forst.	N	Sept.-Mar.	He.
		<i>Ixora coccinea</i> L. (Pl. 3, Fig. E)	C	Throughout the year	Sh.
		<i>Oldenlandia corymbosa</i> Aiton (Pl. 3, Fig. F)	N	Aug.-Oct.	He.
		<i>O. paniculata</i> L.	N	Throughout the year	He.
		<i>Paederia foetida</i> L.	N	Throughout the year	Cl.
		<i>Pavetta indica</i> L.	N	May-July	Sh.
		<i>Spermacoce hispida</i> L.	N	May-Aug.	He.
	Apocynaceae	<i>Allamanda cathartica</i> L.	C	Throughout the year	Cl.
		<i>Calotropis gigantea</i> (L.) Dryand. (Pl. 3, Fig. G)	N	Nov.-Apr.	Sh.
		<i>Carissa carandas</i> L.	C	Dec.-Apr.	Sh.
		<i>Hemidesmus indicus</i> (L.) R. Br. ex Schult.	N	Oct.-Jan.	Cl.
		<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	C	Mar.-May	Sh.
		<i>Tabernaemontana divaricata</i> (L.) R.Br.ex Roem. &	C	July-Sept.	Sh.



		Schult. (Pl. 3, Fig. H)			
		<i>Thevetia peruviana</i> (Pers.) K. Schum	N	Throughout the year	Tr.
		<i>Catharanthus roseus</i> L. (Pl. 3, Fig. I)	C	Throughout the year	Sh.
Solanaceae		<i>Datura metel</i> L.	N	Aug.-Oct.	Sh.
		<i>Physalis minima</i> L. (Pl. 3, Fig. J)	N	Aug.-Nov.	He.
		<i>Solanum indicum</i> L. (Pl. 3, Fig. K)	N	Aug.-Nov.	Sh.
		<i>S. nigrum</i> L. (Pl. 3, Fig. L)	N	May-Oct.	He.
		<i>S. sisymbriifolium</i> Lam. (Pl. 3, Fig. M)	N	Nov.-Jan.	He.
		<i>S. torvum</i> Sw.	N	Apr.-May	Sh.
Convolvulaceae		<i>Evolvulus nummularius</i> (L.) L. (Pl. 3, Fig. N)	N	Aug.-Sept.	He.
		<i>Hewittia scandens</i> (J. König ex Milne) Mabb.	N	Oct.-Jan.	He.
		<i>Merremia hederacea</i> (Burm. f.) Hallier f.	N	Oct.-Mar.	He.
		<i>Operculina turpethum</i> (L.) Silva Manso	N	Oct.-Dec.	Cl.
Oleaceae		<i>Nyctanthes arbor-tristis</i> L.	C	Jul-Oct	Sh.
Scrophulariaceae		<i>Lindenbergia indica</i> Vatke	N	Sept.-Dec.	He.
		<i>Lindernia ciliata</i> (Colsm.) Pennell (Pl. 3, Fig. O)	N	Sept.-Dec.	He.
		<i>L. crustacea</i> (L.) F. Muell.	N	Aug.-Oct.	He.
		<i>L. hyssopoides</i> (L.) Haines	N	May-Oct.	He.
		<i>L. viscosa</i> (Hornem.) Merr.	N	Jul-Oct	He.
		<i>Scoparia dulcis</i> L.	N	Throughout the year	He.
Bignoniaceae		<i>Tecoma stans</i> (L.) Juss. ex Kunth	C	Oct-May	Sh.
		<i>Dipteracanthus</i>	N	July-Nov.	He.

	Acanthaceae	<i>prostratus</i> (Poir.) Nees.				
		<i>D. tuberosus</i> Nees	N	July-May	He.	
		<i>Hemigraphis hirta</i> (Vahl) T. Anderson	N	Nov.-Mar.	He.	
		<i>Phlogacanthus</i> <i>thyrsiflorus</i> Nees	N	Feb.-Apr.	Sh.	
		<i>Rungia pectinata</i> (L.) Nees	N	Nov.-Dec.	He.	
	Verbenaceae	<i>Clerodendrum inerme</i> (L.) Gaertn.	N	Aug.-Jan.	Sh.	
		<i>C. infortunatum</i> L.	N	Throughout the year	Sh.	
		<i>Duranta erecta</i> L.	N	Throughout the year	Sh.	
		<i>Lantana camara</i> L. ( Pl. 3, Fig. P)	N	Throughout the year	Sh	
		<i>Stachytarpheta indica</i> (L.) Vahl	C	Aug.-Nov.	He.	
		<i>Tectona grandis</i> L.f.	C	June -Sept.	Tr.	
	Lamiaceae	<i>Anisomeles indica</i> (L.) Kuntze	N	May-Oct.	He.	
		<i>Leucas aspera</i> (Wiild.) Link (Pl. 3, Fig. Q)	N	July-Oct.	He.	
	L I L I O P S	Amaryllidaceae	<i>Crinum asiaticum</i> L.	C	Aug.-Nov.	He.
		Asphodelaceae	<i>Aloe vera</i> (L.) Burm.f. (Pl. 3, Fig. R)	C	Aug.-Dec.	He.
Musaceae		<i>Ravenala</i> <i>madagascariensis</i> Sonn.	C	Sept.-Nov.	He.	
Zingiberaceae		<i>Cheilocostus</i> <i>speciosus</i> (J. koenig) C.D. Specht	C	Aug.-Dec.	He.	
Commelinaceae		<i>Commelina</i> <i>benghalensis</i> L.	N	Throughout the year	He.	
		<i>Cyanotis axillaris</i> (L.) D. Don. ex Sweet (Pl. 3, Fig. S)	N	July-Dec.	He.	
Cyperaceae		<i>Cyperus rotundus</i> L.	N	Aug.-Oct.	He.	
		<i>Kyllinga odorata</i> Vahl	N	Aug.- Jan.	He.	
Poaceae	<i>Brachiaria reptans</i>	N	July-Nov.	He.		

I D A		(L.) C.A. Gardner & C. E. Hubb.				
		<i>Chloris barbata</i> Sw.	N	July-Apr.	He.	
		<i>Cynodon dactylon</i> (L.) Pers.	N	Throughout the year	He.	
		<i>Dactyloctenium aegyptium</i> (L.) Willd. (Pl. 3, Fig. T)	N	Throughout the year	He.	
		<i>Digitaria sanguinalis</i> (L.) Scop.	N	Aug.-Sept.	He.	
		<i>Eleusine indica</i> (L.) Gaertn.	N	July-Jan.	He.	
		<i>Eragrostis amabilis</i> (L.) Wight & Arn.	N	Throughout the year	He.	
		<i>Imperata cylindrica</i> (L.) Raeusch.	N	Mar.-July	He.	
		<i>Paspalidium flavidum</i> (Retz.) A. Camus	N	Oct.	He.	
		<i>Paspalum scrobiculatum</i> L.	N	Jan.-Nov.	He.	
		<i>Setaria glauca</i> (L.) P. Beauv. (Pl. 3, Fig. U)	N	Oct.	He.	
		Areaceae				
			<i>Phoenix sylvestris</i> (L.) Roxb.	N	Jan.-Mar.	Tr.
		Araceae	<i>Alocasia indica</i> (Lour.) Spach	N	Aug.-Dec.	He.
	<i>Colocasia antiquorum</i> Schott		N	Aug.-Oct.	He.	
	<i>Typhonium trilobatum</i> (L.) Schott (Pl. 3, Fig. V)		N	May-Oct.	He.	
<b>Abbreviations:</b> He.: Herb; Sh.: Shrub; Tr.: Tree; Cl.: Climber; Pl.: Plate number; Fig.: Figure						

## Result

### Systematic enumeration:

The recorded taxa are characterized and the result of which is the artificial key is represented in the following way.

