

## **Plant diversity and their significance of Adikavi Nannaya University Campus**

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### **ABSTRACT**

*Documentation of existing green spaces of an area is important to determine existing resources and to set target for future improvements. Adikavi Nannaya University located between 17°3' 54.53" N and 81°52' 22.80" E in Rajamahendravaram (Rajahmundry) in South India. During 2014-2015 explorations were undertaken, contributed 236 species, 182 genera belongs to 62 families and two species additions to the flora of East Godavari District. It is necessary to develop botanical gardens with native, red list and medicinal plants, to create awareness on conservation of precious plant diversity in the educational institutes and Universities.*

**Keywords:** Conservation, plant diversity, Red list Medicinal Plants, Rajahmundry, Wild edible Plants

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### **INTRODUCTION**

Documentation of existing green spaces of an area is important to determine existing resources and to set target for future improvements. Floras serve as the basic reference of the plant biota of an area; they are critical tools that serve botanists, conservationists, ecologists, foresters, gardeners, agronomists, researchers, and the general public. The botanical exploration of an area and writing a flora to summarize that information was seen as a basic societal need leading to the discovery of economically valuable information.

India is one of the twelve mega diversity countries of the world with a rich diversity of biotic resources [1]. India has 12 biogeographical provinces, 5 biomes and 3 bioregion domains [2]. Though the geographical area cover of the country represents about 2.4% of the world's total landmass, it harbours a total of 47,513 plant species [3] out of about 0.4 million hitherto known in the world, representing as much as 11.4% of world flora. There are 17,527 angiosperm species, under 2991 genera and 251 families in India, representing approximately 7% of the described species in the world [4]. However, the recent estimate accounts a total of 17,926 species of angiosperms in the country [5]. Flora of Andhra Pradesh accounts for about 2803 species belonging to 1051 genera under 185 families, which represents 16% of flowering plant species of India [6]. The flora of Andhra Pradesh [7], [8], [9], does cover East Godavari district. Moreover [10], [11], [12], [13], [14], [15], [16], [17] worked on the Flora of East Godavari District.

An understanding of the distribution of plants species in a region play an important role in elucidating the larger patterns of distribution of biodiversity. Documentation of the flora in University Campus is more helpful for the students and researchers. Objective of the present research is exploration of existed flora and assessment of their significance in the Adikavi Nannaya University Campus.

### **MATERIALS AND METHODS**

**Study area:** Adikavi Nannaya University was established in 2006 and named 11th-century poet Nannayabhatta, who is revered as Adikavi (the first poet) of Telugu literature. It is located between 17°3' 54.53" N and 81°52' 22.80" E with an average elevation of 14 m from the sea level and with red sandy soil (Fig 1). University campus is adjacent to national highway 16 in outskirts of Rajamahendravaram (Rajahmundry), Andhra Pradesh, India (Fig 2). The weather is hot and humid, with a tropical climate. The mean maximum temperature is 32 °C. The hottest season

is from April to June, with temperature ranging from 34 °C to 48 °C with maximum of 51 °C recorded in May 2002 and May 2007. The coolest months are December and January, when it is pleasant at 27 °C to 30 °C. There is heavy monsoon rain at the end of summer, with depressions in the Bay of Bengal. And an average rain fall of 1057.2 mm [18]. Teak and avenue trees are planted in the University campus. More than 70% of the University Campus is open land, occupied by luxuriant growth of herbs and bushes.



Fig 1. Map of the Study area



Fig 2. Satellite map of the Adikavi Nannaya University campus (source google earth)

**Field study:** During the period of 2014-2015 explorations were undertaken covered rainy, winter and summer seasons to record plant species. All plant species were identified with the help of floras and literature [10], [7], [8], [9], [11], [12], [16]. Data such as botanical name, family, and habit significance were given. Local names were provided as far as possible. All the plant species are arranged according to alphabetical order of their family. The

family names of Bentham and Hooker's classification have been followed with recent changes. Nomenclature as far as possible has been made up-to date [19] (Table 1). Some of the important plants were prepared herbarium and deposited in Andhra University Herbarium. Some of the plant photographs were provided for easy identification (Fig 7-9).

### RESULTS

A total of 236 species, 182 genera belongs to 62 families were reported from the Adikavi Nannaya University Campus (Table 1). Among the 236 species dicots are 210 (88.98%) and monocots are 26 (11.01%) were reported (Fig 3). According to life forms highest number of herbs 110 (46.61%) followed by climbers 39 (16.52%), trees 39 (16.52%), shrubs 30 (12.71%), grasses 15 (6.35%) and parasites 3 (1.27%) were reported (Fig 4). Among the 236 species highest numbers of plants 217 (91.94%) species are naturally growing, 19 (8.05%) trees are introduced in to the campus for avenue and ornamental purpose and 20 (8.47%) trees are naturally growing in the University campus.

Among the 182 genera 4 genera (2.19%) *Senna*, *Ipomoea*, *Phyllanthus* and *Indigofera* are the dominant genera with 4 species followed by 9 (4.94%) genera *Alternanthera*, *Cleome*, *Merremia*, *Crotalaria*, *Tephrosia*, *Sida*, *Ficus*, *Solanum* and *Grewia* with 3 species, 24 (13.218%) genera are with 2 species and 145 (79.67%) genera with only single species were reported.

Fabaceae is the most dominant family with 24 (10.16%) species followed by Euphorbiaceae 13 (5.50%) species, Poaceae 12 (5.08%) species, 2 families Amaranthaceae and Convolvulaceae with 11 (4.66%) species, 2 families Caesalpiniaceae and Malvaceae with 10 (4.23%) species, Rubiaceae with 9 (3.81%) species, 2 families Acanthaceae and Asteraceae with 8 (3.38%) species, Tiliaceae with 6 (2.54%) species, 6 families Apocynaceae, Boraginaceae, Lamiaceae, Minosaceae and Rutaceae and Vitaceae are with 5 (2.11%) species, Solanaceae with 4 (1.69%) species, 12 families Aizoaceae, Areaceae, Asclepidiaceae, Bignoniaceae, Capparaceae, Cleomaceae, Cyperaceae, Liliaceae, Moraceae, Sapindaceae and Scrophulariaceae and Sterculiaceae are with 3 (1.27%), 6 families Commelinaceae, Flacourtiaceae, Menispermaceae, Molluginaceae, Rhmanaceae, and Verbenaceae are with 2 (0.84%) species and remaining 25 families are with only single species were reported from the University campus.

