Journal of Bioresources 13 (1): 15-25, January – March 2025

JOURNAL OF BIORESOURCES

journal webpage: https://jbr.rgu.ac.in

ISSN: 2394-4315 (Print)
ISSN: 2582-2276 (Online)

RESEARCH ARTICLE

Study of plant diversity in and around Sonari College campus of Charaideo district, Assam, Northeast India

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Article No.: PNJBR106; Received: 23.10.2024; Peer-reviewed: 12.11.2024; Accepted: 20.02.2025; Published: 31.03.2025
Doi: https://doi.org/10.5281/zenodo.15855096

Abstract

The study was aimed to investigate and document the diversity of plant species in the Sonari College campus. A total of 204 plant species were recorded of which 99 were herbs, 52 were trees, 44 shrubs, 9 climbers in nature. The family with the highest number of species was recorded for the Poaceae which is followed by Fabaceae and Asteraceae. Gymnosperm was represented by only one species *Araucaria columnaris*, an ornamental tree. Among the 204 species of plants recorded, 126 plant species were native and 78 species were found exotic or invasive. 60 plant species have been reported in ethnobotanical uses as they have the medicinal properties.

Keywords: Plant Diversity; Native Species; Exotic; Invasive; Ethnobotanical Uses

1. Introduction

Plant diversity studies help us to understand the floristic wealth and its impact on an area (Gogoi and Nath, 2021). Eastern Himalayan forests are very rich in terms of species diversity. Species richness and distribution patterns of plants are largely regulated by altitude and other environmental factors (Saikia et al., 2017). Assam is a part of Indo-Burma Biodiversity Hotspot, a region with high plant diversity situated in the north-eastern corner of the Indian subcontinent (Borah et al., 2016). Plant diversity is the variety and variation of different plant species in a particular ecosystem. It defined as different plant forms of an area or a landscape, which are essential for the proper management. The different types of plant species on earth are evident in their habits, habitats, structures, functions, and life spans (Sahoo, 2017). Plants are a vital component of a habitat as they provide food, shelter, fuel, medicine, natural resources, and as well as contribute to over (Dey et al., 2021). A number of valuable products have been extracted from plants since ancient times. Natural ecosystems are home to significant genetic resources of endemic and threatened wild trees and ornamental plant relatives, many of which are endangered (George et al., 2011). Assam is well known for its rich medicinal plant diversity. Different communities of the state are known to use various plant species for the treatment of a number of diseases (Bailung and Puzari, 2016). Scientists and researchers are now documenting the ethnobotanical uses of the plants in North east India and some of the sporadic works towards the knowledge of medicinal plants have also been reported (Tamuli, 2004). The study of plant diversity provides insights about different species, nomenclature, distribution, utility and ecology and such studies also help to understand fundamental aspects among them (Devi and Malhotra,2021). Strategically increasing plant diversity has consistently been shown to increase crop and forage yield, wood production, and yield stability, as evidenced by consistent strong evidence (Isbell et al., 2017). The tropics have a diversity of tree species that varies between locations (Whitmore, 1998; Pitman et al., 2002). Plant species distribution in India is influenced by their genetic makeup and environmental factors, which include temperature and water. Plant diversity studies are primarily essential to assess the sustainable utilization of biodiversity and its management of a particular area will provide information on species invasion, existing status and changing floristic pattern (Sahoo, 2017). Understanding the plant diversity and regeneration status of particular forests is essential for managing and conserving biodiversity. Floristic and ecological studies are crucial to advancing our understanding of the distribution and composition of plant communities in biodiversity hotspots (Haq et al., 2023). Plants are advantageous in educational studies for understanding various aspects, such as ecology, environment, diseases caused by pathogens, and more (Dey et al., 2021). Apart from all these plants are provided aesthetic and recreational values and gives mental peace to everyone.

The present studies describe some of the plant species found naturally or grown manually in Sonari College campus, Sonari, Charaideo district with special reference to taxonomy, and their medicinal and ethical values. Apart from documentation of floristic account of the college campus, assessment of native natural flora is necessary to maintaining and rehabilitation of rare plant species and also helpful for students and researchers.

Present study was done to identify and enumerate the structural diversity of plants ranging from ornamental plants, trees and medicinal plants found in college campus and elucidate the various ecosystem services provided by these plant species. The importance of biodiversity planning in urban area is important step towards mitigation of the biodiversity loss because of urbanization and deforestation. This study aims at understanding the contribution of plants in providing ecosystem services to the people so that the students and general public develop a sense of creating healthy environment by growing different types of plant species in the college campus.

Objectives of the study
To examine the distribution of plant species in college campus at different location.

To determine the distribution pattern of highly valuable plant species.

To find out the number of medicinal plants, ornamental plants, fruit plants present in the Campus.

2. Materials and methodology

2.1. Study Site

Sonari is a small town in the Charaideo District of Assam. It is situated at the coordinates 27.1°N latitude and 94.7°E longitude, at an altitude of 97meters above sea level. This town is located near the side of the Taokak River, and is located in close proximity to the Brahmaputra River. Its location influences the surrounding weather patterns and climatic conditions, and has a significant influence on its vegetation. The region experiences a subtropical Monsoon climate, characterized by high humidity and moderate rainfall throughout the year. The average temperature in the region ranges from 19.8°C to 29.9°C. The weather conditions in the region can be classified into three seasons: Summer, monsoon and winter. The present study was conducted in the Sonari college campus located in Sonari town during the different seasons in the year 2023. The campus covers an area of 6.612 acres with a built area of 18084.28square meters. The soil of the study area is acidic in nature.

Figure 1. Map showing the Eastern Himalayan Biodiversity Hotspot

Figure 2. Map showing the study site - "Sonari College"

2.2. Field survey and collection

Vegetation in the study area was surveyed through extensive field visits and different plants such as herbs, shrubs and trees were recorded and photographs of each species were collected. The plants were then identified by consulting various available resources including various websites, professional taxonomist, standard flora and monographs. The plants were collected from different habitats including grassland, ponds, roadsides etc and the vernacular names were recorded. The plant specimens were identified by consulting regional flora such as, *Flora of Assam* (Kanjilal et al., 1934-1940); *A checklist of angiosperms and gymnosperms* (Barooah and Ahmed, 2014); *eflora of China*. The accepted names were consulted in POWO (plant of the world online) hosted by Royal Botanic Garden Kew UK. Herbarium specimens were deposited in the College Herbarium.

