International Journal of
Life Sciences
International Peer Reviewed Open Access Refereed Journal

Int. J. of Life Sciences, 2023; 11 (1): 7-20
ISSN:2320-7817(p) | 2320-964X(o)

Research Article Open Access

The flowering plants diversity of Indira Gandhi University, Meerpur, Rewari, Haryana

Sharma Yogesh[1], Singh Nidhan[2*], Yadav Alpa[1]

[1]Department of Botany, Indira Gandhi University, Meerpur, Rewari, Haryana
[2]Department of Botany, I.B. (PG) College, Panipat, Haryana
[*]Corresponding Author: nidhansinghkuk@gmail.com

Manuscript details:

Received: 17.01.2023
Accepted: 20.03.2023
Published: 25.04.2023

Cite this article as:
Sharma Yogesh, Singh Nidhan, Yadav Alpa (2023) The flowering plants diversity of Indira Gandhi University, Meerpur, Rewari, Haryana, *Int. J. of Life Sciences*, 11 (1): 7-20.

Available online on http://www.ijlsci.in
ISSN: 2320-964X (Online)
ISSN: 2320-7817 (Print)

ABSTRACT

The campus of Indira Gandhi University (IGU), Meerpur is situated in the village Meerpur of district Rewari in southern Haryana. The study area exhibits the geographical features of the sandy plains and Aravali hills, which in turn result into the sand-dune vegetation growing in the area. The university campus, therefore, represents the characteristic vegetation which, in fact, is much diverse in contrast to what may seem from a general look. Majority of the land area of the campus is unattended till now because of the under-development stage of campus infrastructure, thus may be considered as a wasteland like habitat. The current work provides a comprehensive checklist of the flowering plants of the IGU campus, which may prove to be significant for the conservation purposes of plant wealth of the area before it is lost in developmental activities, along with the color photographs of some of the recorded species found to be 'uncommon' or 'rare' in occurrence. The data in this work was obtained from extensive surveys taken during the period of about last 3 years.

Keywords: Angiosperms, Checklist, Conservation, Haryana, IGU Campus.

INTRODUCTION

Plants are indispensable for human beings and form a life support system for almost all the organisms on this planet. They serve our primary as well as secondary requirements of food, fodder and medicine. Their use in health care needs is almost as old as human beings themselves. Traditional medicine, i.e. use of plants in pure or crude form has maintained its popularity in a number of Asian countries, such as China, India, Japan and Pakistan (Singh *et al.*, 2014). Moreover, plant diversity of an area determines the ecological and environmental composition of the area as they are the primary producers of a community, which itself is determined by various geographical features of the area. The kind of vegetation occurring in any area represents various other ecological factors including climatic and edaphic factors, which in turn reflects into many biotic factors (faunal species) of the area. Therefore, it is quite necessary to primarily

conserve the plant diversity of an area to stabilize the ecological community processes. A thorough assessment and documentation of the diversity of any area is, thus, mandatory, prior to any attempts to apply conservation strategies for biodiversity.

Indira Gandhi University (IGU) is a state university in Haryana, which was established in 2013 by the Government of Haryana with an aim to provide the local population an access to higher education and research. The campus of university, spread about over 100 acres of land, is situated in the village Meerpur of Rewari district, about 12 kilometers from the city. Being a newly started university, the campus is currently in its initial stages of development, represented only by 10, mid-sized major buildings and an under-developed herbal garden. Therefore, most of the land is occupied by waste-lands, which get enriched with wild plants shortly after seasonal rain showers in summer and spring. Although, the geographical area of the campus is not significantly large to form a major floristic work, still its floristic diversity documentation can be a worthwhile task, especially in light of the fact that the infrastructure of the campus may be developed to include many of present habitats of the flowering plants and the campus region represents a major chunk of the plant diversity in the region. This fact is further enforced by our work's results as the campus region is found to be represented by significant plant diversity with over 200 species of wild angiosperms, with some rare and uncommon species as well.

MATERIALS AND METHOD

Study Area

Haryana falls in the Agro-Climatic Zone VI of India, which is called as "Trans-Gangetic Plains Region". The four main geographical features of the state are: Shivalik Hills, Ghaggar-Yamuna plains, semi-desert sandy plains and Aravali Hills. The IGU Campus is situated in the district Rewari, adjacent to Rajasthan border in southern Haryana. Rewari also is a part of National Capital Region (NCR). It is located at 28.18°N 76.62°E with an average elevation of 245 m. The mean temperature ranges from 0°C to 46°C during winter and summer seasons, respectively. Most of the rainfall occurs during July to September with a little rainfall in winters. Average annual rainfall in the Rewari district is about 55.3 cm (Figure 1). The district Rewari, along with the adjoining regions of southern Haryana, possesses some distinct characteristics in terms of soil and climate conditions.

The south-western tract of the land in Haryana, which includes districts Sirsa, Hisar, Bhiwani, Mahendragarh, Rewari and Gurugram, bears the features of semi-desert sandy plains with some sightings of low-level hills of Aravali range. These districts remain acutely moisture-deficient for most part of the year because of the high evapo-transpiration rates and low precipitation levels. The distribution of rainfall varies from 213 mm in south-west Haryana to 1400 mm in north-east Haryana. Severe droughts are common in the south-western districts, including Rewari. However, sometimes floods are seen in these districts, representing the extremities in climate of the region (Kumar, 2001). The seasonal and diurnal variations in these districts also reach the extremes in contrast to other parts of the state, temperature being up to 50°C in summer and below 0°C in winter.

Because of these differences in the soil and the climatic conditions between southern Haryana and the upper moisture surplus regions of the state, the type of vegetation as a whole also differs significantly between these regions. The vegetation in southern Haryana is dominated by the prevalence of shrubs and other drought-tolerant plant species.

Figure 1: Map showing location of IGU in district Rewari of state Haryana. (Source of Image: Wikipedia)

For instance, the district Gurugram has the largest number of shrub plants among all districts of the state. Thus, in accordance with this pattern, the vegetation and the agricultural crops grown in the region and district Rewari are significantly distinct from the northern parts of the state.

Along with such characteristic distinctiveness, the region is also facing some major challenges to biodiversity, which are mainly led by some anthropogenic factors. These include unplanned developmental activities, unscientific mining activities (e.g., Kund Slate mining site in Rewari), high air and water pollution and lowering deep levels of ground water table as a result of unscientific water drainage activities e.g., water table in Khol block of Rewari was reported to be 182 feet in 2016 (Saini, 2016).

Methodology

The university campus and the places under its immediate vicinity were extensively and regularly surveyed to observe and record the wild plant diversity, during three years, starting from July, 2019 till June, 2022. Field visits were taken frequently, extensively during summer-spring seasons in a frequency of usually 2-3 days, exploring almost every corner of the campus. Recording of various plants was done mainly in the form of digital photographs, in flowering and/or fruiting stages. To avoid an abrupt delineation of the study area, which was physically brought recently by university walls (even that is not yet completed fully), the vegetation in the immediate vicinity of the campus was also recorded carefully. To study various diagnostic features of plants, required information was recorded as field notes. Plants were photographed in field and later identified by consulting available floras and other literature (Duthie, 1903-22; Kaur *et al.*, 2016; Maheshwari, 1963; Singh *et al.*, 2014). To confirm the identification of recorded flowering plants, special emphasis was given to virtual herbaria, online databases and expert discussions available on various web-resources and online forums, most prominent being 'eFloraofIndia', 'Flowers of India', 'eFloras'. In order to acquire latest nomenclatural information about accepted names and synonyms, two nomenclatural web databases were extensively consulted, *viz*., "Plants of the World Online (POWO)", which is produced and managed by Kew Science, RBG, Kew, and "World Flora Online (WFO)", a project of the World Flora Online Consortium. Latest angiosperm families classification system, i.e. Angiosperm Phylogeny Group IV (APG IV, 2016; APWeb, 2017), was consulted to know about the latest classification and accepted names of various angiosperm families.