*Senna uniflora* and *Cyphostemma setosum* are the new additions to the flora of East Godavari District, which was not reported by earlier researcher [11]. *Senna uniflora* (Syn: *Cassia uniflora*) is the first time reported from Telangana region (Mahabubnagar District) of the Andhra Pradesh by [20], now it is spread in to East Godavari District of Andhra Pradesh.

*Ipomoea aquatica* and *Neptunia oleracea* are the free floating, *Aeschynomene aspera*, *Aeschynomene indica*, *Aponogeton crispus*, *Cyperus exaltatus*, *Nymphaea nouchali*, *Ludwigia perennis*, *Typha domingensis* are submerged aquatic plants growing in the campus. Xerophytic plants like *Asparagus racemosus*, *Opuntia dillenii*, *Sansevieria roxburghiana*, *Cissus quadrangularis* etc. and parasitic plants like *Cuscuta reflexa*, *Cassytha filiformis* and *Striga asiatica* are also naturally growing in the campus. *Alternanthera paronychioides*, *Chromolaena odorata*, *Parthenium hysterophorus* and *Hyptis suaveolens* are the most dominant invasive alien species in the campus.

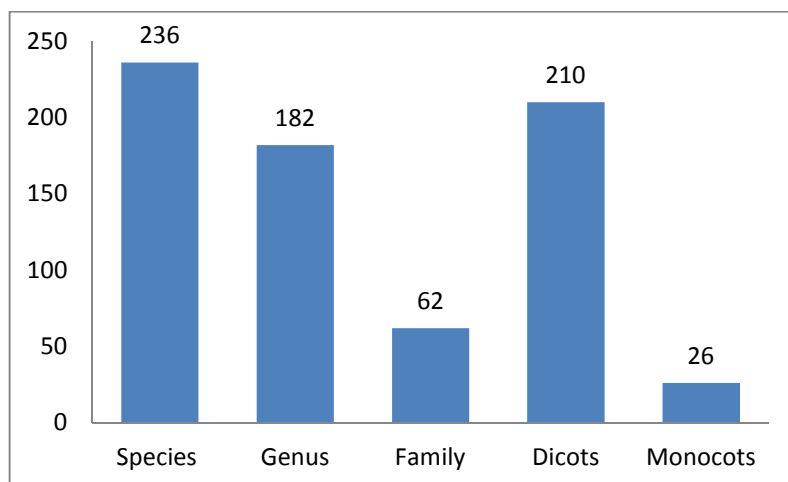


Fig 3. Details of species richness, genus and families of the study area

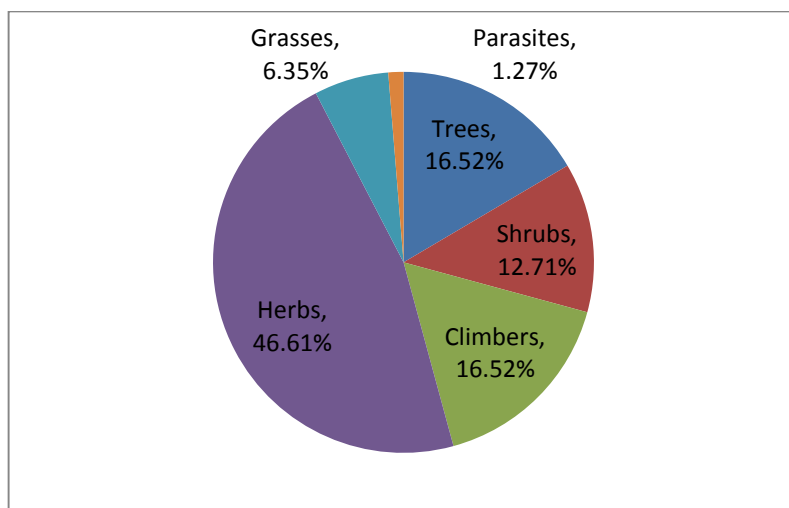


Fig 4. Percentages of different life forms in University campus

Among the 236 species, all the plants were identified as medicinal plants for various diseases [21]. Six (2.54%) plants *Aegle marmelos* (Vulnerable), *Cayratia pedata* (Vulnerable), *Dalbergia latifolia* (Vulnerable), *Gloriosa superb* (Vulnerable), *Gymnema sylvestre* (Vulnerable) and *Operculina turpethum* (Least Concerned) are red list medicinal plants in Andhra Pradesh [22], these medicinal plants are naturally growing in the University campus. Other most valuable medicinal plants like *Andrographis paniculata*, *Achyranthes aspera*, *Aerva lanata*, *Holarrhena pubescens*, *Aristolochia indica*, *Hemidesmus indicus*, *Eclipta prostrate*, *Evolvulus alsinoides*, *Jatropha gossypifolia*, *Phyllanthus amarus*, *Abrus precatorius*, *Clitoria ternatea*, *Curculigo orchioides*, *Ocimum tenuiflorum*, *Strychnos nux-vomica*, *Azadirachta indica*, *Tinospora cordifolia* and *Helicteres isora* are also naturally growing in the campus.

A total of 67 (28.38%) wild edible plants, 12 (5.08%) crops related wild species and 2 (0.84%) fruiting tress (*Annona squamosa* and *Cocos nucifera*) were reported. Among the 67 wild edibles species 35 (14.83%) species are wild edible fruits, 34 (14.40%) species are wild edible leafy vegetables, 2 (0.84%) species (*Cajanus scarabaeoides* and *Sapindus emarginatus*) are wild edible seeds and 1 (0.42%) species (*Asparagus racemosus*) is wild edible tubers were identified (Table 1, Fig 5). A total of 161 (68.22%) species are only used as medicine, 31 (13.14%) species are used as both wild edible fruits and medicine, 26 (11.02%) species are both wild edible and medicine, 6 (2.54%) species are used as both crop related wild species and medicine, 3 (1.27%) species are used as wild edible, crop related wild species and medicine, 2 (0.85%) species are used as edible fruits and medicine, 2(0.85%) species are used as wild edible leafy vegetable, wild edible fruits, crop related wild species and medicine. 2 (0.85%) species are used as wild edible leafy vegetable, wild edible fruits and medicine, 1 (0.42%) species is used as wild edible leafy vegetable, wild edible tubers and medicine, 1 (0.42%) species is used as wild edible seeds, crop related wild species and medicine and 1 (0.42%) species is used as wild edible seeds and medicine were reported from the university campus (Table 1, Fig 6).