3. Result and discussion

The present study has recorded a total of 204 species (126 native species and 78 invasive species) distributed under 99 families. The ten dominant families were found to be Poaceae (18), Fabaceae (13), Asteraceae (12), Malvaceae (10), Myrtaceae (07), Araceae (07), Rubiaceae (06), Amaranthaceae (05), Euphorbiaceae (04) and Lamiaceae (04). Habit analysis revealed herbs with the highest count (99), followed by trees (52), shrubs (44) and climbers (09). Out of 204 plants, 60 plants were found to have ethnobotanical importance. The plants listed, such as *Clerodendrum colebrookeanum* Walp., *Kalanchoe pinnata* (Lam.) Pers., *Terminalia arjuna* (Roxb. ex DC.) Wight and Arn., *Terminalia bellirica* (Gaertn.) Roxb., *Ocimum tenuiflorum* L., *Chamaecostus cuspidatus* (Nees and Mart.) C.D. Specht and D.W.Stev., *Azadirachta indica* A.Juss., and *Alstonia scholaris* (L.) R. Br., each possess a range of medicinal properties valued in traditional medicine. Because of its hepatoprotective, antidiabetic, and anti-inflammatory qualities, *Clerodendrum colebrookeanum* Walp. is utilized in ayurvedic medicine (Bhat and Subramanian, 2011). *Terminalia arjuna* (Roxb.ex DC.) Wight and Arn. is commonly utilized for its cardioprotective, antioxidant, and anti-inflammatory qualities (Kirthikar and Basu, 1980), whereas *Kalanchoe pinnata* (Lam.) Pers. is well-known for its anti-inflammatory, antibacterial, and wound-healing activities (Mulaudzi and McGaw, 2016). Often employed in the *triphala* formulation, *Terminalia bellirica* (Gaertn.) Roxb. is used for its antibacterial, anti-inflammatory, and antioxidant properties (Agrawal and Paridhavi, 2007). *Ocimum tenuiflorum* L. is well known for its anti-inflammatory, antibacterial, and adapt genic qualities (Singh and Yadav, 2010). Traditionally used to treat fever and respiratory ailments, *Chamaecostus cuspidatus* (Nees and Mart.) C.D. Specht and D.W.Stev., exhibits anti-diabetic, antibacterial and anti-inflammatory properties (Kadak et al., 2024). While *Alstonia scholaris* (L.) R.Br. is used for its antimalarial, anti-inflammatory, and analgesic benefits (Kaur and Singh, 2005), *Azadirachta indica* A.Juss. (neem) is well known for its antibacterial, antifungal, and antidiabetic qualities (Anwar and Bhanger, 2003). From the present vegetation analysis at the selected site, it was found that *Ageratum conyzoides* L., *Oxalis latifolia* Kunth, *Bombax ceiba* L., *Opuntia stricta* (Haw.) Haw. expand and respond fast to occupy the habitat as compared to the other native plant species. *Panicum capilaris* L. and *Saccharum officinarum* L. spread rapidly and most dreadful weed species in the campus. Generally, invasive species such as *Sida acuta* Burm.f., *Lantana camara* L. and *Chromolaena odorata* (L.) R.M.King and H. Rob. are serious threat to natural and agricultural landscapes. Since Asteraceae contributes to the maximum alien and invasive flora in the study area specially *Sonchus arvensis* L., *Cyanthilium cinereum* L., *Chromolaena odorata* L. All invasive species are selected after careful consideration of several factors and including their ecological significance, invasive behaviours, within the study area (Kalita et al., 2019; Das and Duarah, 2013).

