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Research Article

Significant floristic composition along rice field bunds from Bhor and Velhe talukas of Pune District, Maharashtra, India

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Abstract

The wide range of floristic composition found growing on rice field bunds. Due to its unique water stringent situation it supports almost all type of habits including lower cryptograms like algae and Pteridophytes. So also, plantation of certain tree species and commonly occurring shrub weeds are found growing on bunds. The present documentation was conducted in Bhor and Velhe taluka of Pune district, Maharashtra; where rice is main crop of cultivation. The study shows rich species diversity occurring on the rice field bunds. The species recorded are documented by their scientific name and respective family. The 347 species belonging to 74 families were recorded. The monocotyledon family Poaceae ranked highest recording 38 genera, 52 species; from dicotyledon family Asteraceae 27 genera and Fabaceae 35 genera placed second. All these species play significant role in rice-field ecosystem along with unique association of Algae and Pteridophytes.

INTRODUCTION

Rice fields with their contiguous aquatic habitats and dry land comprise a rich mosaic of rapidly changing ecotones, harbouring a rich biological diversity, maintained by fast colonization as well as by rapid reproduction and growth of organisms (Fernando, 1995; 1996). The variety of organisms inhabiting rice field ecosystems includes a rich composition of fauna and flora. These organisms colonize rice fields by resting stages in soil, by air and vide irrigation water (Fernando, 1993a). The fauna are dominated by micro, meso and macro invertebrates (especially arthropods) inhabiting the vegetation. The aquatic phase of rice fields generally harbours a varied group of aquatic animals. Those that inhabit the vegetation are mainly the arthropod insects and spiders. In addition, many species of amphibians, reptiles, birds and mammals visit the rice fields for feeding, from surrounding areas, and are generally considered as temporary or ephemeral inhabitants (Bambaradeniya *et al.*, 1998). In relation to the rice crop, the fauna and flora in rice fields include pests, their natural enemies (predators and parasitoids) and neutral forms.

In many parts of India, especially in Chhattisgarh rice bunds cover about 10% area of rice fields. The study from this area revealed that more than 60 species were identified as useful weeds (Oudhia, 1999a). These weeds can act as allelophathic effects i.e. the injurious effects of one upon another. Allelo-chemicals inhibit or stimulate the growth of some species at certain limits. Such positive (inhibitory) allelopathic effects can be exploited to develop eco-friendly, cheap and effective `green herbicides' which are an integral part of eco or organic farming (Oudhia, 1999b). The floristic composition on the rice bunds may act as green herbicide.

Certain weeds can be used as green manure before they set seeds. The use of *Croton bonplandianus* Baill. (= *Croton sparsiflorus*) in

South India and Camelthorn (*Alhagi camelrum*) and pluche a (*Pulchea lanceolata*) North India for green manuring is well-known. The possibilities of converting weeds into compost and ash manure is an important area of research on utilization of weeds particularly in view of current shortage of fertilizers and as these resources are rich in high N and K_2O content. Green leaf manure refers to turning under of green leaves and tender green twigs collected from shrubs and trees grown on bunds. Leguminous plants are used as green manure to enrich the soil nitrogen. When organic matter decomposes the ammonia gets released and this results in supply of nitrogen to plant or converted to nitrate. Green manuring also enriches the other mineral contents such as phosphorous, calcium, sulphur etc. (Mogle, 2014). Some other practices as amending the soil with 10 g wheat straw/kg soil with 100 mg 15 N/kg as urea and *Sesbania aculeate* is known to enhance the nitrogen percentage (Patil and Sarkar, 1991).

Considering such practices it was thought to enlist the rich biodiversity on rice bunds from the Bhor and Velhe talukas, which are well-known rice growing regions of the Pune district. The study five locations are randomly chosen and enlisting was done. The recorded 347 species belonging to 74 families are given in tabulated form (Table-1)

MATERIAL AND METHODS

The study was carried out in three years. The villages namely Karanje, Karnawad, Kiwat, Nigudghar, Salekarvasti from Bhor taluka and Ambavne, Gunjavane, Pabe, Vinzer, Wanjjale from Velhe taluka were selected for the present study. The plant samples were collected from the field bunds and specimens were prepared with standard procedure (Bridson & Forman, 1998). The identification was done with the help of Flora of Maharashtra (1996, 2000, 2001) and consulting the Agharkar herbarium at Maharashtra Association for the cultivation of Science, Pune -411 004 (AHMA). The voucher specimens were deposited in AHMA, Pune and Anantrao Thopte College Herbarium, Bhor (ATCH), Pune. The allotted numbers are included in Table 1.