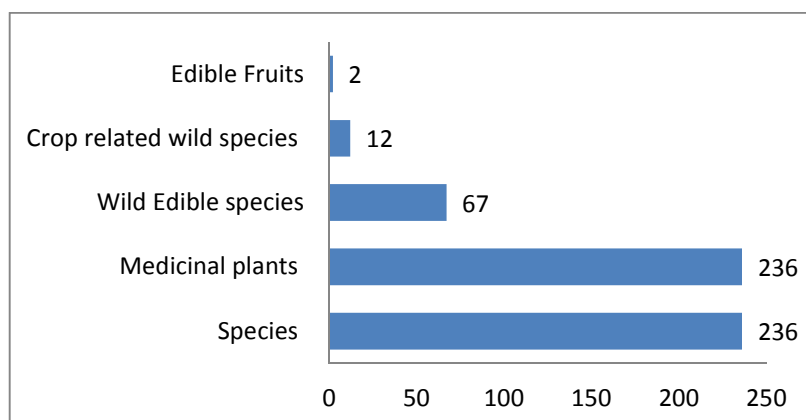


Fig. 5. Significance of the flora of University campus

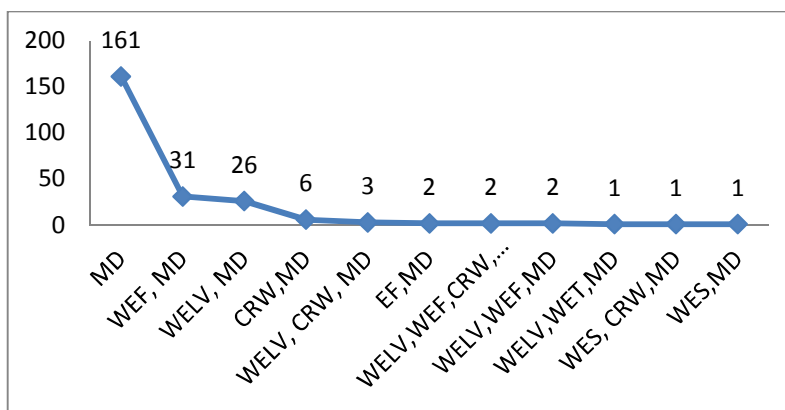


Fig 6. Details of importance of the plants in the study area

Table 1. Enumeration of the plant diversity in Adikavi Nannaya University Campus and their significance

S.No	Family	Name of the Taxa	Habit	Local Name	Significance
1	Acanthaceae	<i>Andrographis paniculata</i> (Burm.f.) Nees	H	Nelavemu	MD
2	Acanthaceae	<i>Asystasia gangetica</i> (L.) T.Anderson	H	Lavanavalli	WELV, MD
3	Acanthaceae	<i>Barleria prionitis</i> L.	Sh	Mulugorinta	MD
4	Acanthaceae	<i>Blepharis integrifolia</i> (L.f.) E.Mey. & Drège ex Schinz	H		MD
5	Acanthaceae	<i>Blepharis maderaspatensis</i> (L.) B.Heyne ex Roth	H		MD
6	Acanthaceae	<i>Dipteracanthus prostratus</i> (Poir.) Nees	H	Neela neelambaram	MD
7	Acanthaceae	<i>Justicia glauca</i> Rottler	H		MD
8	Acanthaceae	<i>Justicia procumbens</i> L.	H		MD
9	Aizoaceae	<i>Mollugo nudicaulis</i> Lam.	H		MD
10	Aizoaceae	<i>Mollugo pentaphylla</i> L.	H		MD
11	Aizoaceae	<i>Trianthema portulacastrum</i> L.	H	Glijeru	WELV, MD
12	Alangiaceae	<i>Alangium salviifolium</i> (L.f.) Wangerin	T	Uduga	WEF, MD
13	Amaranthaceae	<i>Allmania nodiflora</i> (L.) R.Br. ex Wight	H		MD
14	Amaranthaceae	<i>Amaranthus spinosus</i> L.	H	Mullatotakura	WELV, CRW, MD
15	Amaranthaceae	<i>Amaranthus viridis</i> L.	H	Chilaka totakura	WELV, CRW, MD
16	Amaranthaceae	<i>Gomphrena serrata</i> L.	H		MD
17	Amaranthaceae	<i>Achyranthes aspera</i> L.	H	Uttareni	WELV,MD
18	Amaranthaceae	<i>Aerva lanata</i> (L.) Juss.	H	Kondapindikura	WELV,MD
19	Amaranthaceae	<i>Alternanthera paronychioides</i> A.St.-Hil.	H		MD
20	Amaranthaceae	<i>Alternanthera pungens</i> Kunth	H		MD
21	Amaranthaceae	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	H	Pongantikura	WELV, MD
22	Amaranthaceae	<i>Digera muricata</i> (L.) Mart.	H	Chenchalikura	WELV, MD
23	Amaranthaceae	<i>Pupalia lappacea</i> (L.) Juss.	H		MD
24	Annonaceae	<i>Annona squamosa</i> L.	T	Seetaphalam	EF,MD
25	Apocynaceae	<i>Carissa carandas</i> L.	Sh	Vaka	WEF, MD
26	Apocynaceae	<i>Carissa spinarum</i> L.	Sh	Chinna vaka	WEF, MD
27	Apocynaceae	<i>Holarthena pubescens</i> Wall. ex G.Don	T	Kodisapala	MD
28	Apocynaceae	<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton	Cl	Nallateega	MD
29	Apocynaceae	<i>Pergularia daemia</i> (Forssk.) Chiov.	Cl	Dustaputeega	MD
30	Aponogetonaceae	<i>Aponogeton crispus</i> Thunb.	H		MD
31	Arecaceae	<i>Borassus flabellifer</i> L.	T	Tadi	WEF, MD
32	Arecaceae	<i>Cocos nucifera</i> L.	T	Kobbari	EF,MD
33	Arecaceae	<i>Phoenix sylvestris</i> (L.) Roxb.	T	Eeta	WEF, MD
34	Aristolochiaceae	<i>Aristolochia indica</i> L.	Cl	Nallaewari	MD
35	Asclepiadiaceae	<i>Calotropis gigantea</i> (L.) Dryand.	Sh	Jilledu	MD
36	Asclepiadiaceae	<i>Gymnema sylvestre</i> (Retz.) R.Br. ex Sm.	Cl	Podapatri	MD
37	Asclepiadiaceae	<i>Hemidesmus indicus</i> (L.) R. Br. ex Schult.	cl	Sugandipala	MD
38	Asteraceae	<i>Ageratum conyzoides</i> (L.) L.	H	Bodasaram	MD
39	Asteraceae	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	Sh	Kampurodda	MD
40	Asteraceae	<i>Cyanthillium cinereum</i> (L.) H.Rob.	H	Garitakamma	WELV, MD
41	Asteraceae	<i>Eclipta prostrata</i> (L.) L.	H	Guntagalagara	WELV, MD
42	Asteraceae	<i>Emilia sonchifolia</i> (L.) DC. ex DC.	H		WELV, MD
43	Asteraceae	<i>Parthenium hysterophorus</i> L.	H	Vyyaribhama	MD
44	Asteraceae	<i>Tridax procumbens</i> (L.) L.	H	Gaddichamanti	WELV, MD
45	Asteraceae	<i>Xanthium strumarium</i> L.	Sh	Marulamantangi	WELV, MD
46	Bignoniaceae	<i>Markhamia lutea</i> (Benth.) K.Schum.	T		MD
47	Bignoniaceae	<i>Millingtonia hortensis</i> L.f.	T	Kadamalli	MD
48	Bignoniaceae	<i>Spathodea campanulata</i> P.Beauv.	T		MD
49	Boraginaceae	<i>Coldenia procumbens</i> L.	H	Hamsapadu	MD
50	Boraginaceae	<i>Ehretia laevis</i> Roxb.	T		MD
51	Boraginaceae	<i>Ehretia microphylla</i> Lam.	Sh	Bapanapurre	WEF, MD
52	Boraginaceae	<i>Cordia sebestena</i> L.	T		MD
53	Boraginaceae	<i>Heliotropium indicum</i> L.	H	Vankarapogaku	MD
54	Cactaceae	<i>Opuntia dillenii</i> (Ker Gawl.) Haw.	Sh	Brhmadandi	WEF, MD
55	Caesalpiniaceae	<i>Bauhinia purpurea</i> L.	T	Devakanchanam	WELV, MD
56	Caesalpiniaceae	<i>Bauhinia racemosa</i> Lam.	T	Arechettu	MD
57	Caesalpiniaceae	<i>Cassia fistula</i> L.	T	Reela	WELV, MD