### Artificial key (key is valid for the taxa studied only)

#### Bryophytes

##### Key to the genera

1. Plants prostrate; dichotomously branched ..... 2
- 1a. Plants leafy, erect, always growing on the brick made fencing; not branched.....***Semibarbula***
2. Rosette, growing on rock surface or on soil or in the crevices of brick made foot path; air pores not distinct. ....***Riccia***
- 2a. Plants scattered on the wall on the brick surface of shady place; distinct air pores present on the dorsal surface ..... ***Cyathodium***

#### Pteridophytes

##### Key to the genera

1. Plants on marshy areas or float on water bodies..... 2
- 1a. Plants terrestrial or semiaquatic..... 5
2. Plants rooted, free floating..... 3
- 2a. Plants rooted, attached to ground or free floating..... 4
3. Leaves entire with distinct midrib, close-erecto-patent..... ***Salvinia***
- 3a. Leaves deeply-lobed, each lobe with distinct midrib; not erectopatent .....  
.....***Azolla***
4. Plants rooted, climber attached to soil on marshy places or floating on water surface; sori heterosporous, bisporangiate in sporocarps ..... ***Marsilea***
- 4a. Plants erect, succulent, tufted herbs; sori homosporous scattered on the under surface covered by reflexed leaf margin..... ***Ceratopteris***
5. Climbing herb with wide twining stems; spore-bearing organ as spike with sporangia clasped on either side of fertile pinnae.....***Lygodium***
- 5a. Plants smaller or large erect or suberect herbs with rhizomes.....6
6. Plants grow on dry or marshy ground with kidney shaped indusium on the pinnae or indusia linear.....7
- 6a. Plants grown on abandoned brick made wall, indusia false.....8
7. Indusia linear.....***Diplazium***
- 7a. Indusia kidney shaped.....***Dryopteris***
8. Leaflets oblong-linear; sori linear, marginal, covered by false indusia.....***Pteris***
- 8a. Leaflets fan shaped; sori at the terminal portion of the leaflets covered by the

- true or false indusial.....9  
 9. Double indusia opening apically towards the edge of the frond as two valves.....*Lindsaya*  
 9a. Indusia single opening inwardly towards the midrib of frond.....*Adiantum*

## Gymnosperms

### Key to the genera

1. Erect tree, stem generally unbranched, leaves pinnately compound, spirally clustered at the stem apex .....2
- 1a. Bushy shrubs, stem always branched, leaves 4-ranked-scaly.....*Thuja*
2. Leaflets linear, primary vein one, venation hypodromous.....*Cycas*
- 2a. Leaflets elliptic-oblong, primary vein more than one, venation almost parallelodromous.....*Zamia*

## Angiosperms

### Key to the family (Magnoliopsida)

1. Plants with unisexual flowers..... 2
- 1a. Plants with bisexual flowers..... 7
2. Herbs or undershrubs or trees..... 3
- 2a. Climbers..... 6
3. Large or small trees..... 4
- 3a. Herbs or undershrubs or shrubs..... 5
4. Cauliflorous trees; inflorescence hypanthodium.....Moraceae
- 4a. Non-cauliflorous trees; inflorescence lax cymose cluster at the node.....Ulmaceae (*Trema orientalis*)
5. Herbs; without latex.....Urticaceae
- 5a. Herbs, shrubs or undershrubs, with watery or watery-milky or milky latex (except *Phyllanthus*)..... Euphorbiaceae
6. Soft climber with branched tendrils; stamens synandrous; fruit pepo..... Cucurbitaceae
- 6a. Moderately or extensively lianas without tendrils; stamens usually free; fruit drupe.....Menispermaceae
7. Leaves compound.....8
- 7a. Leaves simple.....14
8. Fruit legume or lomentum.....Fabaceae
- 8a. Fruit different .....9
9. Trees; fruit drupe or capsule.....10
- 9a. Herbs and climbers with or without tendrils.....12
10. Leaves 8-12-foliolate (except *Mangifera indica*), pulvinate; fruit drupe.....Anacardiaceae
- 10a. Leaves trifoliolate or digitately 5-foliolate, not pulvinate, fruit capsule.....11

11. Leaves trifoliolate, evergreen unarmed trees; ovary 2-chambered .....  
 .....Bignoniaceae (*Tecoma stans*)
- 11a. Leaves digitately 5-foliolate; deciduous tree with armed trunk; ovary 5-  
 chambered .....Bombacaceae (*Bombax ceiba*)
12. Plants herb, stem creeping and rooting at the nodes; flowers  
 yellow.....Oxalidaceae (*Oxalis corniculata*)
- 12a. Plants soft or lianas; flowers yellow or greyish-white.....13
13. Leaves pinnately trifoliolate .....Sapindaceae
- 13a. Leaves digitately 3-foliolate or pedately 5-11 foliolate.....Vitaceae
14. Large or small trees or lianas.....15
- 14a. Herbs, shrubs, undershrubs or soft climbers.....21
15. Scandent armed shrubs or lianas .....Rhamnaceae (*Ziziphus oenoplia*)
- 15a. Large trees, unarmed.....16
16. Trees with conical crown shape; fruit aggregate berry like.....Annonaceae
- 16a. Spreading trees; fruits simple.....17
17. Trees cauliflorous; fruit with woody shell or amphisarca like.....  
 Lecythidaceae (*Couroupita guianensis*)
17. Trees not cauliflorous; fruit capsule or drupaceous.....18
18. Fruit capsule; leaf domatia absent..... 19
- 18a. Fruit drupaceous smooth or with externally 5-small wings; leaf domatia  
 present..... Combretaceae
19. Small trees; inflorescence dichotomous to trichotomous cymes; corolla salver-  
 shaped, tube yellow but limbs white.....Oleaceae (*Nyctanthes arbor-  
 tristis*)
- 19a. Large trees; flowers solitary or on large panicles; sepals and petals united  
 together or free, greenish-white or purple.....20
20. Leaves subsessile; sepals and petals united to form a warty lid; ovary always  
 four chambered..... Myrtaceae
- 20a. Leaves petiolate; sepals and petals free; ovary 3-6 chambered  
 .....Lythraceae (*Lagerstroemia speciosa*)
21. Plants climbers (except *Peperomia*).....22
- 21a. Plants herbs or shrubs or undershrubs (except *Anthocephalus cadamba*)  
 ..... 24
22. Tendrillar climbers; presence of androphore; staminal corona present; flowers  
 showy.....Passifloraceae (*Passiflora  
 caerulea*)
- 22a. Tendril absent, androphore, staminal corona absent; flowers not show.....23
23. Plants with latex, stigma capitate or bifid; carpels 2 .....Convolvulaceae
- 23a. Plants without latex; stigma simple; carpels 3-4 ..... Piperomiaceae
24. Milky latex present.....Apocynaceae
- 24a. Milky latex absent.....25