RESULTS AND DISCUSSION

The floristic wealth is documented in tabular form. Table one gives the scientific name, its family, local name if available, habit and voucher deposition number at MACS-Agharkar Research Institute marked as AHMA or Anantrao Thopte College, Bhor marked as AT (Table 1). Table two gives the floristic analysis at a glance (Table 2). Table three shows distribution of genera and species within the family (Table 3). Total 347 species are documented form 74 families. This analysis shows rich diversity occurring on the rice field bunds. Few Pteridophytes are also recorded on bunds like *Adintum philippense* L., *Actinopteris dichotoma* Kuhn. Occurrence of algae in rice field is common and its significance is known. But record of the Angiosperm floristic diversity, which is significant, is meagrely documented.

Occurrence of about 1800 species were documented as weed in rice fields from Asian countries and these weeds are responsible to maintain the ecology of rice fields by adding the nitrogen (Bambaradeniya and Amerasinghe, 2003). The cognizance of the rice field bund diversity was also taken in other rice growing countries like Java, Indonesia. It is documented that, varied condition of semi natural vegetation, fallows and bunds should maintain to support plant diversity and ecosystem functioning in paddy field (Nur Rochmah Kumalasari, 2014).

From Kashmir valley, 58 weed species belonging to 45 genera and 27 families were recorded along raised bunds and undulated lands of rice fields by Aijar Hassan *et. al.* (2016); mentioning that such records are important as it may pose future risk and useful in weed management practices.

The community composition and distribution of weed flora in the rice field agro-ecosystems of Kashmir valley revealed a presence of 64 species of weeds including 41 dicotyledons, 20 monocotyledons and 3 pteridophytes from the 6 representative sites located in different administrative zones of the valley which shows importance of rice field ecosystems as significant contributor of biodiversity in the region was recognized (Shahzadi Wufai Naw Bahaar and Bhat, 2012).

The use of *Sesbania rostrata* and *Aescheynomene aspera* as green manure provides minerals and is source of nitrate in minimum inputs was recorded by Becker and Ottow (1991). Records are available for utilization of the species like *Lupinus luteus* L, *Sinapis alba* L. *Trifolium pratense* L. for green manure, all bund species other than main crop to increase humus and nitrogen, phosphorus and potassium is also documented (Kulbida and Artyushenko, 1991).

Traditional farming techniques have been evolved by wisdom of tribal communities. It has been reported by Deshpande and Kulkarni (2013) that Gondia tribe from Vidarbha region add leaves of *Butea monosperma* Taub. (Palas) which grows on field bunds naturally; this helps in protection of the soil erosion, increase soil fertility, control pest and diseases, reduce vapour-transmission rate and control weeds.

During the present study, 27 leguminous weeds naturally growing on bunds belonging to 20 genera has been recorded. Legume species are rich in nitrogen and used in soil fertility management. The plant resource growing on bunds enrich the soil fertility either as free living or in association with host plant. It is impossible to grow healthy vigorous plants without humus. Diversity of bund flora has a potential of green manure and for humus conversion.. Considering the significance of bund diversity, the present study is an important document for the rice growing regions of Maharashtra, India.