58	Caesalpiniaceae	<i>Peltophorum pterocarpum</i> (DC.) K. Heyne	T	Pachha sunkesula	MD
59	Caesalpiniaceae	<i>Pterolobium hexapetalum</i> (Roth) Santapau & Wagh	Cl	Korinta	MD
60	Caesalpiniaceae	<i>Senna auriculata</i> (L.) Roxb.	Sh	Tangedu	MD
61	Caesalpiniaceae	<i>Senna occidentalis</i> (L.) Link	H	Kasinta	WELV, MD
62	Caesalpiniaceae	<i>Senna tora</i> (L.) Roxb.	H	Nelatangedu	WELV, MD
63	Caesalpiniaceae	<i>Senna uniflora</i> (Mill.) H.S. Irwin & Barneby	H		MD
64	Caesalpiniaceae	<i>Tamarindus indica</i> L.	T	Chinta	WELV, MD
65	Capparaceae	<i>Cadaba fruticosa</i> (L.) Druce	Sh		MD
66	Capparaceae	<i>Capparis sepiaria</i> L.	Sh	Nallavuppi	MD
67	Capparaceae	<i>Capparis zeylanica</i> L.	Cl		MD
68	Celastraceae	<i>Gymnosporia montana</i> (Roth) Benth.	Sh	Danti	MD
69	Cleomaceae	<i>Cleome aspera</i> J. Koenig ex DC.	H		MD
70	Cleomaceae	<i>Cleome gynandra</i> L.	H	Kukkavamita	WELV, MD
71	Cleomaceae	<i>Cleome viscosa</i> L.	H	Kukkavamita	WELV, MD
72	Clusiaceae	<i>Calophyllum inophyllum</i> L.	T	Ponnachettu	MD
73	Combretaceae	<i>Combretum albidum</i> G. Don	Cl		MD
74	Commelinaceae	<i>Commelina benghalensis</i> L.	H	Vennadenikura	WELV, MD
75	Commelinaceae	<i>Cyanotis axillaris</i> (L.) D. Don ex Sweet	H		MD
76	Convolvulaceae	<i>Cuscuta reflexa</i> Roxb.	Pr	Bangaruteega	MD
77	Convolvulaceae	<i>Evolvulus alsinoides</i> (L.) L.	H	Vishnukranthi	MD
78	Convolvulaceae	<i>Evolvulus nummularius</i> (L.) L.	H		MD
79	Convolvulaceae	<i>Ipomoea aquatica</i> Forssk.	Cl	Neeti tutikura	WELV, MD
80	Convolvulaceae	<i>Ipomoea carnea</i> Jacq.	Sh	Tuti	MD
81	Convolvulaceae	<i>Ipomoea marginata</i> (Desr.) Verdc.	Cl		MD
82	Convolvulaceae	<i>Ipomoea pes-tigridis</i> L.	Cl		MD
83	Convolvulaceae	<i>Merremia emarginata</i> (Burm. f.) Hallier f.	H	Elukachevi	WELV, MD
84	Convolvulaceae	<i>Merremia hederacea</i> (Burm. f.) Hallier f.	Cl		MD
85	Convolvulaceae	<i>Merremia tridentata</i> (L.) Hallier f.	Cl	Seetamma savaram	MD
86	Convolvulaceae	<i>Operculina turpethum</i> (L.) Silva Manso	Cl		MD
87	Cucurbitaceae	<i>Coccinia grandis</i> (L.) Voigt	Cl	Kakidonda	WELV, WEF, CRW, MD
88	Cucurbitaceae	<i>Cucumis melo</i> L.	Cl		CRW, MD
89	Cucurbitaceae	<i>Luffa cylindrica</i> (L.) M. Roem.	Cl	Netibeera	CRW, MD
90	Cucurbitaceae	<i>Trichosanthes tricuspidata</i> Lour.	Cl	Nakka Dosa	CRW, MD
91	Cucurbitaceae	<i>Ctenolepis garcini</i> (L.) C.B. Clarke	Cl		MD
92	Cucurbitaceae	<i>Diplocyclos palmatus</i> (L.) C. Jeffrey	Cl	Lingadonda	MD
93	Cucurbitaceae	<i>Mukia maderaspatana</i> (L.) M. Roem.	Cl		MD
94	Cyperaceae	<i>Cyperus exaltatus</i> Retz.	Gr		MD
95	Cyperaceae	<i>Cyperus rotundus</i> L.	Gr	Tunga	MD
96	Cyperaceae	<i>Kyllinga nemoralis</i> (J.R. Forst. & G. Forst.) Dandy ex Hutch. & Dalziel	Gr		MD
97	Ebenaceae	<i>Diospyros vera</i> (Lour.) A. Chev.	T	Pisinika	WEF, MD
98	Euphrobiaceae	<i>Acalypha ciliata</i> Forssk.	H		MD
99	Euphrobiaceae	<i>Acalypha indica</i> L.	H	Muripinda	WELV, MD
100	Euphrobiaceae	<i>Bridelia montana</i> (Roxb.) Willd.	T	Balli	MD
101	Euphrobiaceae	<i>Croton bonplandianus</i> Baill.	H	Galivanamokka	MD
102	Euphrobiaceae	<i>Euphorbia hirta</i> L.	H	Pachabotlu	WELV, MD
103	Euphrobiaceae	<i>Flueggea leucopyrus</i> Willd.	T	Tella purugudu	WEF, MD
104	Euphrobiaceae	<i>Jatropha gossypifolia</i> L.	Sh	Seemanepalam	MD
105	Euphrobiaceae	<i>Micrococca mercurialis</i> (L.) Benth.	H		MD
106	Euphrobiaceae	<i>Microstachys chamaelea</i> (L.) Müll. Arg.	H		MD
107	Euphrobiaceae	<i>Phyllanthus amarus</i> Schumach. & Thonn.	H	Nelusiri	WELV, MD
108	Euphrobiaceae	<i>Phyllanthus maderaspatensis</i> L.	H		MD
109	Euphrobiaceae	<i>Phyllanthus reticulatus</i> Poir.	Sh	Puredu	MD
110	Euphrobiaceae	<i>Phyllanthus virgatus</i> G. Forst.	H		MD
111	Fabaceae	<i>Abrus precatorius</i> L.	Cl	Gurivinda	MD
112	Fabaceae	<i>Aeschynomene aspera</i> L.	H	Jeeluga	MD
113	Fabaceae	<i>Aeschynomene indica</i> L.	H	Jeeluga	MD
114	Fabaceae	<i>Alysicarpus montilifer</i> (L.) DC.	H		MD
115	Fabaceae	<i>Cajanus scarabaeoides</i> (L.) Thouars	Cl	Teega kandi	WES, CRW, MD
116	Fabaceae	<i>Clitoria ternatea</i> L.	Cl	Shankupulu	MD
117	Fabaceae	<i>Crotalaria hebecarpa</i> (DC.) Rudd	H		MD
118	Fabaceae	<i>Crotalaria laburnifolia</i> L.	Sh	Pedda giligichha	MD
119	Fabaceae	<i>Crotalaria pallida</i> Aiton	H	Giligiccha	MD
120	Fabaceae	<i>Dalbergia lanceolaria</i> subsp. <i>paniculata</i> (Roxb.) Thoth.	T	Pachhari	MD
121	Fabaceae	<i>Dalbergia latifolia</i> Roxb.	T	Reose wood	MD
122	Fabaceae	<i>Desmodium triflorum</i> (L.) DC.	H		MD
123	Fabaceae	<i>Indigofera colutea</i> (Burm. f.) Merr.	H		MD
124	Fabaceae	<i>Indigofera hirsuta</i> L.	H		MD
125	Fabaceae	<i>Indigofera linnaei</i> Ali	H		MD
126	Fabaceae	<i>Indigofera tinctoria</i> L.	H	Neelimandu	MD
127	Fabaceae	<i>Rhynchosia minima</i> (L.) DC.	Cl		MD
128	Fabaceae	<i>Rothia indica</i> (L.) Druce	H		MD
129	Fabaceae	<i>Tephrosia pumila</i> (Lam.) Pers.	H		MD
130	Fabaceae	<i>Tephrosia purpurea</i> (L.) Pers.	H	Vempali	MD
131	Fabaceae	<i>Tephrosia villosa</i> (L.) Pers.	H	Nugu vempali	MD
132	Fabaceae	<i>Teramnus labialis</i> (L.f.) Spreng.	Cl		MD
133	Fabaceae	<i>Vigna trilobata</i> (L.) Verdc.	H	Pilli pesara	CRW, MD
134	Fabaceae	<i>Zornia diphylla</i> (L.) Pers.	H		MD
135	Flacourtiaceae	<i>Casearia tomentosa</i> Roxb.	Sh		MD
136	Flacourtiaceae	<i>Flacourtia indica</i> (Burm. f.) Merr.	Sh	Kandregu	WEF, MD
137	Gentianaceae	<i>Enicostema axillare</i> (Poir. ex Lam.) A. Raynal	H		MD
138	Hypoxidaceae	<i>Curculigo orchoides</i> Gaertn.	H	Neelatadi	MD