25.	Stipules ochreate or interpetiolar or free lateral.....	26
25a.	Stipules	
	absent.....	30
26.	Stipules free lateral, leaves palminerved.....	27
26a.	Stipules ochreate or interpetiolar.....	29
27.	Stamens monadelphous, anthers uniform; flowers solitary .....	Malvaceae
27a.	Stamens free, anthers different; flowers raceme.....	28
28.	Plants mucilaginous; stamens numerous.....	Tiliaceae ( <i>Corchorus aestuans</i> )
28a.	Plants not mucilaginous; stamens 5.....	Sterculiaceae
29.	Stipules ochreate; perianth papery, persistent; fruits trigonous nut .....	Polygonaceae
29a.	Stipules inter or intrapetiolar; calyx and corolla present; fruits different .....	Rubiaceae
30.	Inflorescence typically capitula; stamens syngenesious.....	Asteraceae
30a.	Inflorescence otherwise; stamens otherwise.....	31
31.	Ovary obliquely placed with the mother axis; leaves with unequal base.....	Solanaceae
31a.	Ovary median or lateral; leaf base different.....	32
32.	Stamens didynamous epipetalous.....	33
32a.	Stamens 4 or 5 or more, free.....	36
33.	Inflorescence spike with leafy bracts and bracteoles; seeds on jaculator .....	Acanthaceae
33a.	Bracts and bracteoles absent or if present not leafy; seeds not on jaculator ...	34
34.	Inflorescence compact or largely verticillaster; fruit carcerule.....	Lamiaceae
34a.	Inflorescence spike or aggregate spike or raceme.....	35
35.	Fruit drupe; corolla tube bent (exception <i>Tectona</i> ).....	Verbenaceae
35a.	Fruit capsule; corolla bilabiate or personate.....	Scrophulariaceae
36.	Shrub; leaves with abundant gland dots.....	Rutaceae
36a.	Herbs, leaves without gland dots.....	37
37.	Ovary inferior; carpels 4 or 5; sepals and petals distinct .....	Onagraceae ( <i>Ludwigia perennis</i> )
37a.	Ovary superior; carpels one; perianth present.....	38
38.	Perianth persistent papery; flowers on aggregate spike.....	Amaranthaceae
38a.	Perianth not papery but united tube like; flowers on panicle or umbellate .....	Nyctaginaceae

## Menispermaceae

### Key to the species

1. Leaves with peltate base; inflorescence umbeliform; stamens united into a peltate synandrium..... *Stephania japonica*

- 1a. Leaf base various; inflorescence thyrsoid or panicle or raceme or pseudopanicled.....2
2. Inflorescence thyrsoid; leaves 3-5 lobed; petals usually bifid at apex.....*Cocculus hirsutus*
- 2a. Inflorescence axillary panicle, terminal raceme or pseudo-panicles; leaves entire; petals entire.....3
3. Woody extensive climber (lianas); leaves ovate-lanceolate; carpels 8-12.....*Tiliacora racemosa*
- 3a. Herbaceous climber; leaves broadly ovate or ovate-rounded; carpels 3.....*Tinospora cordifolia*

## Cucurbitaceae

### Key to the species

1. Tendrils simple (unbranched).....2
- 1a. Tendrils compound (branched).....4
2. Corolla rotate; staminodes absent or rudimentary; leaves hispidly hairy..... *Mukia maderaspatana*
- 2a. Corolla campanulate; staminodes 3, distinct; leaves glabrous or with rigid hairs, not hispid.....3
3. Fruits obovoid or obscurely trigonous; leaf margin dentate, without oil glands.....*Cucumis melo*
- 3a. Fruits oblong; leaves entire often with oil glands.....*Coccinia grandis*
4. Leaves with auriculate base.....*Solena amplexicaulis*
- 4a. Leaf base not auriculate.....5
5. Leaves deeply palmately lobed; flowers fasciculate..... *Diplocyclos palmatus*
- 5a. Leaves 5-lobed, orbicular-reniform to broadly ovate; flowers solitary or on raceme.....6
6. Fruits oblong cylindrical, about 60 cm long; leaves 5-lobed.....*Luffa cylindrica*
- 6a. Fruits ovoid-conical about 3.5-4.2 cm long; leaves orbicular-reniform to broadly ovate.....*Trichosanthes cucumerina*

## Euphorbiaceae

### Key to the genera/ or species

1. Leaves opposite-decussate; plants always with milky latex; inflorescence small clusters of compound cyathia at the node; male flower with single stamen.....*Euphorbia hirta*
- 1a. Leaves alternate or spiral alternate with watery-milky or without latex; inflorescence other than cyathia; stamens more than one.....2



2. Branches with flowers and fruits hang downwards.....*Phyllanthus*
- 2a. Branches or stem with flowers and fruits not hanging downwards.....3
3. Plants small tree or lianas.....4
- 3a. Plants herbs or under shrubs.....5
4. Lianas, dioecious, stamens not branched.....*Mallotus repandus*
- 4a. Small tree, monoecious, stamens numerous, branched.... *Ricinus communis*
5. Plants undershrubs.....6
- 5a. Plants herbs.....7
6. Plants undershrubs with branched glandular trichomes; seeds carunculate; stamens monadelphous.....*Jatropha gossypifolia*
- 6a. Plants without glandular trichomes; seed ecarunculate; stamens free.....*Codiaeum variegatum*
7. Leaf base with two domatia; seeds with small caruncle.....*Croton bonplandianus*
- 7a. Leaf domatia absent; seeds arillate or not..... 8
8. Female flowers axillary with large accrescent bracts; typical leaf mosaic present.....*Acalypha indica*
- 8a. Female flowers without large bracts but on raceme which are usually bent downwards; leaf mosaic absent.....*Micrococca mercurialis*

### Key to the species

#### Genus - *Phyllanthus*

1. Plants bushy shrub; flowers with comparatively long pedicels.....*P. reticulatus*
- 1a. Plants herbs; flowers subsessile..... 2
2. Suberect or prostrate herbs; leaves linear to oblong-obovate.....*P. virgatus*
- 2a. Erect herbs with leaves oblong obovate.....3
3. Basal leaves large, close-set, brownish beneath; profuse branching at base.....*P. urinaria*
- 3a. Leaves identical size throughout, green above, glaucous beneath.....*P. fraternus*

#### Sterculiaceae

### Key to the species

1. Leaves oblong-ovate or suborbicular; flowers terminal, densely crowded; stamens 5.....*Melochia corchorifolia*
- 1a. Leaves hastate-lanceolate; flowers axillary cymes, stamens 15.....*Pentapetes phoenicia*

## Verbenaceae

### Key to the genera/ or species

1. Bushy armed shrubs.....*Lantana camara*
- 1a. Unarmed shrubs, tree or undershrubs.....2
2. Tree with 5 perfect stamens in regular flowers.....*Tectona grandis*
- 2a. Shrub or undershrub with 2 or 4 perfect stamens in irregular flowers.....3
3. Inflorescence long spike; perfect stamens 2 ..... *Stachytarpheta indica*
- 3a. Inflorescence raceme or dichasial cyme.....4
4. Stamens extended in hypocrateriform corolla; thorns absent; inflorescence compound dichasium.....*Clerodendrum*
- 4a. Stamens inserted in tubular corolla with unequal lobes or bilabiatae; inflorescence raceme.....*Duranta erecta*

### Key to the species

#### Genus - *Clerodendrum*

1. Plants erect undershrubs; leaves large cordate-ovate with crenate-serrate margin.....*C. infortunatum*
- 1a. Plants bushy shrubs; leaves ovate-oblong with entire margin .....  
 .....*C. inerme*