Table 1. List of plants found in Sonari College Campus

SI. NO.	SCIENTIFIC NAME	FAMILY	LOCAL NAME	HABIT
1.	*Abroma augustum* (L.) L.F.;Col. No. 68	Malvaceae		Shrub
2.	*Achyranthes aspera* L.; Col. No. 55	Amaranthaceae	Obhatakata	Herb
3.	*Aegle marmelos* (L.) Correa; Col. No. 39	Rutaceae	Bel	Shrub
4.	*Ageratum conyzoides* L.; Col. No. 18	Asteraceae	Gendheli bon	Herb
5.	*Ageratum haustonianum* Mill.; Col. No. 26	Asteraceae	Gundhua bon	Herb
6.	*Aglaonema costatum* N.E.Br.; Col. No. 40	Araceae		Herb
7.	*Aloe vera* (L.) Burm.f.; Col. No. 54	Asphodelaceae	Salkuwori	Herb
8.	*Alstonia scholaris* (L.) R.Br.; Col. No. 27	Apocynaceae	Sotiyona	Tree
9.	*Alternanthera paronychioides* A.St.-Hil.; Col. No. 22	Amaranthaceae	Mati-kaduri	Herb
10.	*Alternanthera philloxeroides* (Mart.) Griseb.; Col. No. 66	Amaranthaceae	Pani-khutura	Herb
11.	*Alternanthera sesilis* (L.) DC.; Col. No. 10	Amaranthaceae	Mati-kaduri	Herb
12.	*Amaranthus spinosa* L.; Col. No. 21	Amaranthaceae	Khutura	Herb
13.	*Anacardium occidentale* L.;Col. No. 44	Anacardiaceae	Kaju	Tree
14.	*Andrographis paniculata* (Burm.f.) Wall. ex Nees; Col. No.36	Acanthaceae	Chirata/Kalmegh	Herb
15.	*Annona reticulata* L.; Col. No. 100	Annonaceae	Atlas	Tree
16.	*Aquilaria malaccensis* Lam.; Col. No. 13	Thymelaeaceae	Sasi	Tree
17.	*Araucaria columnaris* (G.Forst.) Hook.; Col. No. 16	Araucariaceae		Tree
18.	*Areca catechu* L.; Col. No. 25	Arecaceae	Tamul	Tree
19.	*Artocarpus heterophyllus* Lam.; Col. No. 70	Moraceae	Kothal	Tree
20.	*Asparagus racemosus* Willd.; Col. No. 88	Asparagaceae	Satmul	Herb
21.	*Averrhoea carambola* L.; Col. No. 20	Oxalidaceae	Kordoi	Shrub
22.	*Axonopus compressus* (Sw.) P.Beauv.; Col. No. 38	Poaceae	Dolicha-bon	Herb
23.	*Azadirachta indica* a.Juss.; Col. No. 08	Meliaceae	Neem	Tree
24.	*Baccaurea ramiflora* Lour.; Col. No. 03	Phyllanthaceae	Leteku	Tree
25.	*Basella alba* L.; Col. No. 111	Basellaceae	Puroixaak	Climber
26.	*Begonia roxburghii* (Miq.) A.DC.;Col. No. 174	Begoniaceae		Herb
27	*Bergera koenigii* L.; Col. No. 11	Rutaceae	Narasingha	Shrub
28.	*Bombax ceiba* L.; Col. No. 62	Malvaceae	Simolu	Tree
29.	*Caesalpinia pulcherrima* (L.) Sw.;Col. No. 12	Caesalpiniaceae	Radhachura	Tree
30.	*Caladium bicolor* (Aiton) Vent;Col. No. 58	Araceae		Herb
31.	*Capsicum chinese* Jacq.; Col. No. 89	Solanaceae	Bhoot or bih jolokia	Shrub
32.	*Carica papaya* L.; Col. No. 105	Caricaceae	Amita	Small tree
33.	*Cascabela thevetia* (L.) Lippold;Col. No. 77	Apocynaceae	Korobi	Shrub
34.	*Cassia fistula* L.; Col. No. 32	Fabaceae	Sonaru	Tree
35.	*Catharanthus roseus* (L.) G.Don;Col. No. 171	Apocynaceae	Nayantora	Herb
36.	*Centella asiatica* (L.) Urb.; Col. No. 121	Apiaceae	Mani-muni	Herb
37.	*Chromolaena odorata* (L.) R.M.King and H.Rob.; Col. No. 204	Asteraceae	Jarmani-bon	Shrub
38.	*Chrysalidocarpus lutescens* H. Wendl.; Col. No. 28	Arecaceae	Mamoi tamul	Shrub
39.	*Chrysopogon aciculatus* (Retz.) Trin.; Col. No. 116	Poaceae	Bon-guti	Herb
40.	*Cinnamomum tamala* (Buch.-Ham.) T.NeesandC.H.Eberm.; Col. No. 64	Lauraceae	Tezpat	Tree
41.	*Citrus jambhiri* Lush.; Col. No.17	Rutaceae	Gol nemu	Shrub
42.	*Citrus limon* (L.) Osbeck; Col. No. 23	Rutaceae	Kaji nemu	Shrub
43.	*Citrus maxima* (Burm.) Merr.;Col. No. 09	Rutaceae	Robab tenga	Shrub
44.	*Cleome rutidosperma* DC; Col. No. 127	Cleomaceae		Herb
45.	*Clerodendrum colebrookianum* Walp.; Col. No. 30	Verbenaceae	Nephaphu	Shrub
46.	*Clitoria ternatea* L.; Col. No. 190	Fabaceae	Aparajita	Climber
47.	*Cocos nucifera* L.; Col. No. 15	Arecaceae	Narikol	Tree
48.	*Coix lacryma-jobi* L.; Col. No. 109	Poaceae	Kauri-moni	Herb
49.	*Coleus scutellarioides* (L.) Benth.;Col. No. 51	Lamiaceae		Herb
50.	*Colocasia esculenta* (L.) Schott; Col. No. 191	Araceae	Kosu	Herb
51.	*Commelina benghalensis* L.; Col. No. 112	Commelinaceae	Kona-himolu	Herb
52.	*Corchorus capsularis* L.; Col. No. 166	Malvaceae	Mithamora	Shrub
53.	*Corchorus olitorius* L.; Col. No. 91	Malvaceae	Titamora	Shrub
54.	*Cordyline fruticosa* (L.) A.Chev.;Col. No. 168	Asparagaceae		Herb
55.	*Crassocephalum crepidioides* (Benth.) S.Moore; Col. No. 133	Asteraceae		Herb
56.	*Crotolaria juncea* L.; Col. No. 144	Fabaceae		Shrub
57.	*Cucurbita pepo* L.; Col. No. 153	Cucurbitaceae	Rongalao	Climber
58.	*Cuphea carthagenesis* (Jacq.) J.F.Macbr.; Col. No. 113	Lythraceae		Herb
59.	*Curcuma longa* L.; Col. No. 122	Zingiberaceae	Haldhi	Herb
60.	*Cyanthillium cinereum* (L.) H.Rob.; Col. No. 157	Asteraceae		Herb
61.	*Cymbopogon citratus* (DC.) Stapf; Col. No. 182	Poaceae	Gandh-birina	
62.	*Cynodon dactylon* (L.) Pers.; Col. No. 114	Poaceae	Dubori bon	Herb
63.	*Cyperus brevifolius* (Rottb.) Hassk.; Col. No. 129	Cyperaceae		Herb
64.	*Delonix regia* (Bojer ex Hook.) Raf.; Col. No. 24	Fabaceae	Krishno-Chura	Tree
65.	*Digitaria ciliaris* (Retz.) Koeler; Col. No. 96	Poaceae		Herb
66.	*Digitaria setigera* Roth; Col. No. 93	Poaceae		Herb
67.	*Dillenia indica* L.; Col. No. 29	Dilleniaceae	Owtenga	Tree
68.	*Dracaena trifasciata* (Prain) Mabb.; Col. No. 107	Asparagaceae		Herb
69.	*Drymeria cordata* (L.) Willd. Ex Schult.; Col. No. 94	Caryophyllaceae	Laijabori	Herb
70.	*Duranta erecta* L. 163	Verbenaceae		Shrub