139	Lamiaceae	<i>Anisomeles indica</i> (L.) Kuntze	H	Chinna ranaberi	MD
140	Lamiaceae	<i>Hyptis suaveolens</i> (L.) Poit.	H	Nakka tulasi	MD
141	Lamiaceae	<i>Tectona grandis</i> L.f.	T	Teku	MD
142	Lamiaceae	<i>Ocimum americanum</i> L.	H	Bhutulasi	MD
143	Lamiaceae	<i>Ocimum tenuiflorum</i> L.	H	Tulasi	MD
144	Lauraceae	<i>Cassytha filiformis</i> L.	Pr	Seetammavari jadolu	MD
145	Liliaceae	<i>Asparagus racemosus</i> Willd.	Cl	Pillitegalu	WELV,WEF, MD
146	Liliaceae	<i>Gloriosa superba</i> L.	Cl	Nabhi	MD
147	Liliaceae	<i>Sansevieria roxburghiana</i> Schult. & Schult.f.	H	Kittanara	MD
148	Loganiaceae	<i>Strychnos nux-vomica</i> L.	T	Mushini	MD
149	Malvaceae	<i>Abutilon hirsutum</i> (Vell.) K.Schum.	H		MD
150	Malvaceae	<i>Abutilon indicum</i> (L.) Sweet	H	Tutturubenda	MD
151	Malvaceae	<i>Hibiscus micranthus</i> L.f.	H	Nityamalli	MD
152	Malvaceae	<i>Hibiscus vitifolius</i> L.	H		MD
153	Malvaceae	<i>Malvastrum coromandelianum</i> (L.) Garcke	H		MD
154	Malvaceae	<i>Pavonia zeylanica</i> (L.) Cav.	H		MD
155	Malvaceae	<i>Sida acuta</i> Burm.f.	H	Polikampa	MD
156	Malvaceae	<i>Sida cordata</i> (Burm.f.) Bors. Waalk.	H		MD
157	Malvaceae	<i>Sida cordifolia</i> L.	H		MD
158	Malvaceae	<i>Urena lobata</i> L.	H		MD
159	Meliaceae	<i>Azadirachta indica</i> A.Juss.	T	Vepa	WELV,WEF, MD
160	Menispermaceae	<i>Cocculus hirsutus</i> (L.) W.Theob.	Cl	Dusara teega	WEF, MD
161	Menispermaceae	<i>Tinospora cordifolia</i> (Willd.) Miers	Cl	Tippateega	MD
162	Mimosaceae	<i>Acacia caesia</i> (L.) Willd.	Cl	Korinta	MD
163	Mimosaceae	<i>Acacia leucophloea</i> (Roxb.) Willd.	T	Tellatamma	MD
164	Mimosaceae	<i>Dichrostachys cinerea</i> (L.) Wight & Arn.	Sh	Veluturu	MD
165	Mimosaceae	<i>Mimosa pudica</i> L.	H	Attipatti, Nidrabangi	MD
166	Mimosaceae	<i>Neptunia oleracea</i> Lour.	H		MD
167	Molluginaceae	<i>Glinus lotoides</i> L.	H	Chadarasikura	WELV, MD
168	Molluginaceae	<i>Glinus oppositifolius</i> (L.) Aug.DC.	H		MD
169	Moraceae	<i>Ficus benghalensis</i> L.	T	Marri	WEF, MD
170	Moraceae	<i>Ficus racemosa</i> L.	T	Medi, Atti	WEF, MD
171	Moraceae	<i>Ficus rumphii</i> Blume	T		MD
172	Nyctaginaceae	<i>Boerhavia diffusa</i> L.	H	Galjeru	WEF, MD
173	Nymphaeaceae	<i>Nymphaea nouchali</i> Burm.f.	H	Kaluva	WEF, MD
174	Oleaceae	<i>Jasminum malabaricum</i> Wight	Cl		MD
175	Onagraceae	<i>Ludwigia perennis</i> L.	H		MD
176	Oxalidaceae	<i>Oxalis corniculata</i> L.	H	Pulichinta	WEF, MD
177	Passifloraceae	<i>Passiflora foetida</i> L.	Cl	jukamalli	WEF, MD
178	Pedaliaceae	<i>Pedaliium murex</i> L.	H	Pedda palleru	MD
179	Poaceae	<i>Apluda mutica</i> L.	Gr		MD
180	Poaceae	<i>Aristida adscensionis</i> L.	Gr	Chipuru	MD
181	Poaceae	<i>Chloris barbata</i> Sw.	Gr		MD
182	Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	Gr	Garika	WEF, MD
183	Poaceae	<i>Dactyloctenium aegyptium</i> (L.) Willd.	Gr		MD
184	Poaceae	<i>Eragrostis amabilis</i> (L.) Wight & Arn.	Gr		MD
185	Poaceae	<i>Heteropogon contortus</i> (L.) P.Beauv. ex Roem. & Schult.	Gr		MD
186	Poaceae	<i>Imperata cylindrica</i> (L.) Raeusch.	Gr	Darbagaddi	MD
187	Poaceae	<i>Oplismenus burmanni</i> (Retz.) P.Beauv.	Gr		MD
188	Poaceae	<i>Saccharum spontaneum</i> L.	Gr	Rellugaddi	CRW,MD
189	Poaceae	<i>Setaria faberi</i> R.A.W.Herrm.	Gr		MD
190	Poaceae	<i>Themeda triandra</i> Forssk.	Gr		MD
191	Proteaceae	<i>Grevillea robusta</i> A.Cunn. ex R.Br.	T	Silver oke	MD
192	Rhamnaceae	<i>Ziziphus jujuba</i> Mill.	T	Regu	WEF, MD
193	Rhamnaceae	<i>Ziziphus oenopolia</i> (L.) Mill.	Sh	Parimi, Pullaregu	WEF, MD
194	Rubiaceae	<i>Canthium coromandelicum</i> (Burm.f.) Alston	Sh	Balusu	WELV,WEF, MD
195	Rubiaceae	<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	Sh	Manga	MD
196	Rubiaceae	<i>Morinda coreia</i> Buch.-Ham.	T	Togaru	MD
197	Rubiaceae	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	T	Kadamba	MD
198	Rubiaceae	<i>Oldenlandia corymbosa</i> L.	H		MD
199	Rubiaceae	<i>Oldenlandia diffusa</i> (Willd.) Roxb.	H		MD
200	Rubiaceae	<i>Pavetta indica</i> L.	Sh	Papidi	MD
201	Rubiaceae	<i>Spermacoce hispida</i> L.	H		MD
202	Rubiaceae	<i>Spermacoce pusilla</i> Wall.	H		MD
203	Rutaceae	<i>Aegle marmelos</i> (L.) Corrêa	T	Maredu	WEF, MD
204	Rutaceae	<i>Chloroxylon swietenia</i> DC.	T	Billakarra	MD
205	Rutaceae	<i>Glycosmis mauritiana</i> (Lam.) Tanaka	Sh	Golugu	WEF, MD
206	Rutaceae	<i>Limonia acidissima</i> Groff	T	Velaga	WEF, MD
207	Rutaceae	<i>Naringi crenulata</i> (Roxb.) Nicolson	T	Torrivelaga	WEF, MD
208	Salvadoraceae	<i>Azima tetraacantha</i> Lam.	Sh	Uppukampa	MD
209	Sapindaceae	<i>Allophylus cobbe</i> (L.) Raeusch.	Sh		MD
210	Sapindaceae	<i>Cardiospermum halicacabum</i> L.	H	Buddabusada teega	WEF, MD
211	Sapindaceae	<i>Sapindus emarginatus</i> Vahl	T	Konkudu	WES,MD
212	Scrophulariaceae	<i>Lindernia crustacea</i> (L.) F.Muell.	H		MD
213	Scrophulariaceae	<i>Scoparia dulcis</i> L.	H		MD
214	Scrophulariaceae	<i>Striga asiatica</i> (L.) Kuntze	Pr		MD
215	Solanaceae	<i>Physalis minima</i> L.	H	Buddabusada	WEF, MD
216	Solanaceae	<i>Solanum americanum</i> Mill.	H	Kamanchi	WELV,WEF, CRW, MD
217	Solanaceae	<i>Solanum torvum</i> Sw.	H		CRW,MD
218	Solanaceae	<i>Solanum trilobatum</i> L.	H	Uchhinta	WELV, CRW, MD
219	Sterculiaceae	<i>Helicteres isora</i> L.	sh	Melikaya	MD