RESULTS

The thorough survey which was made throughout the span of around three years resulted in compiling of almost all the flowering plants of the campus, including some significant plants from its immediate vicinity. The checklist enlists a total of 208 flowering plant species, which can be considered a good number, looking generally at the visible geographical features of the region [Table 1, Plates A-E (Photos by Yogesh Sharma)]

Table 1: Alphabetically ordered List of the flowering plants recorded from the campus, with their accepted botanical names, families, common names and ecological notes on their occurrence patterns.

Sr. No.	Species	Family	Common Name(s)	Occurrence*
1.	*Abutilon indicum* (L.) Sweet	Malvaceae	Indian Mallow, Kanghi	Frequent
2.	*Achyranthes aspera* L.	Amaranthaceae	Prickly Chaff Flower, Chirchitta, Bhirchitta	Frequent
3.	*Acrachne racemosa* (B. Heyne *ex* Roth) Ohwi	Poaceae	Chinkhe, Jaura	Occasional
4.	*Aerva javanica* (Burm.*f.*) Juss. *ex* Schult.	Amaranthaceae	Desert Cotton, Safed Bui	Common
5.	§*Agave americana* L.	Asparagaceae	Century Plant, Kamal Cactus	Occasional
6.	*Ageratum houstonianum* Mill.	Asteraceae	Floss Flower, GandheJhaar	Frequent
7.	§*Ailanthus excelsa* Roxb.	Simaroubaceae	Mahanimb	Common
8.	*Albizia lebbeck* (L.) Benth.	Fabaceae	Siris Tree, Saras	Occasional
9.	*Alhagi maurorum* Medik.	Fabaceae	Camel Thorn, Javasa, Oont-jhari	Frequent
10.	§*Alstonia scholaris* (L.) R.Br.	Acanthaceae	Scholar Tree, Saptaparni	Occasional
11.	*Alysicarpus monilifer* (L.) DC.	Fabaceae	Necklace-pod Alyce Clover	Rare
12.	*Alysicarpus ovalifolius* (Schumach.)	Fabaceae	Oval-leaf Alyce Clover	Occasional

Sr. No.	Species	Family	Common Name(s)	Occurrence*
	J.Léonard			
13.	*Amaranthus spinosus* L.	Amaranthaceae	Prickly Amaranth, KantaChaulai	Common
14.	*Amaranthus viridis* L.	Amaranthaceae	Green Amaranth, JungliChaulai	Frequent
15.	*Anisomeles indica* (L.) Kuntz.	Lamiaceae	Indian Catmint, Kala Bhangra	Occasional
16.	*Arenaria serpyllifolia* L.	Caryophyllaceae	Thyme-leaved Sandwort	Rare
17.	*Argemone mexicana* L.	Papaveraceae	Mexican Prickly Poppy	Frequent
18.	*Aristida adscencionis* L.	Poaceae	Common Needle Grass, Lappa	Occasional
19.	*Artemisia scoparia* Waldst. & Kit.	Asteraceae	Redstem Wormwood, Seeta-bani	Common
20.	*Asparagus racemosus* Willd.	Asparagaceae	Shatawari, Shatamuli	Occasional
21.	*Asphodelus tenuifolius* Cav.	Asphodelaceae	Onion Weed	Frequent
22.	*Azadirachta indica* A.Juss.	Meliaceae	Neem	Occasional
23.	§*Bauhinia purpurea* L.	Fabaceae	Purple Orchid Tree, Kaniar	Rare
24.	§*Beaucarnea recurvata* (K.Koch & Fintelm.) Lem.	Asparagaceae	Ponytail Palm	Rare
25.	*Boerhavia diffusa* L.	Nyctaginaceae	Red Hogweed, Punarnava	Frequent
26.	*Bombax ceiba* L.	Malvaceae	Silk Cotton Tree, Semal	Rare
27.	§*Bougainvillea spectabilis* Willd.	Nyctaginaceae	Great Bougainvillea, Booganbel	Occasional
28.	*Brachiaria distachya* (L.) T.Q. Nguyen	Poaceae	Signal Grass	Frequent
29.	*Brachiaria ramosa* (L.) T.Q. Nguyen	Poaceae	Browntop Millet, Makra	Common
30.	*Calotropis procera* (Aiton) W.T. Aiton	Apocynaceae	Aak	Occasional
31.	*Cannabis sativa* L.	Cannabaceae	Marijuana, Bhang	Common
32.	*Cardamine flexuosa* With.	Brassicaceae	Wavy Bittercress	Rare
33.	*Carthamus oxyacantha* M.Bieb.	Asteraceae	Wild Safflower	Occasional
34.	§*Cascabela thevetia* (L.) Lippold	Apocynaceae	Peeli Kaner	Occasional
35.	§*Casuarina equisetifolia* L.	Casuarinaceae	Whistling Pine, Jangli Saru	Rare
36.	*Cenchrus biflorus* Roxb.	Poaceae	Indian Sanbur, Bhurat	Common
37.	*Cenchrus ciliaris* L.	Poaceae	Buffel Grass, Anjan, Dhaman	Frequent
38.	*Cenchrus pennisetiformis* Steud.	Poaceae	Slender Buffel Grass	Common
39.	*Cenchrus setiger* Vahl	Poaceae	Birdwood Grass, Bhurtio	Frequent
40.	*Chenopodiastrum murale* (L.) S. Fuentes, Uotila & Borsch	Amaranthaceae	Nettle-Leaved Goosefoot, Goyalo	Common
41.	*Chenopodium album* L.	Amaranthaceae	Goosefoot, Bathua	Common
42.	*Chloris barbata* Sw.	Poaceae	Swollen Finger Grass	Frequent
43.	*Citrullus colocynthis* (L.) Schrad.	Cucurbitaceae	Bitter Apple, Ghorumba	Frequent
44.	*Cleome gynandra* L.	Cleomaceae	African Spider Flower, Safed Bagro	Rare
45.	*Cleome viscosa* L.	Cleomaceae	Asian Spider Flower, Bagra	Rare
46.	*Coccinia grandis* (L.) Voigt	Cucurbitaceae	Ivy Gourd, Kundru	Occasional
47.	§*Coix lacryma-jobi* L.	Poaceae	Job's Tears, Sankru	Rare
48.	*Commelina benghalensis* L.	Commelinaceae	Bengal Dayflower, Kana	Rare
49.	*Commelina forskaolii* Vahl.	Commelinaceae	Forsskal's Dayflower	Common
50.	*Convolvulus arvensis* L.	Convolvulaceae	Field Bindweed, Hiranpug	Rare
51.	*Corchorus aestuans* L.	Malvaceae	East Indian Mallow, Jute, Hade-ka-khet	Frequent
52.	*Corchorus trilocularis* L.	Malvaceae	Wild/African Jute, Kadvapat	Common
53.	*Cordia dichotoma* G. Forst.	Boraginaceae	Indian Cherry, Lasoda	Rare
54.	*Crotalaria burhia* Buch.-Ham. *ex* Benth.	Fabaceae	Saniya, Khimp	Frequent
55.	*Crotalaria medicaginea* Lam.	Fabaceae	Medick Rattlepod	Occasional
56.	*Croton bonplandianus* Baill.	Euphorbiaceae	Ban Tulsi	Common
57.	*Cucumis maderaspatanus* L.	Cucurbitaceae	Bilari, Musmusa	Frequent
58.	*Cucumis melo* L.	Cucurbitaceae	Kachari	Occasional
59.	*Cuscuta reflexa* Roxb.	Convolvulaceae	Amar Bel	Rare
60.	*Cyanthillium cinereum* (L.) H. Rob.	Asteraceae	Little Ironweed, Sahadevi	Frequent
61.	*Cynodon dactylon* (L.) Pers.	Poaceae	Bermuda Grass, Doob	Common
62.	*Cyperus arenarius* Retz.	Cyperaceae	--	Rare