## Apocynaceae

### Key to the species

1. Plants climber.....2
- 1a. Plants undershrubs or small trees.....3
2. Leaves whorled or opposite; pollinia absent; fruits spiny capsule .....*Hemidesmus indicus*
- 2a. Leaves always opposite; pollinia present; fruits smooth follicle.....  
*Allamanda cathartica*
3. Shrub, undershrubs or small tree.....4
- 3a. Herb.....*Catharanthus roseus*
4. Unarmed shrubs or undershrubs or trees, fruits follicle or drupe .....5
- 4a. Armed shrub or small trees; fruits ellipsoid or globose berry.....*Carissa carandas*
5. Fruits follicle or drupe.....6
- 5a. Fruit drupe or drupe like.....7
6. Small tree with linear leaves; corolla funnel shaped.....*Thevetia peruviana*
- 6a. Undershrub with ovate-oblong leaves; corolla salver shaped.....*Rauvolfia*

- serpentina*
7. Shrubs; pollinia absent; anthers sagittate.....*Tabernemonatana divaricata*
- 7a. Small trees; pollinia present; anthers attached to stigma forming gynostegium.....*Calotropis gigantea*

## Malvaceae

### Key to the genera/ or species

1. Epicalyx absent.....2
- 1a. Epicalyx present.....3
2. Undershrubs.....*Abutilon*
- 2a. Herbs.....*Sida*
3. Epicalyx free, calyx 5-lobed.....*Fioria vitifolia*
- 3a. Epicalyx adnate to calyx; calyx cup-shaped.....*Hibiscus sabdariffa*

### Key to the species

#### Genus - *Abutilon*

1. Carpels 8-12; leaves orbicular or cordate.....*A. theophrasti*
- 1a. Carpels more than 15; leaves ovate to suborbicular..... *A. indicum*

#### Genus - *Sida*

1. Prostrate or semiprostrate herbs; mericarps without prominent reticulations....  
*S. cordata*
- 1a. Erect herbs; mericarps with prominent reticulations.....2
2. Leaves lanceolate to linear..... *S. acuta*
- 2a. Leaves oblong to ovate.....*S. rhombifolia*

## Polygonaceae

### Key to the genera/or species

1. Large climber with inflorescence modified to tendrils.....*Antigonon leptopus*
- 1a. Herbs with terminal spike like paniced cyme, not modified to tendril .....  
 .....*Persicaria*

### Key to the species

#### Genus - *Persicaria*

1. Undersurface of leaf and surface of stem with reddish tinge.....*P. hydropiper*
- 1a. Leaves and stem greenish throughout.....*P. orientalis*

## **Amaranthaceae**

### **Key to the genera**

1. Leaves alternate; flowers unisexual.....*Amaranthus*
- 1a. Leaves opposite; flowers bisexual.....2
2. Anthers 2-celled; ovary oblong or ovate.....*Aerva*
- 2a. Anthers 1-celled; ovary orbicular.....*Aletrnanthera*

### **Key to the species**

#### **Genus - *Amaranthus***

1. Plants with axillary spines.....*A. spinosus*
- 1a. Plants without spines.....2
2. Leaf apex emarginate; flowers clustered at axillary as well as terminal.....*A. tricolor*
- 2a. Leaf apex rounded or obtuse; flowers on terminal or branched spikes.....*A. viridis*

#### **Genus - *Aerva***

1. Prostrate herbs; filaments subulate; bracts and bracteoles not spinescent....*A. lanata*
- 1a. Erect herbs; filaments filiform; bracts and bracteoles spinescent..... *A. aspera*

#### **Genus - *Alternanthera***

1. Habitat marshy or aquatic; leaves elliptic-lanceolate.....*A. philoxeroides*
- 1a. Habitat terrestrial; leaves oblong or oblanceolate.....2
2. Leaves oblong; stamens 2-3, rarely 5.....*A. sessilis*
- 2a. Leaves oblanceolate; stamens always 5.....*A. paronychioides*

## **Sapindaceae**

### **Key to the species**

1. Plants tendriller climber where inflorescence modified to tendrils; fruits dehiscent.....*Cardiospermum helicacabum*
- 1a. Plants bushy shrub, tendrils absent; fruits indehiscent.....*Allophyllus serratus*

## Vitaceae

### Key to the species

#### Genus - *Cayratia*

1. Leaves pedately 5-11 foliolate.....*C. pedata*
- 1a. Leaves trifoliolate.....*C. trifolia*

## Anacardiaceae

### Key to the species

1. Leaves compound; deciduous tree .....*Spondias pinnata*
- 1a. Leaves simple; evergreen tree ..... *Mangifera indica*

## Combretaceae

### Key to the species

#### Genus - *Terminalia*

1. Fruit ovoid with five hard projecting wings.....*T. arjuna*
- 1a. Fruit ellipsoid or obovate, 5-ribbed.....*T. chebula*

## Nyctaginaceae

### Key to the species

1. Diffuse herb; leaves opposite; bracts absent.....*Boerhavia repens*
- 1a. Bushy lianas; leaves alternate; bracts three large leafy, coloured.....  
*Bougainvillea spectabilis*

## Lamiaceae

### Key to the species

1. Undershrubs; flowers purple.....*Anisomeles indica*
- 1a. Herbs; flowers white.....*Leucas aspera*

## Acanthaceae

### Key to the genera/ or species

1. Corolla subequally 5-lobed.....2
- 1a. Corolla bilabiate.....3
2. Flowers solitary or lax raceme; corolla oblique.....*Dipteracanthus*
- 2a. Flowers terminal or pseudoaxillary small head-like spike; corolla not oblique.....*Hemigraphis hirta*
3. Flowers in terminal thyrses or narrow panicles; corolla brick-red .....  
..... *Phlogacanthus thyrsiflorus*
- 3a. Flowers in terminal one-sided spike; corolla blue..... *Rungia pectinata*

## Key to the species

### Genus - *Dipteracanthus*

1. Plants erect; often with tuberous roots .....*D. tuberosus*
- 1a. Plants prostrate; rooting at the nodes, roots not tuberous..... *D. prostratus*

## Fabaceae

### Key to the sub-families under Fabaceae

1. Flowers regular; stamens definite; petals valvate.....*Mimosoideae*
- 1a. Flowers irregular; stamens 10; petals imbricate or vexillary.....2
2. Stamens diadelphous (9) + 1; corolla papilionaceous.....*Faboideae*
- 2a. Stamens 10, heterostemonous; corolla imbricate.....*Caesalpinoideae*

## Mimosoideae

### Key to species

1. Inflorescence capitate; leaves bipinnate compound; pods straight or curved ...2
- 1a. Inflorescence axillary spike; leaves phyllode; pods twisted.....*Acacia auriculiformis*
2. Plants herbs; stamens 4; pods subfulcate.....*Mimosa pudica*
- 2a. Plants tree; stamens 8; pods flat.....*Leucaena leucocephala*

## Caesalpinoideae

### Key to the genera/ or species

1. Plants tree or shrubs.....2
- 1a. Plants herbs.....*Senna*
2. Plants tree; petal obovate.....*Peltophorum pterocarpum*
- 2a. Plants shrubs; petals orbicular- oblong.....*Caesalpinia pulcherrima*

## Key to the species

### Genus - *Senna*

1. Leaflets more than three pairs, elliptic oblong.....*S. sophora*
- 1a. Leaflets three pairs, obovate.....*S. tora*

## Faboideae

### Key to the genera/ or species

1. Plants erect or prostrate herbs or climber.....2
- 1a. Plants undershrubs or tree.....4
2. Plants climber; leaflets three, stipel present.....*Clitoria ternatea*
- 2a. Plants herbs; leaflets more than three or leaf simple, stipel absent.....3