220	Sterculiaceae	<i>Melochia corchorifolia</i> L.	H		WELV, MD
221	Sterculiaceae	<i>Waltheria indica</i> L.	H		MD
222	Tiliaceae	<i>Corchorus aestuans</i> L.	H	Kalaskura	WEF, MD
223	Tiliaceae	<i>Grewia carpinifolia</i> Juss.	Sh		MD
224	Tiliaceae	<i>Grewia hirsuta</i> Vahl	Sh		WEF, MD
225	Tiliaceae	<i>Grewia tiliifolia</i> Vahl	T	Tada	WEF, MD
226	Tiliaceae	<i>Triumfetta pentandra</i> A.Rich.	H		MD
227	Tiliaceae	<i>Triumfetta rotundifolia</i> Lam.	H		MD
228	Typhaceae	<i>Typha domingensis</i> Pers.	H	Jammu	MD
229	Verbenaceae	<i>Gmelina asiatica</i> L.	Sh	Chitti gummadi	MD
230	Verbenaceae	<i>Symphorema involucratum</i> Roxb.	Cl		MD
231	Vitaceae	<i>Cayratia pedata</i> (Lam.) Gagnep.	Cl		MD
232	Vitaceae	<i>Cayratia trifolia</i> (L.) Domin	Cl	Kanepaku	MD
233	Vitaceae	<i>Cissus quadrangularis</i> L.	Cl	Nallerukada	WEF, MD
234	Vitaceae	<i>Cissus vitifolia</i> L.	Cl	Adavi draksha	MD
235	Vitaceae	<i>Cyphostemma setosum</i> (Roxb.) Alston	Cl	Barre bachhali	MD
236	Zygophyllaceae	<i>Tribulus terrestris</i> L.	H	Palleru	WEF, MD