Sr.No.	Name of the Plant	Family	Common name	Habit	Voucher number
1	*Abelmoschus manihot* (L.) Medik.	Malvaceae	Ranbhendi	Herb	
2	*Abrus precatorius* L.	Fabaceae	Gunj	Twiner	
3	*Abutilon indicum* (L) sweet	Malvaceae	Mudra	Herb	AT203
4	*Acacia farnesiana* (L.) Willd.	Mimosaceae	DevBabhul	Tree	
5	*Acacia leucophloea* (Roxb .)Willd.	Mimosaceae	Hivar	Tree	AHMA 27527
6	*Acacia nilotica* (L.) Willd. ex Del	Mimosaceae	Babul	Tree	AT226
7	*Acanthospermum hispidum* DC.	Asteraceae	-	Herb	
8	*Achyranthes aspera* L.	Amaranthaceae	Aghada	Herb	AT131
9	*Acrachne 453acemose* (Heyne. Ex R & Sa.) Ohwi	Poaceae	-	Herb	AT144
10	*Aeschynomene indica* L.	Fabaceae	-	Herb	
11	*Agave angustifolia* Haw.	Agavaceae	Ghypat	Shrub	
12	*Ageratum conyzoides* L.	Asteraceae	Sahdevi	Herb	AHMA 27513
13	*Allophylus cobbe* (L.) Raeusch	Sapindaceae	Tipani	Shrub	
14	*Alloteropsis cimicina* (L) Stapf.	Poaceae	Snni	Herb	AT145
15	*Alternanthehera tenella* Colla var Veldk	Amaranthaceae	-	Herb	AT235
16	*Alternanthera pungens* Kunth .	Amaranthaceae	Reshim kata	Herb	AHMA 27543
17	*Alternanthera sessilis* (L.) R. Br. ex DC.	Amaranthaceae	-	Herb	AHMA 27518
18	*Alysicarpus monilifer* (L.) DC.	Fabaceae	-	Herb	AT222
19	*Alysicarpus pubescens* Law. Wight	Fabaceae	-	Herb	AHMA 27556
20	*Alysicarpus tetragonolobus* Edg.	Fabaceae	-		AHMA 27552
21	*Amaranthus cruentus* L.	Amaranthaceae	Rajgira	Herb	AT191
22	*Amaranthus roxburghianus* Nevski.	Amaranthaceae	Tandulja	Herb	AT224
23	*Amaranthus spinosus* L.	Amaranthaceae	Kate - math	Herb	AT132
24	*Amaranthus tricolour* L.	Amaranthaceae	Math	Herb	AHMA 27528
25	*Amaranthus viridis* L	Amaranthaceae	Math	Herb	AT133
26	*Ammannia baccifera* L.	Lytheraceae	Dadmari	Herb	AT116
27	*Annona reticulata* L.	Annonaceae	Ramphal	Tree	
28	*Annona squamosa* L.	Annonaceae	Sitaphal	Tree	
29	*Apluda mutica* L.	Poaceae	Tambat	Herb	AT147
30	*Argemone mexicana L.*	Papavaraceae	Piwala dhotra	Herb	
31	*Argyreia cuneata* (Willd.) Ker-Gawl.	Convolvulaceae	Mahalungi	Shrub	
32	*Argyreia elliptica* (Roth) Choisy	Convolvulaceae	Bondvel	Herb	AT197
33	*Artemisia japonica* Thunb.	Asteraceae	Davani	Herb	
34	*Artemisia nilagirica* (Cl.)Pamp.	Asteraceae	Dhordavana	Herb	AT148
35	*Artocarpus heterophyllus* Lam.	Moraceae	Phanas	Tree	
36	*Arundinella ciliata* (Roxb.)Nees ex	Poaceae	-	Herb	

	Miq.				
37	*Asclepias curassavica* L.	Asclepidaceae	Haladi kunku	Shrub	
38	*Asphodelus tenuifolius* Cavan	Lilaceae	-	Herb	AT230
39	*Atriplex stockii* (Wight) Boiss.	Chenopodiaceae	-	Herb	AT189
40	*Avena sativa* L.	Poaceae	-	Herb	AT149
41	*Azadirachta indica* A.Juss	Meliaceae	Neem	Tree	
42	*Bacopa monnieri* (L).Penn.	Scrophulariaceae	Brahmi	Herb	AT128
43	*Bambusa arundinacea* (Retz)Willd.	Poaceae	Katekalak	Tree	
44	*Bauhinia racemosa* Lamk.	Caesalpinaceae	Apta	Tree	AT182
45	*Bauhinia vahlii* Wight &Arn.	Caesalpinaceae	-	Climber	
46	*Bergia ammannioides* Roxb.ex Roth.	Elatinaceae	-	Herb	AT202
47	*Bergia capensis* L.Mant.	Elatinaceae	-	Herb	AT276
48	*Bidens biternata* (Lour.) Merr. & Scherif.	Asteraceae	-	Herb	AT117
49	*Biophytum sensitivum* (L.)DC.	Oxilidaceae	Lajalu	Herb	AHMA 27508
50	*Blainvillea acmella* (L.) Philip.	Asteraceae	-	Herb	AHMA 27550
51	*Blumea lacera* (Burm.f.) DC.	Asteraceae	-	Herb	AT213
52	*Blumea obliqua* (L.) Druce.	Asteraceae	-	Herb	AT220
53	*Blumea solidaginoides* (Poir.)DC.	Asteraceae	-	Herb	AT118
54	*Boerhavia erect*a L.	Nyctaginaceae	Pandhari Punarnav	Herb	AT130
55	*Bombax ceiba* L.	Bombaceae	Katesavar	Tree	
56	*Brachiaria ramosa* (L).Stapf	Poaceae	Chapar	Herb	AT152
57	*Brachiaria reptans* (L) Gard.	Poaceae	Chiman chara	Herb	AT150
58	*Bridelia retusa* (L.) Spreng	Euphorbiaceae	Asana	Tree	
59	*Butea monosperma* (Lamk)Taub	Fabaceae	Palas	Tree	AT151
60	*Caesalpinia bonduc* (L).Roxb	Caesalpiaceae	Sagargota	Climber	
61	*Caesulia axillaris* Roxb.	Asteraceae	-	Herb	
62	*Cajanus lineatus* (Wt.&Arn.) Van .der Maesen.	Fabaceae	Rantur	Herb	
63	*Cajanus scarabaeoides* (L.) Du petit Thou.	Fabaceae	Rantur	Herb	AT177
64	*Calotropis gigantea* (L) R.Br.	Asclepidaceae	Rui	Shrub	
65	*Calotropis procera* (Ait)R.Br	Asclepidaceae	Mandar	Twininer	
66	*Calycopteris floribunda* (Roxb) Poir.	Combretaceae	Ukashi	Shurb	
67	*Canscora diffusa* (Vahl.) R.Br.ex. R.& S.	Gentianaceae	Patri	Herb	AHMA 27563
68	*Cardiospermum helicacabum* L.	Sapindaceae	Kapalphodi	Herb	AT210
69	*Carica papaya* L.	Caricaceae	Papi	Tree	
70	*Carissa congesta* Wight	Apocynaceae	Karvand	Shrub	
71	*Carvia callosa* (Nees) Bremek	Acanthaceae	Karvi	Shrub	
72	*Careya arborea* Roxb	Lecythidaceae	Kumbha	Tree	
73	*Cassia absus* L.	Caesalplniaceae	-	Herb	
74	*Cassia mimosoides* L.	Caesalpinaceae	-	Herb	AT237
75	*Cassia obtusifolia* L.	Caesalpinaceae	Takala	Herb	AT175
76	*Cassia uniflora* Mill.	Caesalpinaceae	Takala	Herb	
77	*Cayratia trifolia* (L.) Domin.	Vitaceae	Ambatwel	Climber	
78	*Celastrus paniculatus* Willd	Celastraceae	Mal kanguni	Climber	
79	*Celosia argentea* L.	Amaranthaceae	Kurdu	Herb	AHMA 27512
80	*Cenchrus pennisetiformis* Hochst. & Steud ex Steud.	Poaceae	Sankaret	Herb	AT153
81	*Centaurium meyeri* (Bunge) Druce	Gentianaceae	Luntak	Herb	AHMA 27535
82	*Chloris barbata* Sw.	Poaceae	Gondvel	Herb	AT154
83	*Chloris virgata* Sw.	Poaceae	Ghdshep	Herb	AT155