71.	*Echinocloa colonum* (L.) Link; Col. No. 71	Poaceae		Herb
72.	*Eclipta prostrata* (L.) L.; Col. No. 115	Asteraceae	Keheraj	Herb
73.	*Elaeocarpus serratus* L.; Col. No. 05	Elaeocarpaceae	Jolphai	Tree
74.	*Elephantopus scaber* L.; Col. No. 87	Asteraceae		Herb
75.	*Eleusine indica* (L.) Gaertn.; Col. No. 103	Poaceae	Bobosa-bon	Herb
76.	*Epipremnum aureum* (Linden and Andre) G.S.Bunting; Col. No. 126	Araceae		Climber
77.	*Eragrostis japonicum* (Thunb.) Trin.; Col. No. 135	Poaceae		Herb
78.	*Eragrostis tenella* (L.) P.Beauv. ex Roem. and Schult.; Col. No. 145	Poaceae		Herb
79.	*Eragrostis unilioides* (Retz.) Nees ex Steud.; Col. No. 137	Poaceae		Herb
80.	*Eucalyptus regnans* F.Muell.; Col. No. 95	Myrtaceae		Tree
81.	*Euphorbia hirta* L.; Col. No. 138	Euphorbiaceae		Herb
82.	*Euphorbia milii* Des Moul.; Col. No. 85	Euphorbiaceae		Herb
83.	*Euphorbia neriifolia* L.; Col. No. 124	Euphorbiaceae	Hiju	Shrub
84.	*Euphorbia tithymaloides* L.; Col. No. 186	Euphorbiaceae		Herb
85.	*Evolvulus nummularius* (L.) L.;Col. No. 196	Convolvulaceae		Herb
86.	*Fimbristylis quinquangularis* (Vahl) Kunth; Col. No. 146	Cyperaceae		Herb
87.	*Flacourtia jangomas* (Lour.) Raeusch.; Col. No. 165	Salicaceae	Poniyol	Shrub
88.	*Garcinia xanthochymus* Hook.f. ex T.Anderson; Col. No. 73	Clusiaceae	Tapor-tenga	Tree
89.	*Gardenia jasminoides* J.Ellis; Col. No. 90	Rubiaceae	Togor	Shrub
90.	*Gmelina arborea* Roxb. ex Sm.	Lamiaceae	Gomari	Tree
91.	*Goeppertia ornata* (Lem.) Borchs. and S.Suarez; Col. No. 185	Marantaceae		Herb
92.	*Gonostegia hirta* (Blume) Miq.; Col. No. 149	Urticaceae		Herb
93.	*Grevillea robusta* A.Cunn. ex R.Br.; Col. No. 41	Proteaceae		Tree
94.	*Hemelia patens* Jacq.; Col. No. 82	Rubiaceae		Shrub
95.	*Hibiscus rosa-sinensis* L.; Col. No. 47	Malvaceae	Joba Phul	Shrub
96.	*Hydrocotyl sibthorpioides* Lam.; Col. No. 154	Araliaceae	Xoru mani-muni	Herb
97.	*Hygroryza aristata* (Retz.) Nees ex Wight and Arn.; Col. No. 162	Poaceae	Dol-ghah	Herb
98.	*Hypericum japonicum* Thumb.; Col. No. 188	Hypericaceae		Herb
99.	*Imperata cylindrica* (L.) Raeusch.; Col. No.	Poaceae	Ulu-bon	Herb
99.	*Ipomoea aquatica* Forssk.; Col. No. 142	Convolvulaceae	Kolmou	Climber
100.	*Ixora chinensis* Lam.; Col. No. 53	Rubiaceae	Rangal-phul	Shrub
101.	*Jasminum multiflorum* (Burm.f.) Andrews; Col. No. 125	Oleaceae	Kharikajai	Shrub
102.	*Kalanchoe pinnata* (Lam.) Pers.; Col. No. 92	Crassulaceae	Duportenga	Herb
103.	*Lagerstroemia indica* L.; Col. No. 31	Lythraceae	Japani ajar	Shrub
104.	*Lemna minor* L.; Col. No. 202	Araceae	Puni	Herb
105.	*Leucas aspera* (Willd.) Link; Col. No. 97	Lamiaceae	Durun bon	Herb
106.	*Lindernia dubia* (L.) Pennell; Col. No. 128	Linderniaceae		Herb
107.	*Litchi chinensis* Sonn.; Col. No. 14	Sapindaceae	Lichu	Tree
108.	*Litsea monopetala* (Roxb.) Pers.; Col. No. 143	Lauraceae	Soalu	Tree
109.	*Machilus gamblei* King ex Hook.f.; Col. No. 177	Lauraceae	Som	Tree
110.	*Magnifera indica* L.; Col. No. 37	Anacardiaceae	Aam	Tree
111.	*Magnolia insignis* Wall.; Col. No. 140	Magnoliaceae	Titasopa	Tree
112.	*Malvaviscus penduliflorus* Moc. and Sesse ex DC; Col. No. 164	Malvaceae	Tikoni-joba	Shrub
113.	*Manilkara zapota* (L.) P.Royen; Col. No. 136	Sapotaceae	Chiku	Tree
114.	*Mazus pumilus* (Burm.f.) Steenis	Mazaceae		Herb
115.	*Mecardonia procumbens* (Mill.) Small; Col. No. 184	Plantaginaceae		Herb
116.	*Melaleuca citrina* (Curtis) Dum. Cours.; Col. No. 01	Myrtaceae	Bottle-brush	Shrub
117.	*Melastroma malabatricum* L.; Col. No. 192	Melastomataceae	Phutukola	Shrub
118.	*Melia azadirach* L.; Col. No. 79	Meliaceae	Ghura neem	Tree
119.	*Mesua ferrea* L.; Col. No. 33	Calophyllaceae	Nahor	Tree
120.	*Mikania micrantha* Kunth; Col. No. 75	Asteraceae	Premlota	Climber
121.	*Mimosa pudica* L.; Col. No. 59	Fabaceae	Lajuki bon	Herb
122.	*Mimosa rubicaulis* subsp. *himalayana* (Gamble) H. Ohashi; Col. No. 60	Fabaceae	Kawri kata	Shrub
123.	*Mimusops elengi* L.; Col. No. 49	Sapotaceae	Bokul	Shrub
124.	*Mirabilis jalapa* L.; Col. No. 52	Nyctaginaceae	Godhuli Gopal	Shrub
125.	*Momordica dioica* Roxb. ex Willd.; Col. No. 194	Cucurbitaceae	Bhat kerela	Climber
126.	*Monoon longifolia* (Sonn.) B.Xue and R.M.K.Saunders; Col. No. 34	Annonaceae	Debodaru	Tree
127.	*Morus indica* L.; Col. No. 04	Moraceae	Nuni	Shrub
128.	*Musa acuminata* Colla; Col. No. 35	Musaceae	Kol	Herb
129.	*Mussaenda erythrophylla* Schumach. and Thonn.; Col. No. 159	Rubiaceae	Sonarupa	Shrub
130.	*Myrtus communis* L.; Col. No. 07	Myrtaceae		Tree
131.	*Nyctanthes arbor-tristis* L.; Col. No. 19	Oleaceae	Sewali	Shrub
132.	*Ocimum gratissimum* L.; Col. No. 42	Lamiaceae	Tulshi	Herb
133.	*Ocimum tenuiflorum* L.; Col. No. 72	Lamiaceae	Tulshi	Herb
134.	*Oldenlandia corymbosa* L.; Col. No. 118	Rubiaceae	Xarpa-jibha	Herb
135.	*Oplismenus burmanii* (Retz.) P.Beauv.; Col. No. 183	Poaceae	Bahpotiaban	Herb
136.	*Opuntia stricta* (Haw.) Haw.; Col. No. 194	Cactaceae	Sagar fena	Herb
137.	*Oxalis debilis* Kunth; Col. No. 155	Oxalidaceae	Tengesi	Herb
138.	*Oxalis latifolia* Kunth; Col. No. 156	Oxalidaceae	Tengechi-tenga	Herb
139.	*Panicum capillare* L.; Col. No. 193	Poaceae		Herb
140.	*Panicum notatum* Retz.; Col. No. 99	Poaceae		Herb