Sr. No.	Species	Family	Common Name(s)	Occurrence*
63.	*Cyperus rotundus* L.	Cyperaceae	Nut Grass, Coco Grass	Common
64.	*Dactyloctenium aegyptium* (L.) Willd.	Poaceae	Egyptian Crowfoot Grass, Makra	Common
65.	*Dactyloctenium aristatum* Link.	Poaceae	Crowfoot Grass	Occasional
66.	*Dalbergia sisoo* Roxb. *ex* DC.	Fabaceae	Indian Rosewood, Shisham	Occasional
67.	*Datura innoxia* Mill.	Solanaceae	Dhatura	Frequent
68.	*Datura metel* L.	Solanaceae	Dhatura	Rare
69.	§*Delonix regia* (Bojer *ex* Hook.) Raf.	Fabaceae	Flame Tree, Gulmohar	Rare
70.	*Dichanthium annulatum* (Forssk.) Stapf.	Poaceae	Sheda Grass	Occasional
71.	*Dicliptera paniculata* (Forssk.) I. Darbysh	Acanthaceae	Panicled Foldwing, Atrilal, Nasabhanga	Common
72.	*Digera muricata* (L.) Mart.	Amaranthaceae	Kondhra	Common
73.	*Digitaria bicornis* (Lam.) Roem. & Schult.	Poaceae	Asian Crab Grass	Occasional
74.	*Digitaria ciliaris* (Retz.) Koeler	Poaceae	Wild Crab Grass	Common
75.	*Distimake aegyptia* (L.) A.R. Simões & Staples	Convolvulaceae	Hairy Woodrose	Frequent
76.	*Dysphania ambrosoides* (L.) Mosyakin & Clemants	Amaranthaceae	Mexican Tea, Sugandha Vastuka	Occasional
77.	*Echinochloa colonum* (L.) Link.	Poaceae	Shama Millet, Jungle Rice, Shamak	Frequent
78.	*Eclipta prostrata* (L.) L.	Asteraceae	False Daisy, Bhringaraj	Rare
79.	*Eragrostis ciliaris* (L.) R. Br.	Poaceae	Gophertail Lovegrass, Lutio-lamp	Occasional
80.	*Eragrostis japonica* (Thunb.) Trin.	Poaceae	Pond Lovegrass	Rare
81.	*Eragrostis minor* Host	Poaceae	Little Lovegrass	Common
82.	*Eragrostis pilosa* (L.) P. Beauv.	Poaceae	Indian Lovegrass	Rare
83.	*Eragrostis tenella* (L.) P. Beauv. *ex* Roem. & Schult.	Poaceae	Japanese Lovegrass, Bharbhusi	Common
84.	*Erigeron bonariensis* L.	Asteraceae	Flaxleaf Fleabane	Common
85.	*Erigeron canadensis* L.	Asteraceae	Canadian Horseweed, Jarayupriya	Rare
86.	*Euphorbia clarkeana* Hook. *f.*	Euphorbiaceae	Clarke's Spurge	Rare
87.	*Euphorbia heterophylla* L.	Euphorbiaceae	Wild Spurge	Rare
88.	*Euphorbia hirta* L.	Euphorbiaceae	Asthma Weed, Bara Dudhi	Frequent
89.	*Euphorbia prostrata* Aiton	Euphorbiaceae	Prostrate Sandmat	Common
90.	*Euphorbia serpens* Kunth	Euphorbiaceae	Matted Sandmat, Dudhi	Frequent
91.	*Euploca strigosa* (Willd.) Diane & Hilger	Boraginaceae	Bristly Heliotrope, Chitiphul	Frequent
92.	*Evolvulus alsinoides* (L.) L.	Convolvulaceae	Dwarf Morning Glory, Vishnukranti	Rare
93.	*Ficus benghalensis* L.	Moraceae	Banyan Tree, Bargad, Barh	Rare
94.	§*Ficus benjamina* L.	Moraceae	Weeping Fig, Pukar	Occasional
95.	*Ficus elastica* Roxb. *ex* Hornem.	Moraceae	Rubber Tree/Plant	Rare
96.	*Ficus racemosa* L.	Moraceae	Cluster Fig, Gooler	Rare
97.	*Ficus religiosa* L.	Moraceae	Sacred Fig Tree, Peepal	Occasional
98.	*Fumaria indica* (Hausskn.) Pugsley	Papaveraceae	Indian Fumitory, Papara	Frequent
99.	*Gamochaeta pensylvanica* (Willd.) Cabrera	Asteraceae	Pensylvania Cudweed	Frequent
100.	*Gisekia pharnaceoides* L.	Molluginaceae	Balu-ka-saag	Frequent
101	*Heliotropium curassavicum* L.	Boraginaceae	Seaside Heliotrope	Occasional
102	*Heliotropium europaeum* L.	Boraginaceae	Common/European Heliotrope	Rare
103.	*Heteropogon contortus* (L.) P. Beauv. *ex* Roem. & Schult.	Poaceae	Black Speargrass	Occasional
104.	*Holoptelea integrifolia* (Roxb.) Planch.	Ulmaceae	Papri	Frequent
105.	*Indigofera cordifolia* B. Heyne *ex* Roth	Fabaceae	Heart-leaf Indigo	Common
106.	*Indigofera hochstetteri* Baker	Fabaceae	Sind Indigo	Rare
107.	*Indigofera linifolia* (L. *f.*) Retz.	Fabaceae	Narrowleaf Indigo, Ratanjot	Rare
108.	*Indigofera linnaei* Ali	Fabaceae	Birdsville Indigo, Pandarphali	Frequent
109.	*Indigofera sessiliflora* DC.	Fabaceae	Stalkless Indigo	Occasional
110.	*Indigofera tinctoria* L.	Fabaceae	True Indigo, Neel	Rare
111.	*Ipomoea pes-tigridis* L.	Convolvulaceae	Tiger Foot Morning Glory, Panchpatia	Occasional
112.	*Ipomoea obscura* (L.) Ker Gawl.	Convolvulaceae	Obscure Morning Glory, Pan Bel	Frequent