H: Herb; Sh: Shrub; Cl: Climber; T: Tree; Gr: Grass; Pr: Parasite; MD-Medicinal; WELV-Wild edible leafy vegetable; CRE-Crop related wild species; EF-Edible fruit; WEF-Wild edible fruit; WES-Wild edible seeds; WET-Wild edible tubers

## DISCUSSION

Various researchers worked on different University campus floras, from Andhra University reported 167 tree species [23], Pondicherry University 537 species [24] and Banaras Hindu University 415 species [25] were reported. When compare with these researches, present research contribution of 236 species from Adikavi Nannaya University campus revealed that University campus is the rich in plant biodiversity. This data will more useful for the students and researchers of the University and others. From the present exploration, 2 plant additions (*Senna uniflora* and *Cyphostemma setosum*) to the Flora of East Godavari District from the University campus and 18 species (*Cycas sphaerica*, *Utricularia striatula*, *Albizia thompsoni*, *Bauhinia emarginata*, *Callicarpa tomentosa*, *Citrus medica*, *Cordia wallichii*, *Elaeocarpus tectorius*, *Ficus auriculata*, *Flacourtia jangomas*, *Lasiococca comberi*, *Miliusa velutina*, *Nothopegia heyneana*, *Putranjiva roxburghii*, *Saraca asoca*, *Solanum giganteum*, *Toona ciliate* and *Vitex leucoxylon*) additions to the Flora of East Godavari District by [13], [14], [16] in recent explorations is indicating that Flora of East Godavari District is needs to be revision for new plant additions. Occurrence of the 236 medicinal plants, 67 (28.38%) wild edible plants, and 12 (5.08%) crops related wild species demonstrating University campus is a good resource for economically impotent and medicinal plant spices. This information will useful for the researches in the University researchers and others in future.