141.	*Papilionanthe teres* (Roxb.) Schltr.; Col. No. 46	Orchidaceae	Bhatou Phul	Herb
142.	*Parthenium hysterophorus* L.; Col. No. 167	Asteraceae	Gajorghah	Herb
143.	*Peperomia pallida* (G.Forst.) A.Dietr.; Col. No. 178	Piperaceae	Pononowa	Herb
144.	*Persicaria chinensis* (L.) H.Gross; Col. No. 106	Polygonaceae	Madhu-soleng	Herb
145.	*Persicaria glabra* (Willd.) M. Gomez; Col. No. 198	Polygonaceae	Ronga bihalogoni	Herb
146.	*Phlogacanthus thyrsiformis* (Roxb. ex Hardw.) Mabb.; Col. No. 120	Acanthaceae	Titaphool	Shrub
147.	*Phyllanthus acidus* (L.) Skeels; Col. No. 123	Phyllanthaceae	Pora amlokhi	Tree
148.	*Phyllanthus emblica* L.; Col. No. 06	Phyllanthaceae	Amlokhi	Tree
149.	*Phyllanthus fraternus* G.L.Webstar; Col. No. 161	Phyllanthaceae	Bhui-amlokhi	Herb
150.	*Pilea microphylla* (L.) Liebm.; Col. No. 187	Urticaceae		Herb
151.	*Piper nigrum* L.; Col. No. 179	Piperaceae	Jaluk	Climber
152.	*Pistia stratiotis* L.; Col. No. 197	Araceae	Borpuni	Herb
153.	*Polygonum effusum* Meisn.; Col. No. 176	Polygonaceae		Herb
154.	*Pongamia pinnata* (L.) Pierre; Col. No. 180	Fabaceae	Koros	Tree
155.	*Pontederia crassipes* Mart.; Col. No. 175	Pontederiaceae		Herb
156.	*Portulaca oleracea* L.; Col. No. 181	Portulacaceae	Maalbhogxaak	Herb
157.	*Psidium guajava* L.; Col. No. 98	Myrtaceae	Modhuri	Shrub
158.	*Putranjiva roxburghii* Wall.; Col. No. 43	Putranjivaceae	Putranjiva	Tree
159.	*Pyrus communis* L.; Col. No. 117	Rosaceae	Naspoti	Tree
160.	*Pyrus pyrifolia* (Burm.f.) Nakai; Col. No. 119	Rosaceae	Naspoti	Tree
161.	*Rhododendron indicum* (L.) Sweet; Col. No. 69	Ericaceae	Azalea	Shrub
162.	*Rhyncostylis retusa* (L.) Blume; Col. No. 45	Orchidaceae	Kopouphul	Herb
163.	*Rosa indica* L.; Col. No. 76	Rosaceae	Gulap	Shrub
164.	*Saccharum officinarum* L.; Col. No. 169	Poaceae	Kuhiya	Shrub
165.	*Samanea saman* (Jacq.) Merr.; Col. No. 86	Fabaceae		Tree
166.	*Scoparia dulcis* L.; Col. No. 130	Plantaginaceae	Seni bon	Herb
167.	*Senegalia catechu* (L.f.) P.J.H.Hurter and Mabb.; Col. No. 134	Fabaceae	Khoir	Herb
168.	*Senna tora* (L.) Roxb.; Col. No. 48	Fabaceae	Medeluwa	Herb
169.	*Senna alata* (L.) Roxb.; Col. No. 101	Fabaceae	Khor Pat	Tree
170.	*Senna sophera* (L.) Roxb.; Col. No. 132	Fabaceae	Bormedeluwa	Tree
171.	*Setaria pumila* (Poir.) Roem. and Schult.; Col. No. 189	Poaceae	Bisa bon	Herb
172.	*Sida acuta* Burm.f.; Col. No. 170	Malvaceae		Herb
173.	*Sida rhombifolia* L.; Col. No. 173	Malvaceae	Boriola	Herb
174.	*Smilax perfoliata* Lour.; Col. No. 200	Smilacaceae	TikoniBorua	Climber
175.	*Solanum nigrum* L.; Col. No. 203	Solanaceae	Tita bhekuri	Shrub
176.	*Solanum torvum* Sw.; Col. No. 148	Solanaceae	Hati bhekuri	Shrub
177.	*Sonchus arvensis* L.; Col. No. 158	Asteraceae		Herb
178.	*Spermacoce articularis* L.f.; Col. No. 172	Rubiaceae	Gahori-bon	Herb
179.	*Spinacea oleracea* L.; Col. No. 150	Amaranthaceae	Piralipaleng	Herb
180.	*Spondias mombin* L; Col. No. 108	Anacardiaceae	Amora	Tree
181.	*Spondias pinnata* (L.f.) Kurz; Col. No. 110	Anacardiaceae	Amora	Tree
182.	*Sporobolus diander* (Retz.) P.Beauv.; Col. No. 199	Poaceae	Tupasoli	Herb
183.	*Sporobolus diandrus* (Retz.) P. Beauv.; Col. No. 151	Poaceae	Guti Ghah	Herb
184.	*Sporobolus indicus* (L.) R. Br.; Col. No. 83	Poaceae		Herb
185.	*Swietenia mahagoni* (L.) Jacq.; Col. No. 84	Meliaceae	Mahgony	Tree
186.	*Azadirachta indica* L.; Col. No. 102	Meliaceae	Mahaneem	Tree
187.	*Syngonium podophyllum* Schott; Col. No. 50	Araceae		Herb
188.	*Syzygium cumini* (L.) Skeels; Col. No. 02	Myrtaceae	Jamuk	Tree
189.	*Syzygium fruticosum* DC.; Col. No. 81	Mrytaceae	Kutahijamuk	Tree
190.	*Syzygium jambos* (L.) Alston; Col. No. 80	Mrytaceae	Bogi jamuk	Tree
191.	*Tabernaemontana divaricata* (L.) R.Br. ex Roem. and Schult.; Col. No. 147	Apocynaceae	Kothona	Shrub
192.	*Tamarindus indica* L.; Col. No. 160	Fabaceae	Teteli	Tree
193.	*Terminalia arjuna (*Roxb. ex DC.) Wight and Arn.; Col. No. 139	Combretaceae	Arjun	Tree
194.	*Terminalia bellirica* (Gaertn.) Roxb.; Col. No. 54	Combretaceae	Bhumura	Tree
195.	*Terminalia chebula* Retz.; Col. No. 56	Combretaceae	Hilikha	Tree
196.	*Terminalia myriocarpa* Van Heurck and Mull. Arg.; Col. No. 131	Combretaceae	Hollock	Herb
197.	*Torenia asiatica* L.; Col. No. 201	Linderniaceae		Herb
198.	*Tradeschantia zebrine* Bosse; Col. No. 152	Commelinaceae		Herb
199.	*Tridax procumbens* L.; Col. No. 78	Asteraceae	Putoli bon	Herb
200.	*Triumfetta rhomboidea* Jacq.; Col. No. 141	Malvaceae	Horu-agra	Shrub
201.	*Urena lobata* L.; Col. No. 74	Malvaceae		Shrub
202.	*Xanthium strumarium* L.; Col. No. 57	Asteraceae	Aagora	Herb
203.	*Xanthostemon chrysanthus* (F. Muell.) Benth.; Col. No. 65	Myrtaceae		Shrub
204	*Ziziphus jujuba* Mill.; Col. No. 61	Rhamnaceae	Bogori	Tree