- 3. Leaves simple; plants prostrate herb.....*Alysicarpus vaginalis*
- 3a. Leaves compound; plants erect herb.....*Tephrosia purpurea*
- 4. Plants tree; leaves always compound.....6
- 4a. Plants undershrubs; leaves simple or compound.....5
- 5. Stamens 10, monadelphous; leaves simple or trifoliolate .....*Crotalaria*
- 5a. Stamens 10, diadelphous (9) + 1; leaves compound, leaflets 4-19 pairs.....  
*Sesbania sesban*
- 6. Unarmed large tree; flowers yellowish white.....*Dalbergia sissoo*
- 6a. Armed small tree; flowers bright scarlet.....*Erythrina variegata*

### Key to the species

#### Genus - *Crotalaria*

- 1. Leaves simple; stipule foliaceous.....*C. spectabilis*
- 1a. Leaves trifoliolate compound; stipule absent.....*C. pallida*

### Rutaceae

#### Key to the genus

- 1. Plants armed tree.....*Aegle marmelos*
- 1a. Plants shrubs.....2
- 2. Inflorescence axillary panicle; berry globose.....*Glycosmis pentaphylla*
- 2a. Inflorescence axillary or terminal corymb or cyme; berry oblong or ovoid  
 .....*Murraya*

### Key to the species

#### Genus - *Murraya*

- 1. Leaflets 9-25, dull green; berries black.....*M. koenigii*
- 1a. Leaflets 3-9, glossy green; berries red.....*M. paniculata*

### Solanaceae

#### Key to the genus/species

- 1. Anthers connivent in a cone, dehiscence porous.....*Solanum*
- 1a. Anthers not connivent, dehiscence longitudinal.....2
- 2. Corolla yellowish- green; fruit berry crowned by dilated accrescent calyx  
 .....*Physalis minima*
- 2a. Corolla white; fruit capsule; calyx never accrescent.....*Datura metel*

### Key to the species

#### Genus - *Solanum*

- 1. Plants unarmed herbs; leaves entire or sinuately lobed.....*S. nigrum*
- 1a. Plants armed shrubs or small tree.....2

2. Plants small tree like; leaves once or twice pinnatifid; densely spiny throughout.....***S. sisymbriifolium***
- 2a. Plants shrubs; leaves sinuately lobed, spines not so dense throughout.....3
3. Flowers white; spines not distributed on the veins.....***S. torvum***
- 3a. Flowers blue; spines on the veins.....***S. indicum***

## Myrtaceae

### Key to the species

1. Leaves leathery, often hang obliquely; petals cohered to form a cup; fruit capsule .....***Eucalyptus globulus***
- 1a. Leaves coriaceous, horizontal to angular upward; petals free; fruit berry .....***Psidium guajava***

## Moraceae

### Key to the genera/ or species

1. Inflorescence hypanthodium.....***Ficus***
- 1a. Inflorescence otherwise.....2
2. Stamens 4; fruit berry..... ***Streblus asper***
- 2a. Stamen 1; fruit sorosis.....***Artocarpus heterophyllus***

### Key to the species

#### Genus - *Ficus*

1. Leaf apex obtuse; hypanthodium sessile.....***F. benghalensis***
- 1a. Leaf apex otherwise; hypanthodium stalked.....2
2. All parts of the plant with more or less hispidly hairy; leaves with entire margin.....***F. hispida***
- 2a. Hairs otherwise; leaves with serrate margin.....***F. racemosa***

## Convolvulaceae

### Key to the species

1. Plants prostrate, rooting at the node; leaves near about orbicular.....  
 .....***Evolvulus nummularius***
- 1a. Plants climber, not rooting at the node; leaves variously.....2
2. Stem, peduncles and petioles winged; calyx large, boat like fleshy.....  
 .....***Operculina tarpethum***
- 2a. Stem, peduncle and petiole not winged; calyx otherwise.....3
3. Leaves lobed or angled; corolla with purplish eye.....***Hewittia scandens***
- 3a. Leaves entire; corolla marked with dark violet lines.....***Merremia hederacea***



## Rubiaceae

### Key to the genera/ or species

1. Plants large or small tree.....2
- 1a. Plants herbs, shrubs or climbers.....3
2. Flowers 2-3 chotomously branched corymb; petals 4.....*Pavetta indica*
- 2a. Flower small on capitate head; petals 5.....*Breonia chinensis*
3. Plants climber; leaves foetid when crushed; stipules triangular.....*Paederia foetida*
- 3a. Plants herbs or shrubs; leaves not foetid; stipules otherwise.....4
4. Herbs; interpetiolar stipules united at the node forming cup with or without cilia.....5
- 4a. Shrubs; intrapetiolar stipules without cilia; inflorescence mixed corymb .....*Ixora coccinea*
5. Interpetiolar stipules with cilia; flowers tetramerous.....6
- 5a. Interpetiolar stipule without cilia; flowers pentamerous.....*Dentella repens*
6. Leaves spatulate, coriaceous, stem reddish- green at upper side and green at lower side.....*Spermacoce hispida*
- 6a. Leaves lanceolate to ovate-lanceolate, herbaceous; stem green throughout. ....*Oldenlandia*

### Key to the species

#### Genus - *Oldenlandia*

1. Leaves ovate-lanceolate; inflorescence panicle.....*O. paniculata*
- 1a. Leaves lanceolate; inflorescence corymb.....*O. corymbosa*

## Asteraceae

### Key to the genera/ or species

1. Capitula heterogamous.....2
- 1a. Capitula homogamous.....6
2. Plants typical procumbent habit; peduncle long.....*Tridax procumbens*
- 2a. Habit otherwise; peduncle small, capitula simple or compound.....3
3. Capitula compound; leaves usually lanceolate above to pinnately-dissected below.....*Parthenium hysterophorus*
- 3a. Capitula simple; leaves not dissected.....4
4. Capitula white.....*Eclipta prostrata*
- 4a. Capitula yellow.....5
5. Capitula sessile, aggregated into group of 1-4 in leaf axils.....*Synedrella nodiflora*

- 5a. Capitula peduncled, solitary.....*Acmella*
- 6. Plants climber.....*Mikania micrantha*
- 6a. Plants herbs.....7
- 7. Capitula yellow.....8
- 7a. Capitula otherwise.....9
- 8. Leaves lyrate-lobed; head axillary panicles.....*Blumea lacera*
- 8a. Leaves crenate to serrate; heads solitary.....*Eleutheranthera ruderalis*
- 9. Leaves opposite-decussate; stem adpressed greyish-pubescent; involucre bracts 2-serrate.....*Cyanthillium cinericum*
- 9a. Leaves alternate; stem terete, pilose; involucre bracts 4-seriate .....  
*Ageratum conyzoides*

### Key to the species

#### Genus - *Acmella*

- 1. Heads with ray florets 8-12.....*A. ciliata*
- 1a. Heads with ray florets 5-6.....*A. uliginosa*

### Scrophulariaceae

#### Key to the genera or species

- 1. Hispid plants grow on brick made wall; flowers yellow..... *Lindenbargia indica*
- 1a. Plants not hispid and grow well in soil also; flowers white.....2
- 2. Flowers tetramerous, regular.....*Scoparia dulcis*
- 2a. Flowers pentamerous, irregular.....*Lindernia*