Sr. No.	Species	Family	Common Name(s)	Occurrence*
113.	*Ipomoea triloba* L.	Convolvulaceae	Little Bell	Common
114.	*Justicia adhatoda* L.	Acanthaceae	Malabar Nut, Safed Bansa	Rare
115.	*Justicia simplex* D. Don	Acanthaceae	Simple Justicia	Rare
116.	*Launaea procumbens* (Roxb.) Ramayya & Rajagopal	Asteraceae	Creeping Launaea, Jangi Gobi	Common
117.	§*Lawsonia inermis* L.	Lythraceae	Henna, Mehendi	Rare
118.	*Lemna minor* L.	Araceae	Common Duckweed	Rare
119.	*Lepidium didymium* L.	Brassicaeae	Bitter Cress, Pitpapra	Occasional
120.	*Leucaena leucocephala* (Lam.) de Wit	Fabaceae	Wild Tamarind, Safed Babool	Frequent
121.	*Leucas aspera* (Willd.) Link	Lamiaceae	Common Leucas, Chhota Halkusa	Rare
122.	*Lycium edgeworthii* Dunal	Solanaceae	Indian Box Thorn	Frequent
123.	*Lysimachia arvensis* var. *caerulea* (L.) Turland & Bergmeier	Primulaceae	Blue Pimpernel, Neel, Dharti Dhak	Frequent
124.	*Malva parviflora* L.	Malvaceae	Least Mallow, Guragped	Common
125.	*Malvastrum coromandelianum* (L.) Garcke	Malvaceae	False Mallow, Kharenti	Rare
126.	§*Mangifera indica* L.	Anacardiaceae	Mango, Aam	Rare
127.	*Mazus pumilus* (Burm. *f.*) Steenis	Mazaceae	Asian Mazus	Occasional
128.	*Medicago monantha* (C.A. Mey.) Trautv.	Fabaceae	Medick	Rare
129.	*Medicago polymorpha* L.	Fabaceae	Bur Clover	Occasional
130.	*Melia azedarach* L.	Meliaceae	Chinaberry, Persian Lilac, Bakain	Rare
131.	*Melilotus indicus* (L.) All.	Fabaceae	Indian Sweet Clover, Ban Methi	Frequent
132.	§*Mimusops elengi* L.	Sapotaceae	Maulsari	Occasional
133.	*Momordica balsamina* L.	Cucurbitaceae	Balsam Pear, Jungli Karela	Occasional
134.	§*Monoon longifolium* (Sonn.) B. Xue & R.M.K. Saunders	Annonaceae	False Ashok, Ashok	Occasional
135.	§*Moringa oleifera* Lam.	Moringaceae	Drumstick Tree, Senjana	Rare
136.	*Morus alba* L.	Moraceae	Mulberry, Shehtoot	Frequent
137.	*Ocimum basilicum* L.	Lamiaceae	Basil, Sweet Basil, Ram/Babui Tulsi, Marua	Rare
138.	§*Ocimum tenuiflorum* L.	Lamiaceae	Holy Basil,Tulsi	Rare
139.	*Oldenlandia corymbosa* L.	Rubiaceae	Diamond Flower, Daman Pappar	Rare
140.	*Opuntia elatior* Mill.	Cactaceae	Prickly Pear, Nag Phani	Rare
141.	*Orobanche aegyptiaca* Pers.	Orobanchaceae	Egyptian Broomrape	Common
142.	*Oxalis corniculata* L.	Oxalidaceae	Creeping Wood Sorrel, Amrul	Rare
143.	*Paramollugo nudicaulis* (Lam.) Thulin	Molluginaceae	Naked Stem Carpetweed	Common
144.	*Parthenium hysterophorus* L.	Asteraceae	Congress Grass, Gajar Ghas	Common
145.	*Pedalium murex* L.	Acanthaceae	Large Caltrops, Bara Gokhru	Frequent
146.	*Pergularia daemia* (Forssk.) Chiov.	Apocynaceae	Pergularia, Dholi Dudhi, Gadaria-ki-bel	Frequent
147.	*Perotis indica* (L.) Kuntze	Poaceae	Indian Comet Grass	Frequent
148.	*Phalaris minor* Retz.	Poaceae	Dwarf Canary Grass, Mandusi	Common
149.	§*Phyllanthus emblica* L.	Phyllanthaceae	Indian Gooseberry, Amla, Aonla	Occasional
150.	*Phyllanthus fraternus* G.L. Webster	Phyllanthaceae	Gulf Leaf Flower, Bhumi Aonla	Frequent
151.	*Physalis angulata* L.	Solanaceae	Cutleaf Ground Cherry	Frequent
152.	*Pluchea lanceolata* (DC.) C.B. Clarke	Asteraceae	Rasnaa, Phaar	Common
153.	*Poa annua* L.	Poaceae	Annual Bulegrass	Frequent
154.	*Polypogon monspeliensis* (L.) Desf.	Poaceae	Annual Beard Grass	Occasional
155.	§*Pongamia pinnata* (L.) Pierre	Fabaceae	Kalinga, Papar	Occasional
156.	*Portulaca oleracea* L.	Portulacaceae	Purslane, Nonia	Rare
157.	*Portulaca pilosa* L.	Portulacaceae	Kiss-Me-Quick, Pink Purslane	Occasional
158.	*Prosopis cineraria* (L.) Druce	Fabaceae	Khejri Tree, Jaandi	Common
159.	*Prosopis juliflora* (Sw.) DC.	Fabaceae	Junglee/Pahaari Keekar	Common
160.	*Pupalia lappacea* (L.) Juss.	Amaranthaceae	Forest Burr, Chirchitta	Frequent
161.	*Ranunculus sceleratus* L.	Ranunculaceae	Cursed Buttercup, Jaldhaniya	Rare
162.	*Rhynchosia minima* (L.) DC.	Fabaceae	Burn-Mouth Vine, Kulata	Rare

Sr. No.	Species	Family	Common Name(s)	Occurrence*
163.	*Rumex dentatus* L.	Polygonaceae	Toothed Dock, Jangli Palak	Rare
164.	*Rumex spinosus* L.	Polygonaceae	Devil's Thorn	Common
165.	*Saccharum spontaneum* L.	Poaceae	Kaans	Occasional
166.	*Senna occidentalis* (L.) Link.	Fabaceae	Coffee Senna, Bari Kasondi	Occasional
167.	§*Senna siamaea* (Lam.) H.S.Irwin & Barneby	Fabaceae	Siamese Senna, Kassod	Frequent
168.	§*Sesamum indicum* L.	Pedaliaceae	Sesame, Til	Occasional
169.	*Setaria verticillata* (L.) P. Beauv.	Poaceae	Bristly Foxtail, Latkaunya	Common
170.	*Sida acuta* Burm. *f.*	Malvaceae	Common Wireweed, Baraira	Occasional
171.	*Sida cordifolia* L.	Malvaceae	Heart-leaf Sida, Kharinta	Frequent
172.	§*Silybum marianum* (L.) Gaertn.	Asteraceae	Milk Thistle, Variegated Thistle	Rare
173.	*Sisymbrium irio* L.	Brassicaceae	London Rocket, Khubkhala	Common
174.	*Solanum americanum* Mill.	Solanaceae	American Black Nightshade, Gurkamai	Occasional
175.	*Solanum nigrum* L.	Solanaceae	Black Nightshade, Mokoi	Rare
176.	*Solanum villosum* Mill.	Solanaceae	Yellow/Red-fruited Nightshade	Rare
177.	*Sonchus asper* (L.) Hill.	Asteraceae	Prickly Sow-Thistle, Dudhi	Common
178.	*Sonchus oleraceus* L.	Asteraceae	Milk/Sow Thistle, Dudhi	Occasional
179.	*Sorghum halepense* (L.) Pers.	Poaceae	Johnson Grass, Jangli Jowar	Frequent
180.	*Spergula arvensis* L.	Caryophyllaceae	Corn Spurry	Common
181.	*Spergularia rubra* (L.) J. Presl & C. Presl	Caryophyllaceae	Purple/Red Sandspurry	Common
182.	*Spermacoce hispida* L.	Rubiaceae	False Buttonweed, Madanghanti	Frequent
183.	*Stellaria aquatica* (L.) Scop.	Caryophyllaceae	Giant Chickweed	Rare
184.	*Stellaria media* (L.) Vill.	Caryophyllaceae	Chickweed, Buch-bucha	Occasional
185.	*Syzygium cumini* (L.) Skeels	Myrtaceae	Java Plum, Jaamun	Rare
186.	*Tamarix aphylla* (L.) H. Karst.	Tamaricaceae	Farash, Lal-jhar	Frequent
187.	*Tephrosia purpurea* (L.) Pers.	Fabaceae	Common Tephrosia, Sharpunkha	Common
188.	§*Terminalia arjuna* (Roxb. *ex* DC.) Wight & Arn.	Combretaceae	Arjun	Occasional
189.	*Tinospora cordifolia* (Willd.) Hook. *f.* & Thomson	Menispermaceae	Gulbel, Giloy	Rare
190.	*Trianthema portulacastrum* L.	Aizoaceae	Desert Horse Purslane, Saanti	Frequent
191.	*Tribulus terrestris* L.	Zygophyllaceae	Chhota Gokhru	Frequent
192.	*Trichodesma indicum* (L.) Sm.	Boraginaceae	Indian Borage, Chhota Kalpa	Occasional
193.	*Tridax procumbens* L.	Asteraceae	Tridax Daisy, Kanphuli	Occasional
194.	*Trigonella balansae* Boiss. & Reut.	Fabaceae	Cultivated Fenugreek, Kasturi Methi	Occasional
195.	*Tripidium bengalense* (Retz.) H. Scholz	Poaceae	Sarkanda, Moonj, Kaans	Occasional
196.	*Triumfetta rhomboidea* Jacq.	Malvaceae	Chinese Burr, Chikti	Frequent
197.	*Vachellia leucophloea* (Roxb.) Maslin, Seigler & Ebinger	Fabaceae	White Bark Acacia, Safed Kikar/Babul	Occasional
198.	*Vachellia nilotica* (L.) P.J.H. Hurter & Mabb.	Fabaceae	Babul, Kikar	Frequent
199.	*Vachellia tortilis* (Forssk.) Galasso & Banfi	Fabaceae	Israeli Babool	Common
200.	*Verbesina encelioides* (Cav.) Benth. & Hook. *f. ex* A. Gray	Asteraceae	Golden Crownbeard	Common
201.	*Veronica polita* Fr.	Plantaginaceae	Grey Field-speedwell	Rare
202.	*Veronica undulata* Wall.	Plantaginaceae	Undulate Speedwell	Rare
203.	*Vicia sativa* L.	Fabaceae	Common Vetch, Ankra, Matari	Occasional
204.	*Withania somnifera* (L.) Dunal	Solanaceae	Indian Ginseng, Ashwagandha	Frequent
205.	*Xanthium strumarium* L.	Asteraceae	Common Cocklebur, ChhotaDhatura	Rare
206.	*Zaleya pentandra* (L.) C. Jeffrey	Aizoaceae	Five-stamen Horse Purslane, Itsit	Rare
207.	*Ziziphus mauritiana* Lam.	Rhamnaceae	Indian Jujube/Plum, Ber	Occasional
208.	*Ziziphus nummularia* (Burm. *f.*) Wight & Arn.	Rhamnaceae	Jhari Beri	Frequent