Figure 3: A. *Clerodendrum colebrookeanum* Walp. B. *Kalanchoe pinnata* (Lam.) Pers. C. *Terminalia arjuna* (Roxb.ex DC.) Wight & Arn. D. *Terminalia bellirica* (Gaertn.) Roxb. E. *Ocimum tenuiflorum* L. F. *Chamaecostus cuspidatus* (Nees & Mart.) C.D.Specht & D.W.Stev. G. *Azadirachta indica* A. Juss. H. *Alstonia scholaris* (L.) R.Br.

Figure 4: Plants bearing edible fruits in Sonari College Campus. (I) *Manilkara zapota* (L.) P.Royen (J) *Averrhoea carambola* L. (K) *Dillenia indica* L. (L) *Cocos nucifera* L. (M) *Phyllanthus acidus* (L.) Skeels (N) *Psidium guajava* L. (O) *Flacourtia jangomas* (Lour.) Raeusch. (P) *Baccaurea ramiflora* Lour.

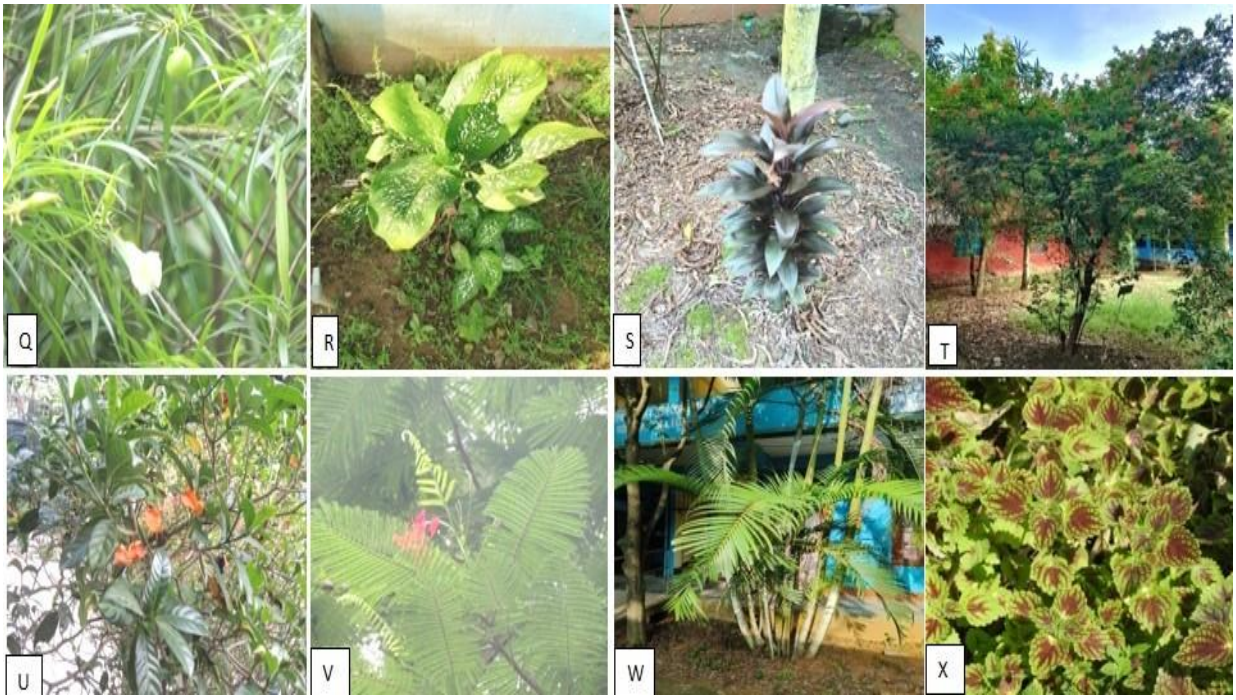

Figure 5: List of ornamental plants in Sonari College Campus. (Q*) Cascabela thevetia* (L.) Lippold (R) *Aglaonema costatum* N.E.Br. (S) *Cordyline fruticosa* (L.) A.Chev.(T) *Hemelia patens* Jacq. (U) *Tabernaemontana divaricata* (L.) R.Br. ex Roem. and Schult. (V) *Delonix regia* (Bojer ex Hook.) Raf. (W) *Chrysalidocarpus lutescens* H. Wendl. (X) *Coleus scutellarioides* (L.) Benth.

Listed invasive plant species:

A total of 79 invasive plants belonging to 27 families and 31 genera were recorded from Sonari College Campus, Charaideo. Specially *Ageratum conyzoides L, Mimosapudica L, Maikania micrantha Kunth* are major invaders species. Among the families Asteraceae and Amaranthaceae included the most recorded invasive plant species in studied area.