### Key to the species

#### Genus - *Lindernia*

- 1. Leaf base semi-amplexical, teeth very sharp and each terminating into a spine.....*L. ciliata*
- 1a. Leaf base otherwise, leaf margin serrate or crenate-serrate or  $\pm$  entire, not terminating into spine.....2
- 2. Capsules oblong-ovoid to ellipsoid; plants glabrous.....3
- 2a. Capsules globose; plants with sparsely to densely hispid hairs.....*L. viscosa*
- 3. Leaves linear-lanceolate to oblong, margin finely dentate, petiolate to sessile.....*L. crustacea*
- 3a. Leaves ovate, margin crenate-serrate, sessile.....*L. hyssopioides*

## Urticaceae

### Key to the species

1. Female perianth 3-5 partite; leaves opposite.....*Pilea microphylla*
- 1a. Female perianth tubular; leaves mostly alternate.....*Pouzolzia zeylanica*

## Piperaceae

### Key to the species

1. Plants prostrate, climber, rooting at the node; stem not transparent.....  
.....*Piper longum*
- 1a. Plants erect, transparent stem.....*Peperomia pellucida*

### Key to the family (Liliopsida)

1. Inflorescence spikelets.....2
- 1a. Inflorescence otherwise.....3
2. Stem cylindrical, fistular; phyllotaxy distichous; fruits caryopsis.....Poaceae
- 2a. Stem triangular, solid; phyllotaxy tristichous; fruit compressed or trigonous nuts.....Cyperaceae
3. Tree with simple or compound leaves.....4
- 3a. Herbs with always simple leaves .....5
4. Plants with apical crown of compound leaves.....Arecaceae (*Phoenix sylvestris*)
- 4a. Plants with simple fan shaped distichous close set leaves, tip not spinous.....Musaceae (*Ravenala madagascariensis*)
5. Leaves succulent with spiny or entire margin.....6
- 5a. Leaves not succulent.....7
6. Leaves with spiny teeth at margin and tips; flowers drooping, yellow to purplish.....Asphodelaceae (*Aloe vera*)
- 6a. Leaves entire, not spiny at tips; flowers white, erect.....Amaryllidaceae (*Crinum asiaticum*)
7. Flowers unisexual in spadix inflorescence, naked.....Araceae
- 7a. Flowers bisexual, in spike or 2-fid cymes, not naked.....8
8. Flowers with petaloid staminodes modified to labellum, plants aromatic.....Zingiberaceae (*Cheilocostus speciosus*)
- 8a. Flowers without labellum; plants not aromatic.....Commelinaceae

## Commelinaceae

### Key to the species

1. Perfect stamens 3, cymes solitary with spathaceous bract..... *Commelina benghalensis*

1a. Perfect stamens 6, cymes scorpioid, axillary.....*Cyanotis axillaris*

## Araceae

### Key to the species

1. Leaves with peltate base, ovate-cordate; appendage in inflorescence cylindrical .....2
- 1a. Leaves without peltate base, 3-5-lobed; appendage in inflorescence barren ..... *Typhonium trilobatum*
2. Placentation basal.....*Alocasia indica*
- 2a. Placentation parietal.....*Colocasia antiquorum*

## Cyperaceae

### Key to the species

1. Styles 2-fid; rachilla of spikelets distichous; fruits laterally compressed.....  
*Kyllinga monocephala*
- 1a. Styles 3-fid; rachilla of spikelets deciduous; fruit trigonas..... *Cyperus rotundus*

## Poaceae

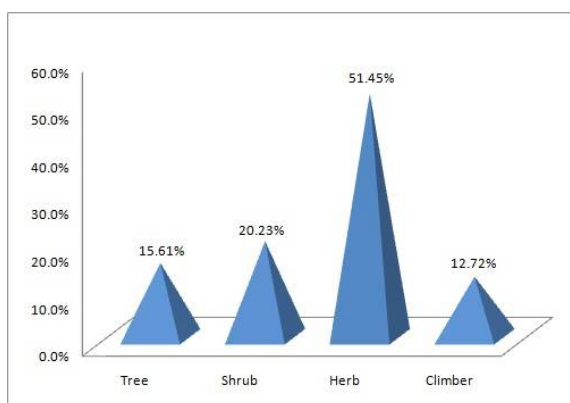
### Key to the species

1. Spikelets one to many flowered.....2
- 1a. Spikes 2-flowered always.....6
2. Spikelets with a fertile floret or with reduced florets.....3
- 2a. Spikelets with 2 or more fertile florets.....4
3. Spikelets without reduced florets, awns absent.....*Cynodon dactylon*
- 3a. Spikelets with one or more reduced florets, 3-awned.....*Chloris barbata*
4. Spikelets on panicles.....*Eragrostis tenella*
- 4a. Spikelets spike like.....5
5. Rachis projected beyond the terminal spikelets as appendix; rachis horizontal comparatively short.....*Dactyloctenium aegyptiacum*
- 5a. Rachis not projected beyond the terminal spikelets; lateral rachises angular, comparatively large.....*Eleusine indica*
6. Spikelets with paired glumes as long as spikelets, awned, silky-white.....  
.....*Imperata cylindrica*
- 6a. Spikelets paired or with solitary glumes.....7
7. Spikelets with an involucre of bristles.....*Setaria glauca*
- 7a. Spikelets not subtended by involucre of bristles.....8
8. Lemma of upper floret thinly cartilaginous, smooth shining, margin hyaline.....*Digitaria sanguinalis*
- 8a. Lemma of upper floret thick crustaceous or coriaceous, margin inrolled .....9

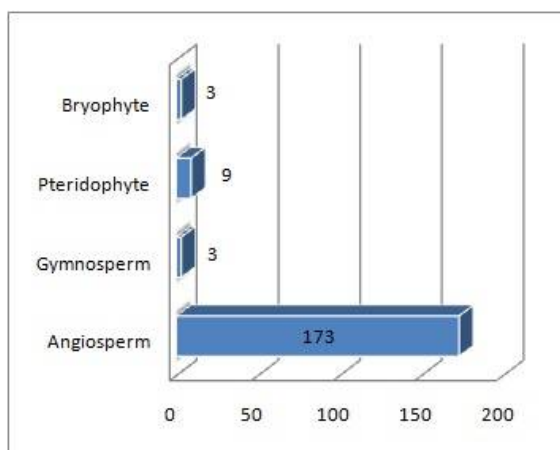
- 9. Lower glume turned towards the rachis; spikelets adaxial ..... ***Brachiaria reptans***
- 9a. Lower glume either absent or turned away from the rachis; spikelets abaxial .....10
- 10. Lower glume usually absent.....***Paspalum scrobiculatum***
- 10a. Lower glume usually present but reduced.....***Paspalidium flavidum***

The protected waste places of such institutional campuses depict 173 angiosperms, 3 gymnosperms, 9 pteridophytes and 3 bryophytes (Fig. 3).

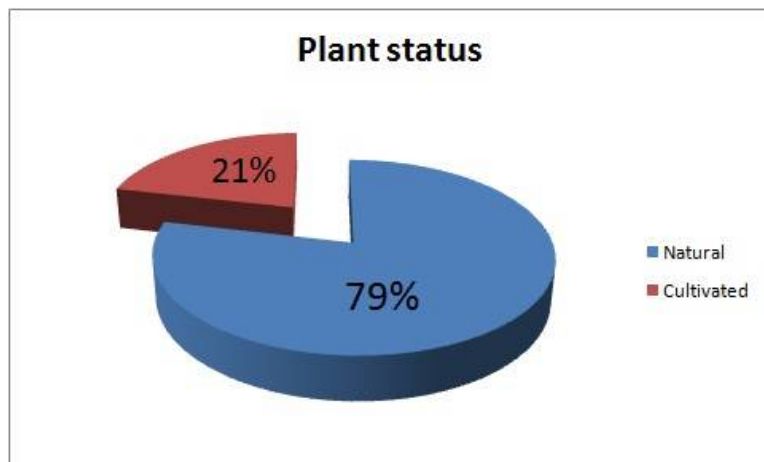
The natural herbaceous taxa are of the highest percentage (51.45%) on the campus (Fig. 2). Again 79 % of taxa are natural, while only 21% are cultivated that are evident in the pai diagram (Fig. 4).