(*With reference to this work, '**common**' represents a species which is very well distributed and growing gregariously; '**frequent**' represents a species of wide occurrence but not gregarious; '**occasional**' represents a species which have less number of individuals than the other two categories; '**rare**' ones include those species which are reported from one or two localities only. §The species is cultivated/escaped.)

Plate A: 1. *Acrachne racemosa*; 2. *Alhagi maurorum*; 3. *Alysicarpus monilifer*; 4. *Amaranthus spinosus*; 5. *Aristida adscencionis*; 6. *Asphodelus tenuifolius*; 7. *Carthamus oxyacantha*; 8. *Cenchrus biflorus*; 9. *Cenchrus pennisetiformis*

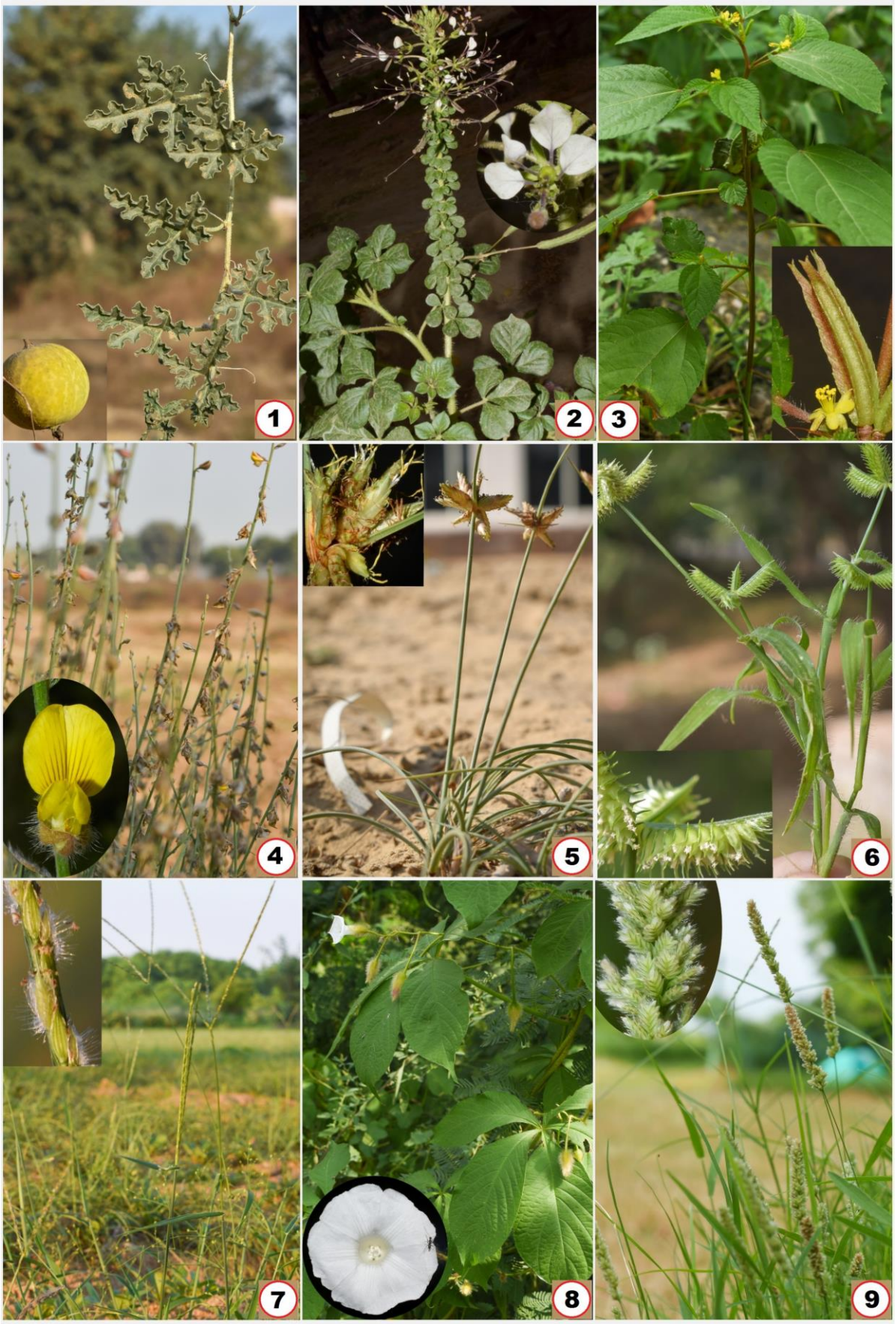

Plate B: 1. *Citrullus colocynthis*; **2.** *Cleome gynandra*; **3.** *Corchorus aestuans*; **4.** *Crotalariaburhia*; **5.** *Cyperus arenarius*; **6.** *Dactyloctenium aristatum*; **7.** *Digitaria bicornis*; **8.** *Distimakeaegyptia*; **9.** *Eragrostis ciliaris*