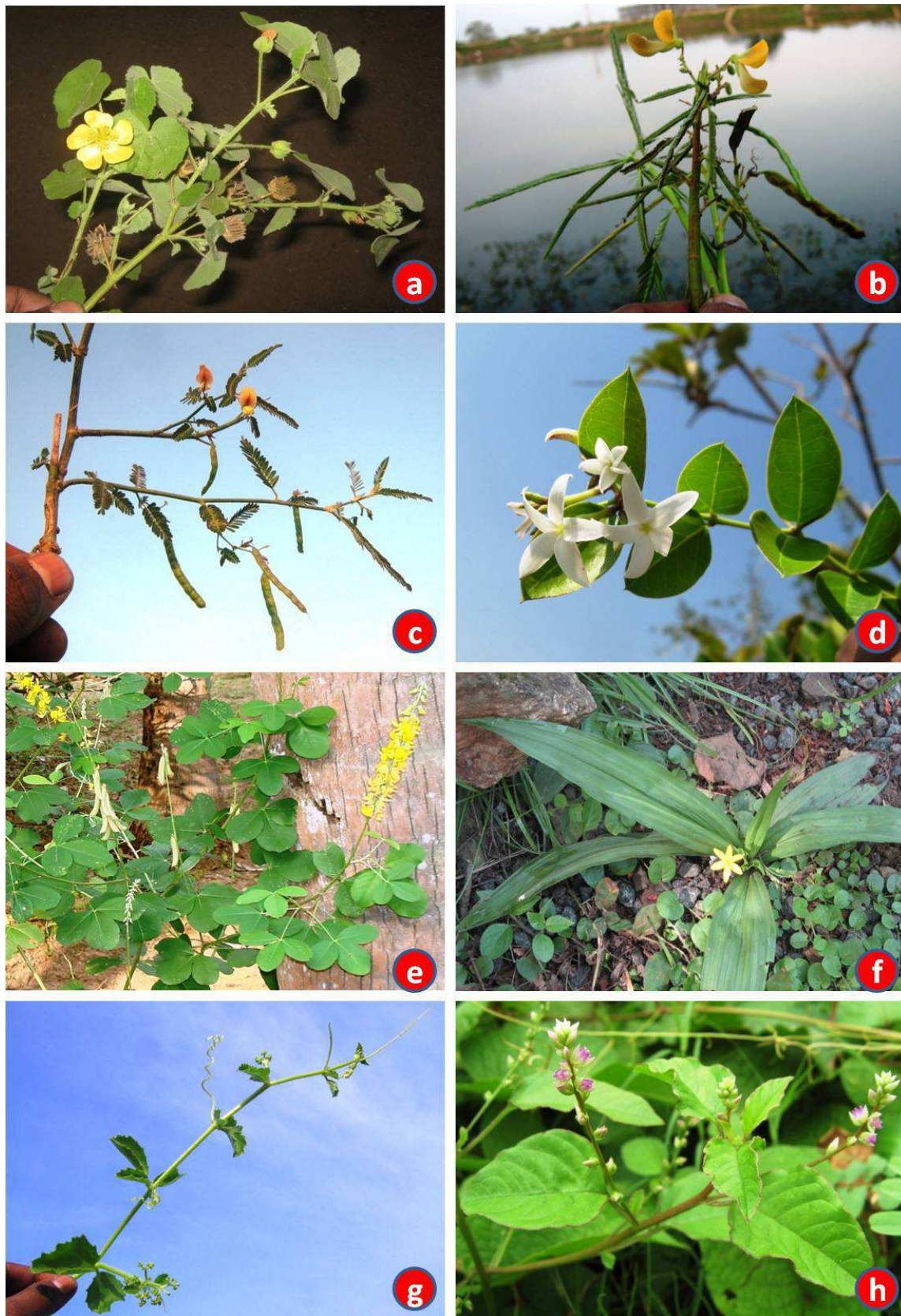


Fig 7. a) *Abutilon hirsutum* (Vell.) K.Schum. ; b) *Aeschynomene aspera* L.; c) *Aeschynomene indica* L.; d) *Carissa spinarum* L.; e) *Crotalaria pallida* Aiton; f) *Curculigo orchiooides* Gaertn.; g) *Cyphostemma setosum* (Roxb.) Alston; h) *Digeria muricata* (L.) Mart.



Fig 8. a) *Gloriosa superba* L. ; b) *Phoenix sylvestris* (L.) Roxb.; c) *Heliotropium indicum* L.; d) *Imperata cylindrica* (L.) Raeusch.; e) *Jatropha gossypifolia* L.; f) *Neptunia oleracea* Lour.; g) *Ocimum americanum* L.; h) *Opuntia dillenii* (Ker Gawl.) Haw.

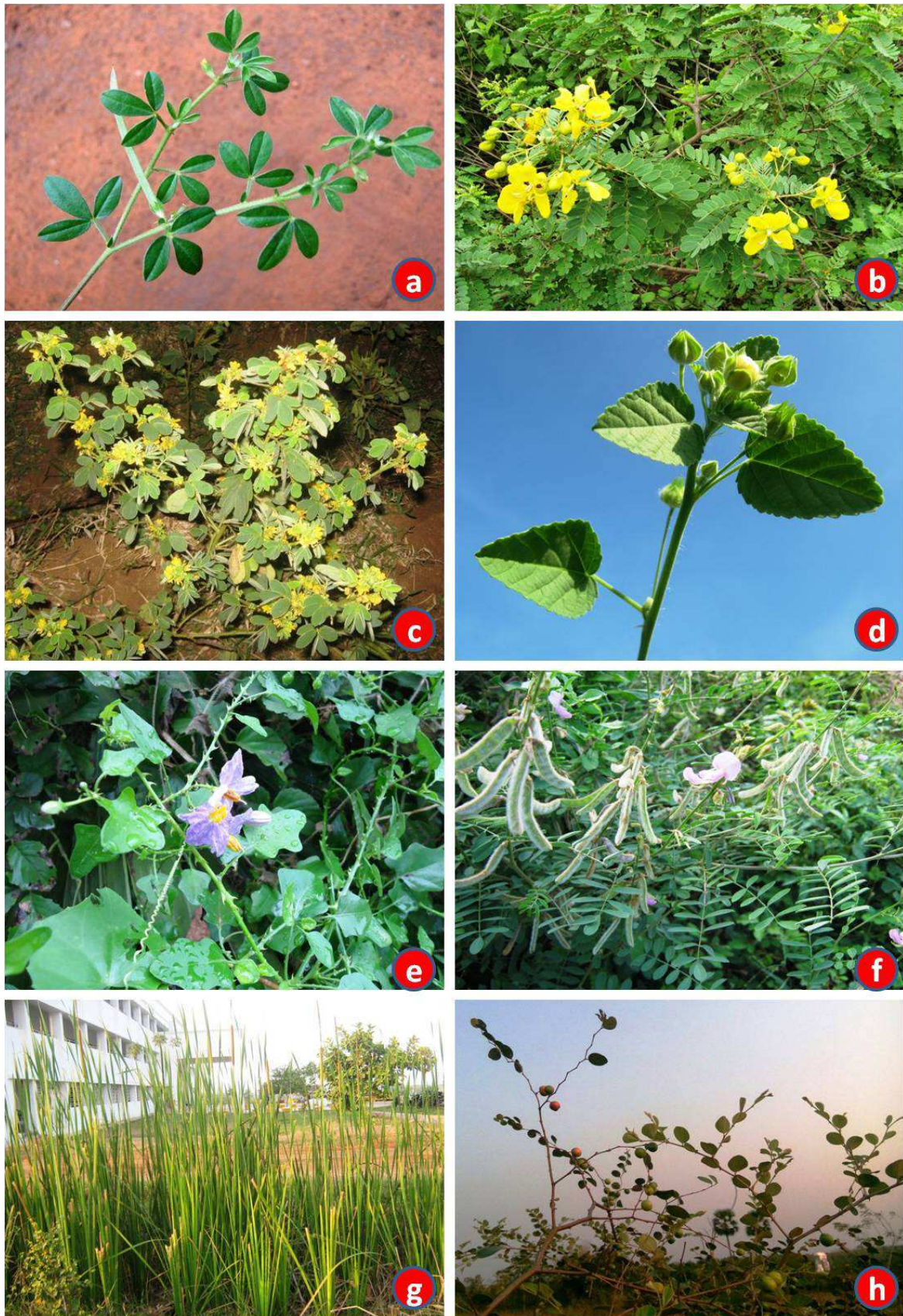


Fig 9. a) *Rothia indica* (L.) Druce; b) *Senna auriculata* (L.) Roxb.; c) *Senna uniflora* (Mill.) H.S.Irwin & Barneby ; d) *Sida cordifolia* L.; e) *Solanum trilobatum* L.; f) *Tephrosia villosa* (L.) Pers.; g) *Typha domingensis* Pers.; h) *Ziziphus jujuba* Mill.

## CONCLUSION

Occurrence of the red list medicinal plants in the University campus is indicating that University campus is suitable for conservation of ecological sensitive plants, so there is a chance to develop red list medicinal plant garden in the University campus through ex-situ and in-situ conservation. It will be useful for the students and researchers of various departments in University and also for others. It is necessary that University authorities' needs to focus on introduce rare and endemic forest plants for development of the University greenery without common and exotic plants. It is also useful for the conservation of rare and endemic plants, in the University campus as well as creates awareness on threatened native plants.

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