**Fig. 2:** Percentage of plant habits of angiosperms



**Fig. 3:** No. of plant groups with species recorded from survey area.



**Fig. 4:** Cultivated and natural plant status from studied taxa only.

## Discussion

The waste patches of the well-protected campus become an appropriate vegetational pocket for the growth of different plants groups since 1950 when the college was established. Some developmental activities like an excavation of water bodies, plantations etc. were done by the college authority but without disturbing the natural sporadic patches of vegetation. However, no attempt was made for the identification of such plant resources for academic purposes. After proper identification, boards having scientific names and uses have been displayed on some tree taxa in the campus for awareness purposes.

An *ex-situ* conservation strategy of indigenous taxa marked out by the college authority after acquiring a project entitled “**Creation of Biodiversity Conservation-Education Centre**” from West Bengal Biodiversity Board vide Memo No. 637/ IV (Bio)-2/2020 dt. 26.08.2020 along with the restoration of natural flora in this protected area.

Thus, such work may provide immense help to students, academicians, authorities and local people remembering the strategy of MOEF (G.O.F. No. 9-5/2015/GIM/MGNREGS dt. 03.03.2015).

## Acknowledgement

We are very grateful to the principal for providing research opportunities in the Department of Botany, Bejay Narayan Mahavidhyalaya, Itachuna, Hooghly-712147.

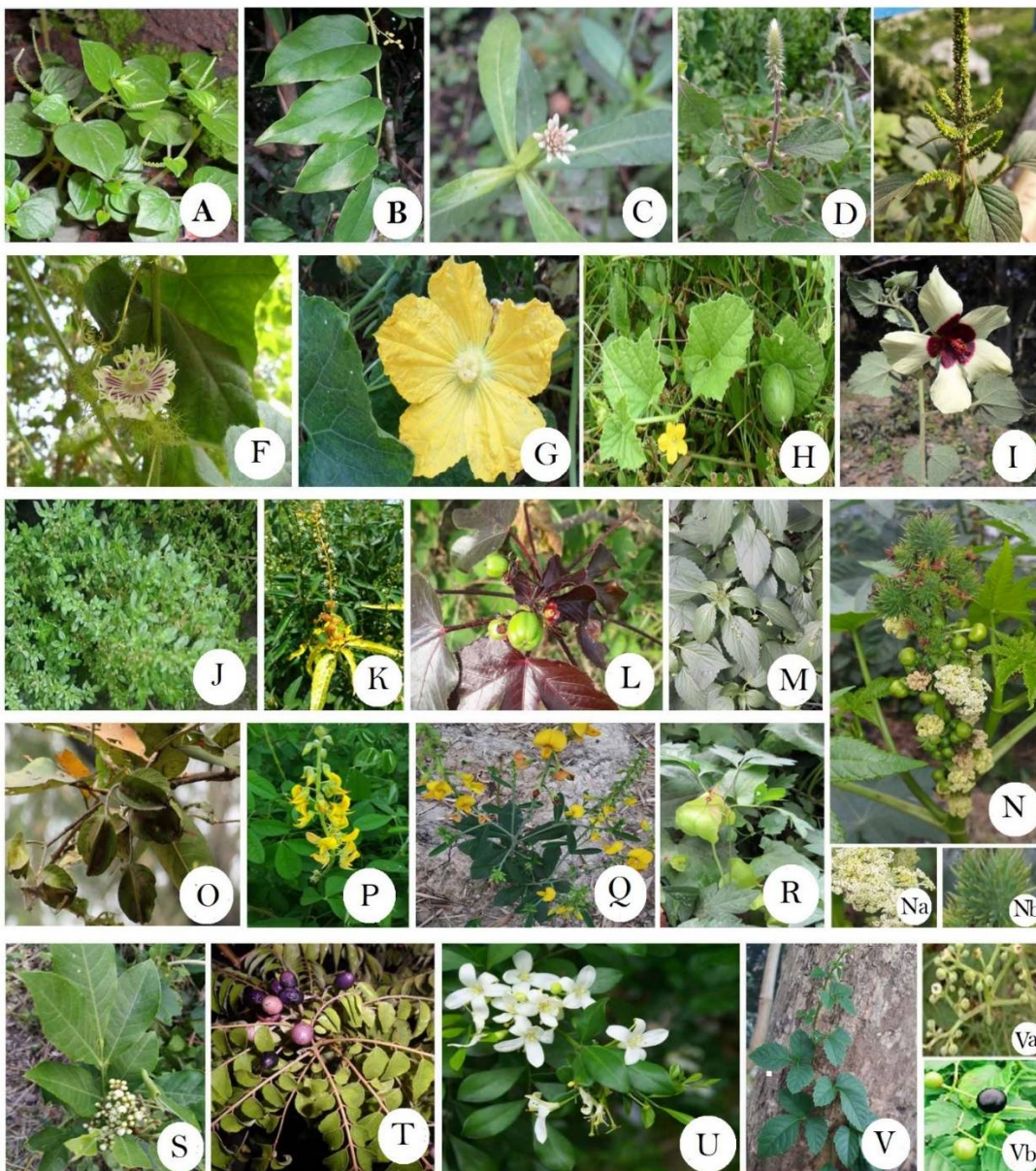
## References

- Basak, R. K. 1968a. *Ophioglossum nudicaule* L. f. var. *macrorrhizum* (Ktze.) Clausen: A new record for West Bengal & Eastern India. *Indian For.*, **94**:639-640.
- Basak, R. K. 1968b. A note on the distribution of some plants in Birbhum district, West Bengal. *Bull. Bot. Surv. India*, **10**:254-257.
- Basak, R. K. 1979. Some noteworthy plants from Birbhum district, West Bengal. *Indian For.*, **105** (+6): 477-481.
- Basak, R. K. and D. N. Guha Bakshi. 1977. Floristic Studies on the Lower Ganga Plain of the state of West Bengal: Present status and future strategies. *Bull. Bot. Surv. India*, **19**:42-55.
- Chakravarty, A. K. 1957. Weed flora of the paddy fields of West Bengal. *Indian Agric.*, **1**:19-25.
- Culshaw, J.C. 1952. Some West Bengal Plants. *J. Bombay. Nat. Hist. Soc.*, **49**:188-196.
- Datta, P. C. and Maity, R. K. 1963. Paddy field weeds of Midnapore district. *Indian Agric.*, **7**:147-165.
- Guha, B. P. 1967. A New variety of *Cardanthera uliginosa* Buch-Ham. from the district of Birbhum (West Bengal). *Bull. Bot. Soc. Bengal*, **21**:47-48.
- Guha, B. P. 1968. An account of the floristic survey of Birbhum district (West Bengal) 1. Ranunculaceae to Moringaceae. *Ibid.*, **22**: 109-121.
- Hazra, P. K. 1997. *Flora of West Bengal*, **Vol. -1**. BSI.
- Hooker, J. D. 1854a. On the climate and vegetation of the temperate and cool regions of East Nepal and the Sikkim Himalaya mountains. *J. Agric. Soc. India*, **8**: 35-36, 73-95.
- Hooker, J. D. 1872-1897. *The Flora of British India*, **7 vols**. London.
- Lakshminarasimhan, P., Dash, S. S., and Singh. P., Chowdhery. H. J. 2019. *Flora of West Bengal*, **Vol-IV**. BSI.
- Malick, K. C. 1966. A Contribution to the flora of Purulia district, West Bengal. *Bull. Bot. Surv. India*, **8**:45-59.
- Paul, T. K., Lakshminarasimhan. P., Chowdhery, H. J., Dash, S.S., Sing. P. 2015. *Flora of West Bengal*, **Vol-II**. BSI.
- Prain, D. 1903. *Bengal Plants*, **Vol.-I & II**. Bishen Singh Mahendra Pal Singh.
- Ranjan, V., Lakshminarasimhan. P., Dash, S. S. and Chowdhery, H. J. 2016. *Flora of West Bengal*, **Vol. -III**. BSI.
- Takhtajan, A. 2003. *Diversity and classification of flowering plants*. Bishen Singh Mahendra Pal Singh.