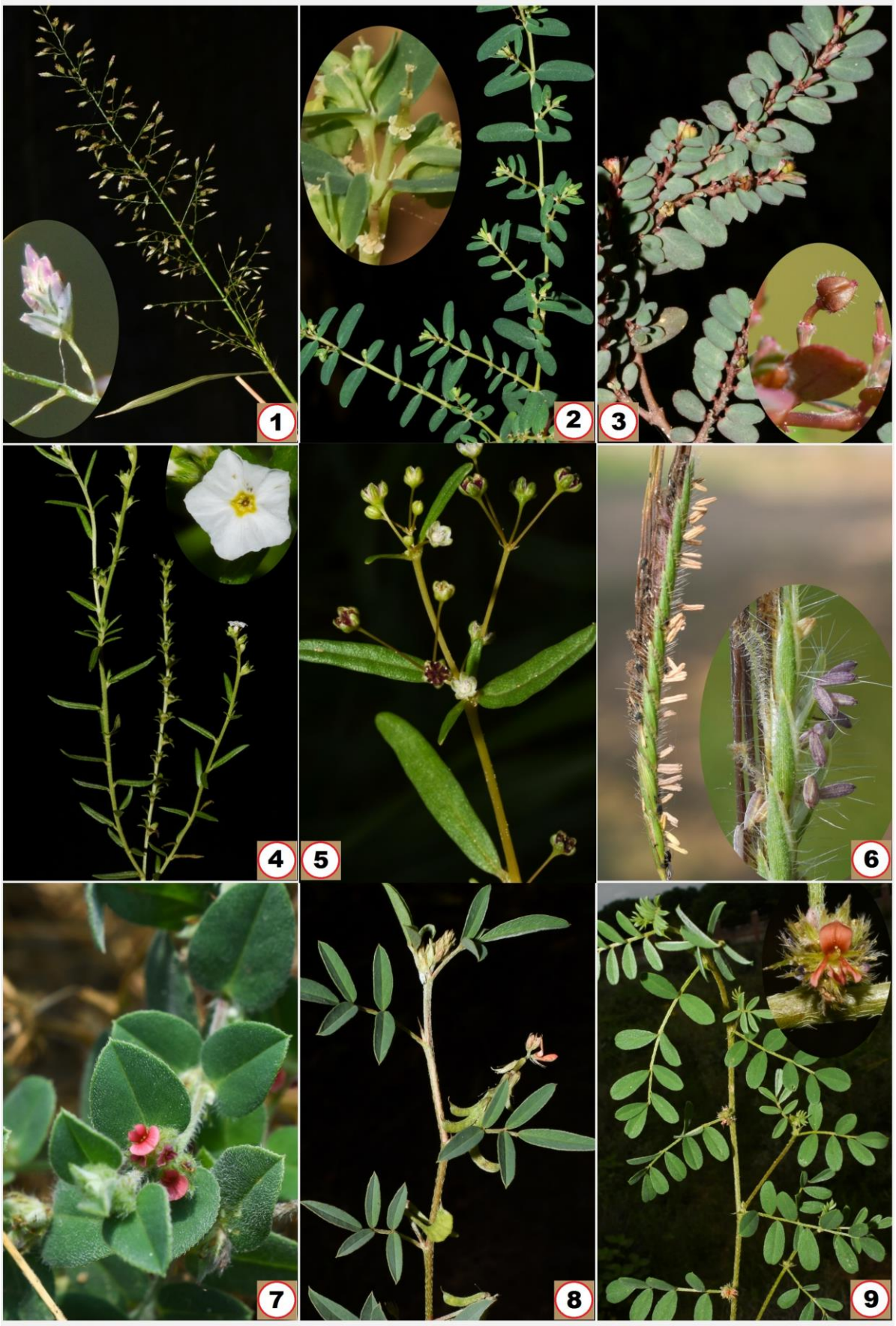

Plate C: 1. *Eragrostis tenella*; **2.** *Euphorbia clarkeana*; **3.** *Euphorbia prostrata*; **4.** *Euplocastrigosa*; **5.** *Gisekia pharnaceoides*; **6.** *Heteropogon contortus*; **7.** *Indigofera cordifolia*; **8.** *Indigofera hochstetteri*; **9.** *Indigofera sessiliflora*

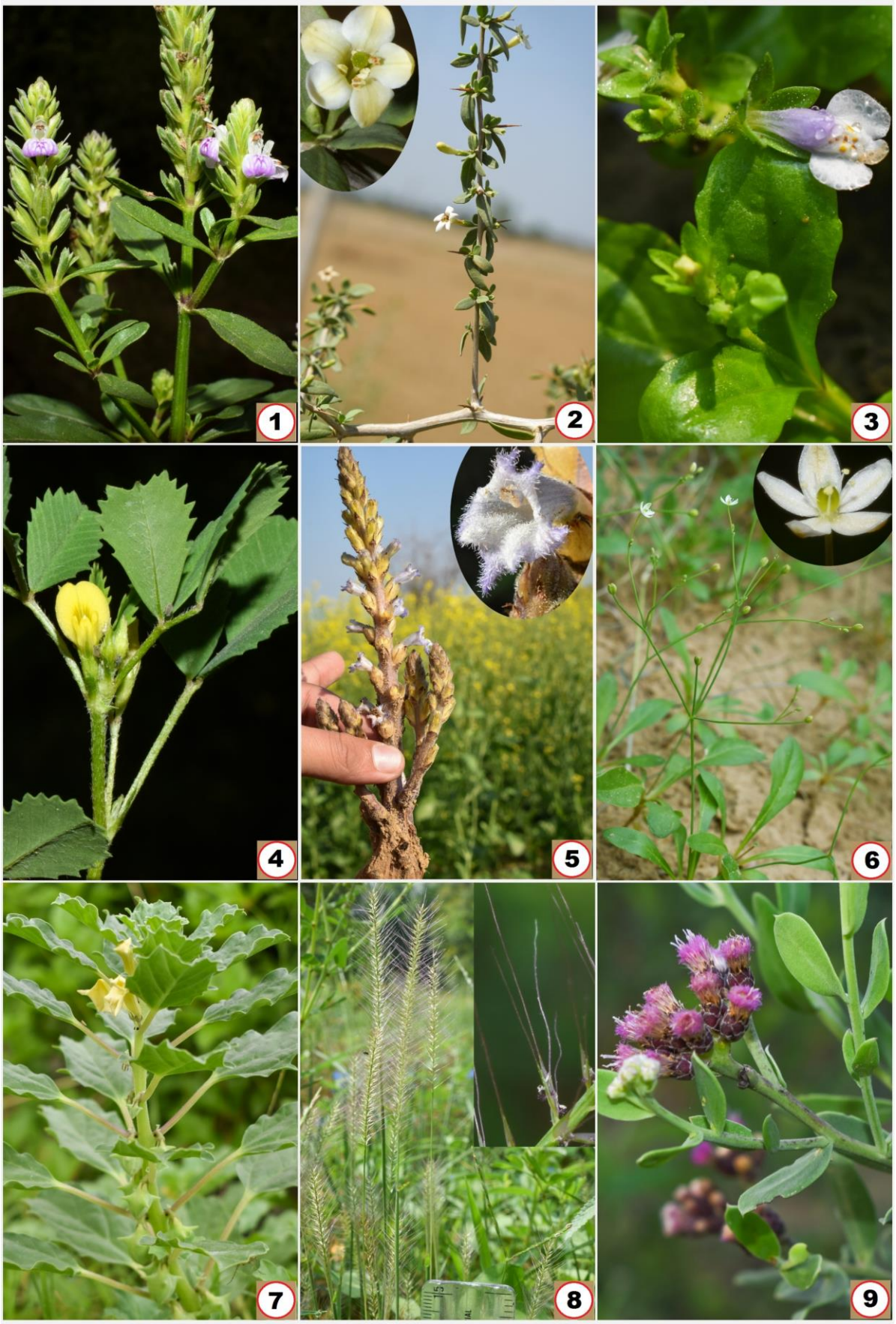

Plate D: 1. *Justicia simplex*; 2. *Lycium edgeworthii*; 3. *Mazus pumilus*; 4. *Medicago monantha*; 5. *Orobanche aegyptia*; 6. *Paramollugo nudicaulis*; 7. *Pedalium murex*; 8. *Perotis indica*; 9. *Pluchea lanceolata*