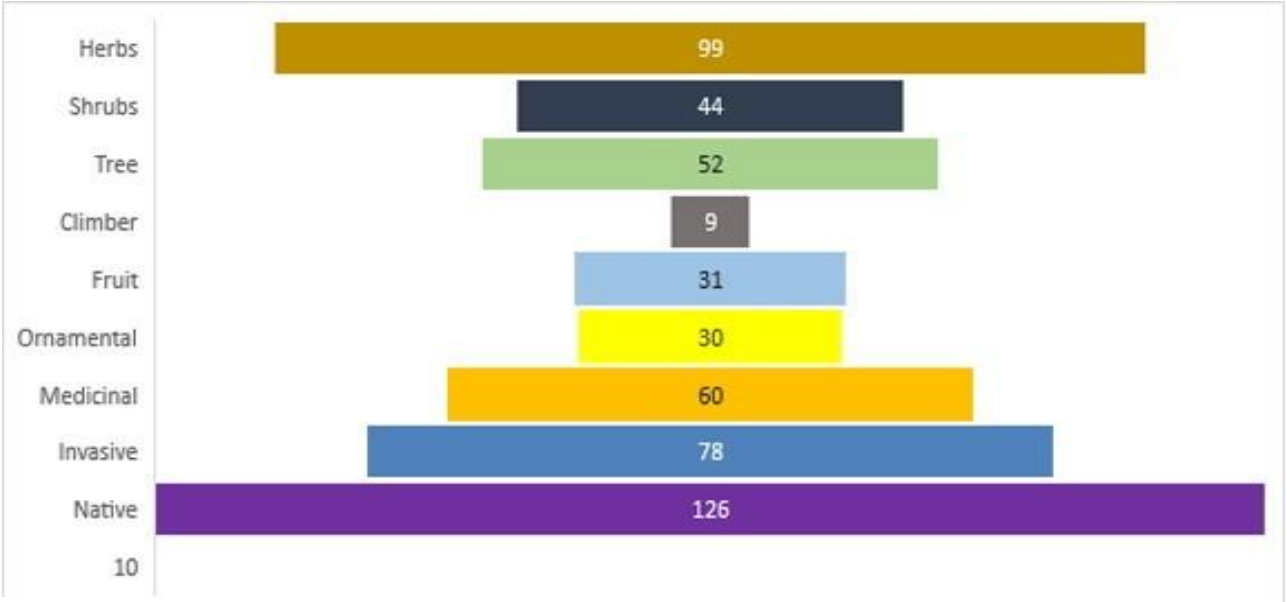

Figure: 6 Variation of plant forms based on their habit, uses and nativity.

Plant diversity is the cornerstone of a healthy ecosystem, providing a variety of benefits including food, shelter, medicine, and natural resources. This discussion will explore the plant life found on the Sonari college campus, located in Sonari, Charaideo district, Assam, India. The Sonari college campus boasts a rich tapestry of plant life, encompassing a range of:

Ornamental Plants: These visually appealing plants enhance the aesthetics of the campus. Examples include marigolds, dahlias, roses, hibiscus, Ixoras etc.

Trees: The campus is adorned with several tree species, some with medicinal properties like *Nyctanthes arbor-tristis* L. (Night Jasmine) and *Mimusops elengi* L. (Bakul). Other prominent trees include *Terminalia arjuna* (Roxb.ex DC.) Wight and Arn. (Arjuna) and *Terminalia bellirica* (Gaertn.) Roxb. (Belliric Myrobalan) etc.

Fruit Trees: The campus is home to fruit trees like litchi (*Litchi chinensis* Sonn.), guava (*Psidium guajava* L.), Indian gooseberry (*Phyllanthus emblica* L.), and *Elaeocarpus serratus* L.

Medicinal Plants: Several medicinal plants are found on campus, including *Asparagus racemosus* Willd., *Ocimum tenuiflorum* L., *Centella asiatica* (L.) Urb., *Clerodendrum colebrookeanum* Walp. which beautifies the campus with its yellow flowers when in bloom.

Importance of Plant Diversity

Ecosystem Services: The variety of plants on campus provides vital ecosystem services. Trees offer shade and regulate temperature, while all plants contribute to oxygen production and air purification.

Educational Value: The diversity of plant life serves as a valuable learning resource for students and researchers, fostering an understanding of plant ecology, medicinal uses, and conservation practices.

Habitat Creation: This plant diversity creates a habitat for various insects, birds, and other animals, promoting a balanced ecosystem within the college grounds.

Management and Conservation: To monitor and preserve diversity, a thorough inventory of the campus's plant species is essential. Preserving natural vegetation is crucial to preserving ecological equilibrium. It is important to preserve and restore endangered plant species. Organic farming techniques and water conservation should be prioritized in sustainable gardening operations.

Various workers have reported on plant diversity of different regions of Assam. Gogoi and Nath (2021) worked on the diversity of angiosperms of Dibrugarh district whereas (Gogoi ,2020) enlisted the weed flora of the same district. Heydari and Mahadevi (2009) investigated on the plant diversity richness and documented 83 species. Das and Das (2005) encountered 122 plant species from the home gardens of Barak valley whereas (Zimik et al., 2012) documented a total of 268 species under 200 genera from the home gardens of Assam and Arunachal Pradesh. A total number of 166 genera under 136 genera recorded in Hojai and Kumorakata reserve forest of Assam (Dutta and Devi, 2013). (Saikia et al., 2017) reported 482 numbers of plant species from Arunachal Pradesh. Singh et al (2021) documented 516 plants belonging to 241 genera in the hotspots of north east India.

The importance of plant diversity in an urban setting is best shown by the campus of Sonari College. We can support a thriving and healthy campus environment by being aware of and appreciative of the many plants and the functions they perform. The present discourse is an initial step towards additional investigation and endeavours aimed at conserving and augmenting the diversity of plants in the College campus.

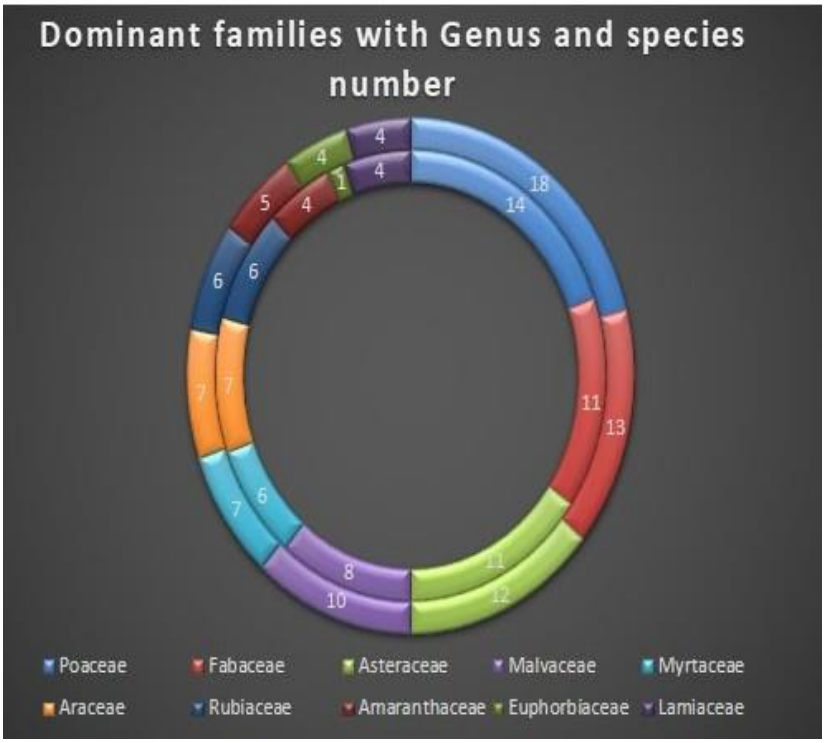

Figure: 7 Graphical representations of ten dominant families of Sonari College Campus

Table 2. List of top ten dominant families.