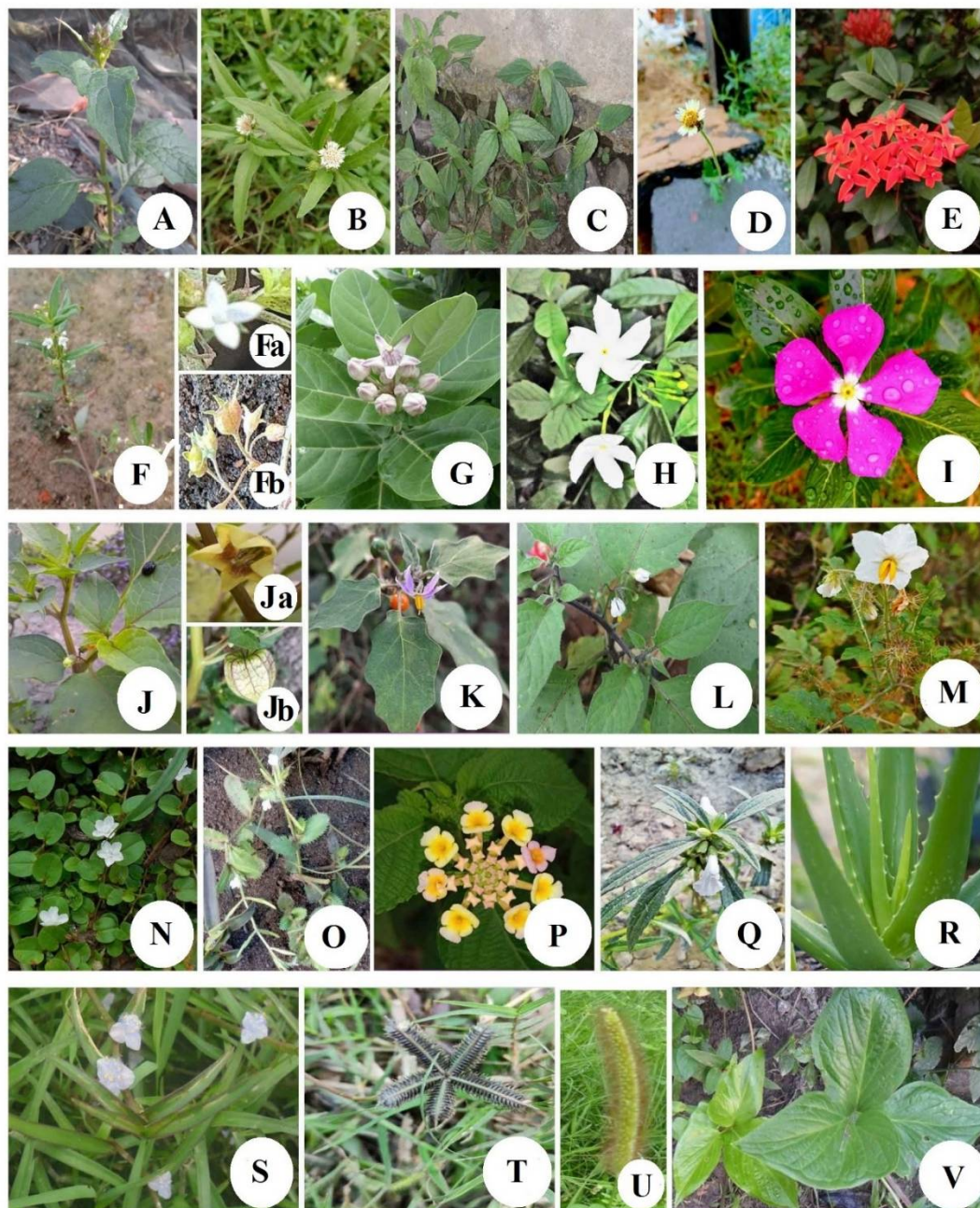


**Plate-1. Figs. A.** *Riccia* sp., **B.** *Azolla* sp., **C.** *Marsilea* sp., **D.** *Diplazium* sp., **E.** *Dryopteris* sp.,  
**F.** *Adiantum* sp., **G.** *Cycas* sp., **H.** *Thuja* sp., **I.** *Zamia* sp.





**Plate-2. Figs. A.** *Peperomia pellucida*; **B.** *Tiliacora racemosa*; **C.** *Alternanthera philoxeroides*; **D.** *Achyranthes aspera*; **E.** *Amaranthes viridis*; **F.** *Passiflora caerulea*; **G.** *Luffa cylindrica*; **H.** *Mukia maderaspatana*; **I.** *Fioria vitifolius*; **J.** *Pilea microphylla*; **K.** *Croton bonplandianus*; **L.** *Jatropha gossypifolia*; **M.** *Micrococca mercurialis*; **N.** *Ricinus communis*, **Na.** Male flower and **Nb.** Female flower of *R. communis*; **O.** *Terminalia arjuna*; **P.** *Crotalaria pallida*; **Q.** *Crotalaria spectabilis*; **R.** *Cardiospermum halicacabum*; **S.** *Glycosmis pentaphylla*; **T.** *Murrya koenigii*; **U.** *M. panicuata*; **V.** *Cayratia trifolia*, **Va.** Flower and **Vb.** Fruit of *C. trifolia*



**Plate-3. Figs. A.** *Cyanthillium cinereum*; **B.** *Eclipta prostata*; **C.** *Eleutheranthera ruderalis*; **D.** *Tridax procumbens*; **E.** *Ixora coccinea*; **F.** *Oldenlandia corymbosa*, **Fa.** Flower and **Fb.** Fruit of *C. corymbosa*; **G.** *Calotropis gigantea*; **H.** *Tabernaemontana divartica*; **I.** *Vinca rosea*; **J.** *Physalis minima*, **Ja.** Flower and **Jb.** Fruit of *P. minima*; **K.** *Solanum indicum*; **L.** *S. nigrum*; **M.** *S. sisymbriifolium*; **N.** *Evolvulus nummularius*; **O.** *Lindernia ciliata*; **P.** *Lantana camara*; **Q.** *Leucas aspera*; **R.** *Aloe vera*; **S.** *Cyanotis axillaris*; **T.** *Dactyloctenium aegyptium*; **U.** *Setaria glauca*; **V.** *Tiphonium trilobatum*