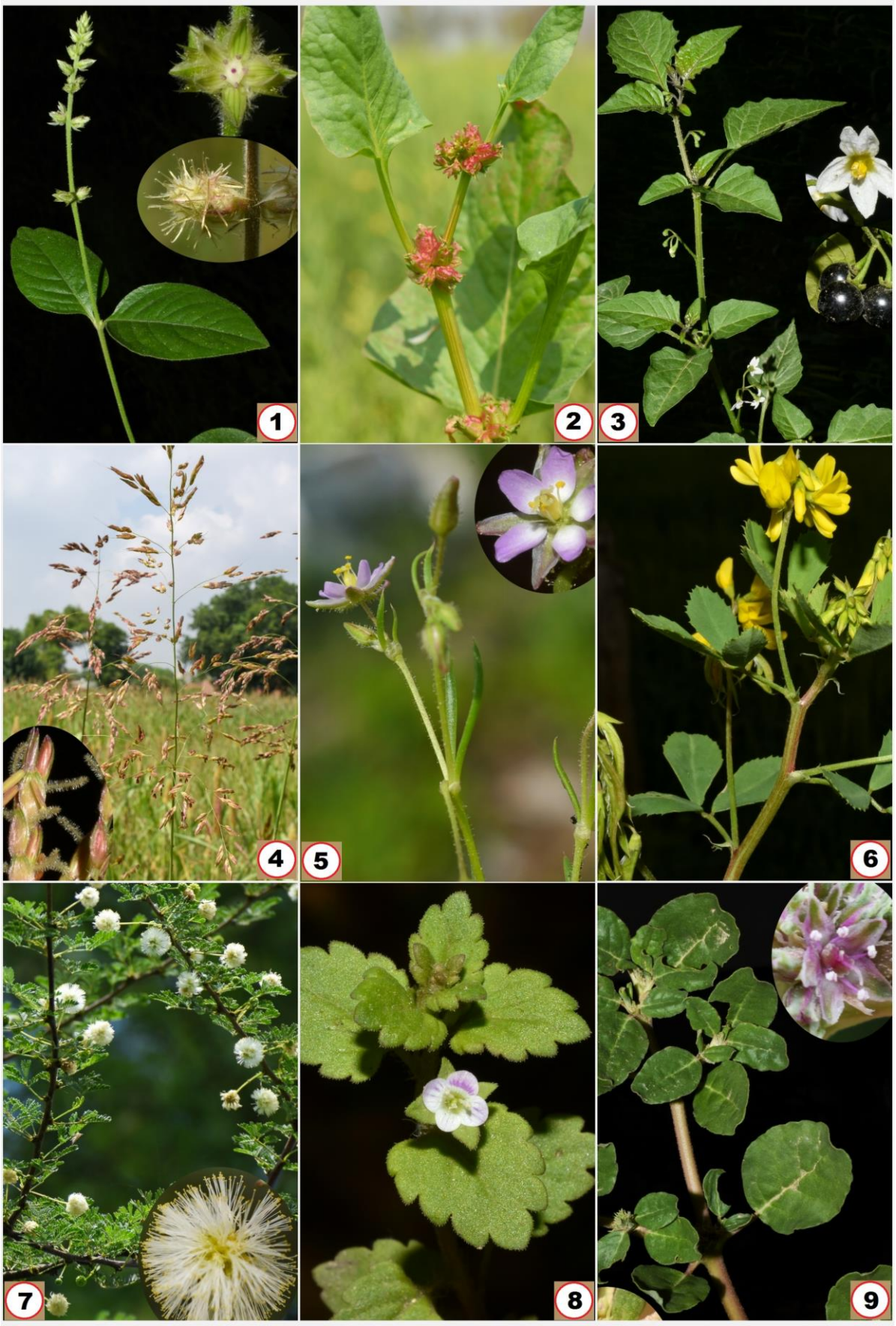

Plate E: 1. *Pupalia lappacea*; 2. *Rumex spinosus*; 3. *Solanum americanum*; 4. *Sorghum halepense*; 5. *Spergularia rubra*; 6. *Trigonella balansae*; 7. *Vachellia tortilis*; 8. *Veronica polita*; 9. *Zaleya pentandra*

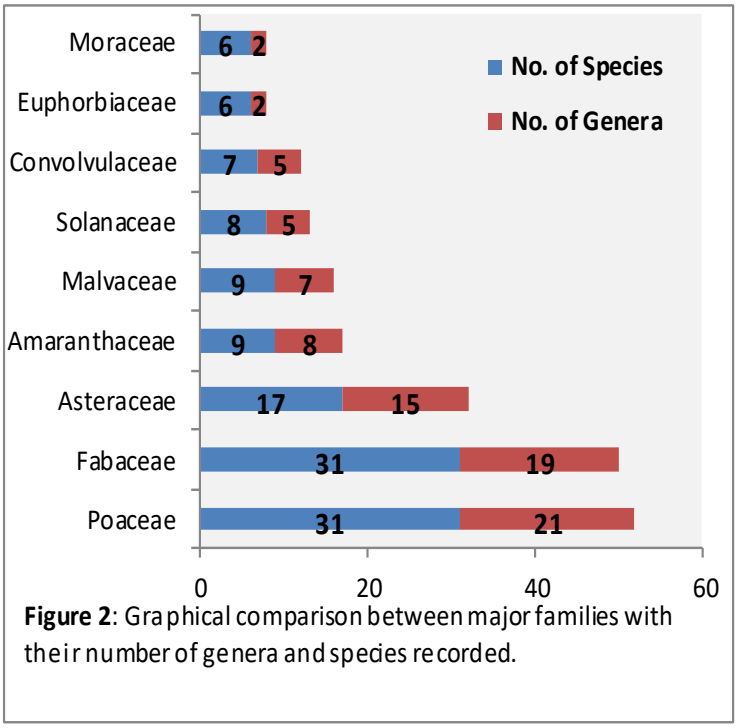

Figure 2: Graphical comparison between major families with their number of genera and species recorded.

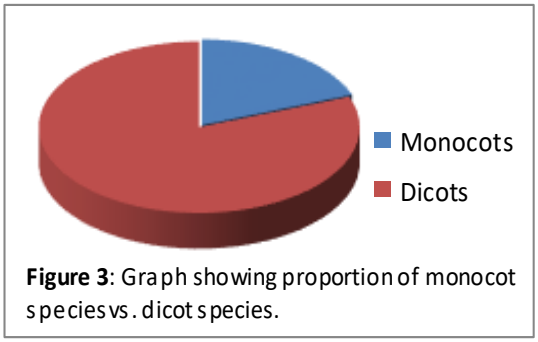

Figure 3: Graph showing proportion of monocot species vs. dicot species.