Family	Genus	Species
Poaceae	14	18
Fabaceae	11	13
Asteraceae	11	12
Malvaceae	8	10
Myrtaceae	6	7
Araceae	7	7
Rubiaceae	6	6
Amaranthaceae	4	5
Euphorbiaceae	1	4
Lamiaceae	4	4

Table 3. Table showing various habit forms.

Plant habit	No of species
Herb	99
Shrub	44
Tree	52
Climber	9
Total	204

Table 4. List of invasive plant species.

Name of Invasive species	Family
Ageratum conyzoides L.	Asteraceae
Eclipta prostrata (L.)	Asteraceae
Mikania micrantha Kunth	Asteraceae
Chromolaena odorata (L.) R.M.King and H.Rob.	Asteraceae
Mimosa pudica L.	Fabaceae
Tridax procumbens L.	Asteraceae
Tradescantia zebrine Bosse	Commelinaceae
Sonchus arvensis L.	Asteraceae
Senna sophera (L.) Roxb.	Caesalpiniaceae
Senna tora (L.) Roxb.	Caesalpiniaceae
Oxalis latifolia Kunth	Oxalidiaceae
Echinocloa colona (L.) Link	Poaceae
Portulaca oleracea L.	Portulaceae
Scoparia dulcis L.	Plantaginaceae
Solanum torvum Sw.	Solanaceae
Grevillea robusta A.Cunn.ex R.Br	Proteaceae
Achyranthes aspera L.	Amaranthaceae
Litchi chinensis Sonn.	Sapindaceae
Ageratum houstonianum Mill.	Asteraceae
Aloe vera (L.) Burm.f.	Asphodelaceae
Alternanthera paronychioides A.St.Hil	Amaranthaceae
Alternanthera philloxeroides (Mart.) Griseb	Amaranthaceae
Alternanthera sessilis (L.) DC.	Amaranthaceae
Amaranthus spinosa L.	Amaranthaceae
Anacardium occidentale L.	Anacardiaceae
Anonna reticulata L.	Annonaceae
Averrhoa carambola L.	Oxalidaceae
Aquilaria malaccensis Lam.	Thymelaeceae
Araucaria columnaris (G.Forst) Hook	Araucariaceae
Areca catechu L.	Arecaceae
Bombax ceiba L.	Malvaceae
Caesalpinia pulcherrima (L.)Sw.	Caesalpiniaceae
Caladium bicolar (Aiton) Vent	Araceae
Monoon longifolia (Sonn.) B.Xue and R.M.K.Saunders	Annonaceae
Capsicum cinensis Jacq.	Solanaceae
Carica papaya L.	Caricaceae
Cascabela thevetia (L.) Lippold	Apocynaceae
Cartharanthus roseus (L.) G.Don	Apocynaceae
Chromolena odorata (L.) R.M.King and H.Rob	Asteraceae
Citrus jambhiri Lush	Rutaceae
Clitoria ternatea L.	Fabaceae
Coleus scutellarioides (L.) Benth	Lamiaceae
Cocos nucifera L.	Aracaceae
Cucurbita pepo L.	Cucurbitaceae
Cuphea carthagenesis (Jacq.) J.F.Macbr	Lythraceae
Cyanthillium cinereum (L.) H.Rob	Asteraceae
Xanthostemon crysanthus (F.Muell.) Benth	Myrtaceae
Xanthium strumarium L.	Asteraceae
Tridax procumbens L.	Asteraceae
Tradescantia zebrica Bosse	Commelinaceae
Syngonium podophyllum Schott	Araceae
Swietenia mahgoni (L.) Jacq	Meliaceae
Sonchus arvesis L.	Asteraceae
Sida acuta Burm.f.	Malvaceae
Scoparia dulsis L.	Plantaginaceae
Samanea saman (Jacq.) Merr.	Fabaceae
Saccharum officinarum L.	Poaceae
Rhynchostylis retusa (L.) Blume	Orchidaceae
Rhododendron indicum (L.) Sweet	Ericaceae
Pyrus pyrifolia (Burm.f.) Nakai	Rosaceae
Portulaca oleracea L.	Portulacaceae
Potendria crassipes Mart.	Potendriaceae
Pilea microphylla (L.) Liebm.	Urticaceae
Peperomia pallida (G.Forst)A.Dietr.	Piperaceae
Panicum capilaris L.	Poaceae
Oxalis latifolia Kunth	Oxalidaceae
Oxalis debilis Kunth	Oxalidaceae
Opuntia stricta (Haw.) Haw.	Cactaceae
Myrtus communis L.	Myrtaceae
Mussaenda erythrophylla Schumach and Thonn	Rubiaceae
Monoon longifolium (Sonn.) B.Xue and R.M.K Saunders	Annonaceae
Melaleuca citrine (Curtis) Dum.Cous.	Myrtaceae
Mecardonia procumbens (Mill.) Small	Plantaginaceae
Manilkara zapota (L.) P.Royan	Sapotaceae
Malvaviscus penduliflorus Moc.and Sesse ex DC.	Malvaceae
Lindernia dubia (L.) Pennell	Linderniaceae
Lemna minor L.	Araceae

5. Conclusion

The present study revealed that the Sonari College campus is rich in plant diversity having ecological, economical and medicinal significance. The college campus has a lush green picturesque landscape featured by evergreen trees, fruit trees, medicinal plants, ornamental plants and orchids. Plant diversity measures the health of an ecosystem and studying the plant diversity of an area helps in conservation and protection of nature. It is seen that plantation programs conducted in the college campus has been contributing to the increment in plant biodiversity of the college campus and also creating a sustainable and thriving environment in the academic settings. However, it is important that indigenous plant species should be planted rather than exotic species as they have adverse effects on the nearby plant communities.

Acknowledgement: Thankful to college authority for help and support.

Author's contribution: All the authors have equally contributed in field work and development of the manuscript.

Conflict of Interest: Authors declare that there is no conflict of interest.

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