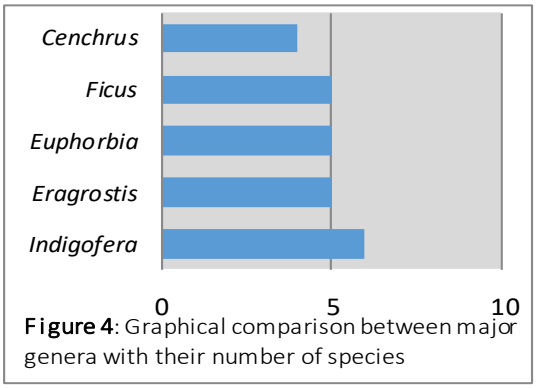

Figure 4: Graphical comparison between major genera with their number of species

The total 208 plant species recorded from the campus belong to 54 families and 155 genera. Out of these 54 families, 5 families are monocot families — Poaceae, Asparagaceae, Commelinaceae, Cyperaceae and Asphodelaceae — remaining 49 being families of dicot plants. Two families have the highest number of species recorded, *viz.* Poaceae and Fabaceae; Poaceae are the most diverse family among all, as its members include almost no record of any naturalized cultivated grass species whereas Fabaceae include naturalized cultivated trees of *Bauhinia purpurea* and *Delonix regia*. Other major families are Asteraceae, Amaranthaceae, Malvaceae, Solanaceae, Convolvulaceae and Euphorbiaceae etc. Moreover, 24 families are represented by only one species, e.g. Asphodelaceae, Ranunculaceae, Primulaceae, Annonaceae, Cactaceae and Araceae etc. Many families are represented by only two species, viz. 14 families, including Cyperaceae, Commelinaceae, Rubiaceae, Polygonaceae, Plantaginaceae and Nyctaginaceae etc. Brassicaceae, Apocynaceae and Asparagaceae are represented each by 3 species and the family Lamiaceae are represented by 4 species (Figure 2 & 3).

The largest genus among all the 155 recorded genera is the genus *Indigofera*, with 6 species (2 spp. being very uncommon in the region — *I. hochstetteri* and *I. sessiliflora*), followed by *Eragrostis*, *Euphorbia* and *Ficus* each with 5 species, *Cenchrus* with 4 species and *Ipomoea, Vachellia* and *Solanum* each with 3 species. Most of the genera, *viz.* 120 genera, are represented by only one species and 27 genera are represented each by two species, which includes *Alysicarpus, Amaranthus, Brachiaria, Crotalaria, Cyperus, Digitaria, Erigeron, Senna, Sida* and *Ziziphus* etc. (Figure 4).

CONCLUSION AND SUGGESTION

With an analysis of the two aspects, the facts regarding distinctiveness of the climate and edaphic factors in the region, and, a general study of the plant diversity recorded in the table above, we can conclude that the region, or say, similarly, the southern Haryana region, is represented by a distinctive vegetation and species diversity. Thus, the region has a lot of potential in terms of possible research and conservation works. It is not only about the plant diversity, it was also seen during our work that the region also houses a distinct animal life, especially the Arthropods and the Birds. A significant diversity of spiders, insects and migratory birds can be seen in the region. Moreover, the latest flora work available for the state Haryana was only published in the year 2001 (Kumar, 2001). It has been over 2 decades, and since then only a few scattered and small works has been carried out for the region.

Thus, there is a need to revise and record the complete biodiversity of the region, especially considering the

fact of *climatological distinctiveness* of southern Haryana and *increasing anthropogenic threats* to the biodiversity. Such works will be significant for required biodiversity conservation efforts, in telling us about the species which are going through declining population trends, either naturally or under influence of anthropogenic disturbances, in setting up priorities in the conservation efforts. For instance, the region has been seen with a declining trend in populations of species like *Cordia dichotoma*, *Butea monosperma*, *Commiphora wightii* and *Prosopis cineraria*. Such trends in species population raise concerns for the region, as it comes under the natural habitat ranges of such species.

The number of the species recorded from the IGU Campus clearly represents a floristically diverse campus, in spite of its relatively small area and climate conditions. Majority of the area is still under development, thus forming waste land like suitable habitats for wild plants. Continuous development of the campus also poses a threat to this plant diversity. Thus, suitable conservation strategies should be added in the development plans by the infrastructure development bodies of the university administration. Establishing a botanical garden inside the campus shall be the first step to initiate essential conservation practices.

Conflicts of Interest: The authors declare no conflict of interest.

REFERENCES

Angiosperm Phylogeny Group IV (2016). An Update of the Angiosperm Phylogeny Group Classification for the Orders and Families of Flowering Plants: APG IV. *Botanical Journal of the Linnean Society,* 181: 1-20.

Balkrishna A., Joshi B., Srivastava A. and Shukla B.K. (2018). New Plant Records for the Flora of Haryana. *Indian Journal of Forestry,* 41(2): 117-127.

Duthie, J.F. (1903-19029). Flora of the Upper Gangetic Plain and of the adjacent Siwalik and Sub-Himalayan Tracts. Government Press, Calcutta (Reprint 1960, Botanical Survey of India, Calcutta).

Jain S.P., Singh S.C., Verma D.M., Singh J.S. and Kumar S. (2000). Flora of Haryana; Central Institute Medicinal and Aromatic Plants (CIMAP), Lucknow, India.

Kaur R., Singh N. and Vashistha B.D. (2016). Flowering Plant Diversity of District Karnal, Haryana, India; *International J. of Life Sciences,* 4(3): 361-371.

Kumar S. (2001). Flora of Haryana: (Materials); Bishen Singh Mahendrapal Singh, Dehradun, India.

Lal M., Palria N. and Vashistha B.D. (2017). Floristic Diversity and Ethnobotanical Studies On Some Parts Of Southern Haryana –I: Bhiwani District; *Bull. Env. Pharmacol. Life Sci.,* Vol 6[2]: 16-23.

Maheshwari J.K. (1963). The Flora of Delhi. CSIR, New Delhi.

Palria N. and Vashistha B.D. (2017). Floristic and Ethno-Botanical Studies on Some Parts of Hisar District of Haryana, India; *Bull. Env. Pharmacol. Life Sci.,* Vol 6[2]: 24-30.

Saini, R. (2016). 'In Rewari's Khol Block, Water Table Drops 108 feet in 16 Years'. *The Tribune*, 07 Dec., 2016.

Sharma Y. and Singh N. (2021). *Stellaria aquatica* (L.) Scop. (Caryophyllaceae: Alsineae): A New Plant Record for Haryana, India. *Phytotaxonomy,* 19(2019): 138-141.

Sharma Y., Singh N. and Tomar K. (2021). Interesting and Uncommon Plant Records from Central and Southern Haryana, India. In: *Online International Conference on Scientific Developments in the Current Era (ICSDCE-2021).* 201-206.

Singh B. and Singh J. (2014). Ethnobotanical Uses of Some Plants from Central Haryana, India; *Phytodiversity, 2014,* Vol. 1 (1&2): 7-24.

Singh N., Singh B. and Vashistha B.D. (2014). Genus Solanum L. in North and North Eastern Haryana (India): Diversity, Ecological Status and Ethnobotanical Significance; *Phytodiversity* 1(1&2): 32-40.

Singh N. and Vashistha B.D. (2014). Flowering plant diversity and Ethnobotany of Morni Hills, Siwalik Range, Haryana, India; *Int. J. Pharm. Bio. Sci.* 5(2): (B) 214-222.

Yadav S.S. and Bhandoria M.S. (2013). Ethnobotanical exploration in Mahendergarh district of Haryana (India); *J. Med. Plants Res.* 7(18): 1263-1271.

WEB REFERENCES

Efloraofindia (2007 onwards). Efloraofindia. Available online. (accessed on: 04 Mar., 2020). http://sites.google.com/site/efloraofindia/ OR http://efloraofindia.com/

eFloras (2008). Published on the internet. (accessed on: 29 Feb., 2020). http://www.efloras.org/

Flowers of India (2005 onwards). Available online. (accessed on: 23 Feb., 2020).

http://m.flowersofindia.net/

Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet. (accessed on: 21 June, 2021). http://www.plantsoftheworldonline.org/

Stevens, P.F. (2001 Onwards). Angiosperm Phylogeny Website. Version 14, July 2017. (accessed on 17 May, 2021). http://www.mobot.org/MOBOT/research/APweb/

WFO (2021): World Flora Online. Published on the Internet. (accessed on: 22 June, 2021). http://www.worldfloraonline.org/