84	*Chrozophora prostrata* Dalz .in Dalz. & Gibs.	Euphorbiaceae	-	Herb	AT195
85	*Chrozophora rottleri* (Geis.) Juss.ex.spreng.	Euphorbiaceae	Monogr	Herb	AT136
86	*Chrysopogon fulvus* (Spreng.) Chiov	Poaceae	Gagar	Herb	AT156
87	*Chrysopoqon polyphyllus* (Hack. ex Hook. f.) Blatt. & McC.	Poaceae	-	Herb	AT217
88	*Cissus woodrowii* (Stapf.ex.Cooke) Sant.	Vitaceae	Girmuli	Shrub	
89	*Citrullus colocynthis* Schradr.	Cucurbitaceae	Kadu Indravan	Climber	
90	*Cleome chelidonii* L.f.	Cleomaceae	-	Herb	AT233
91	*Cleome felina* L.f.	Cleomaceae		Herb	AT198
92	*Cleome viscosa* L.	Cleomaceae	Pivali tilvan	Herb	AT199
93	*Clerodendrum serratum* (L.) Moon	Verbenaceae	Bharangi	Herb	
94	*Clitoria ternatea* L.	Fabaceae	-	Herb	
95	*Colebrooke aopppsitifolia* J.E.Smith	Lamiaceae	Bhahman	Shrub	
96	*Commelina benghalensis* L.	Commelinaceae	-	Herb	AHMA 27548
97	*Commelina diffusa* Burm.f.	Commelinaceae	Gandlogi	Herb	AHMA 25545
98	*Commelina forsskalaei* vahl.	Commelinaceae	Canpet	Herb	AHMA 27548
99	*Commelina paleata* Hassk	Commelinaceae		Herb	AT180
100	*Commelina subulata* Roth.	Commelinaceae	-	Herb	AHMA 27542
101	*Convolvulus arvensis* L.	Convolvulaceae	-	Climber	
102	*Corchorus olitorius* L.	Tiliaceae	Banpat	Herb	AHMA 27523
103	*Cosmos bipinnatus* Cav	Asteraceae	-	Herb	AT178
104	*Crotalaria filipes* Benth.	Fabaceae	-	Herb	AHMA 27538
105	*Crotalaria hebecarpa* (Dc.) Rudd.	Fabaceae	Godhadi	Herb	
106	*Crotalaria retusa* L.	Fabaceae	Khulkhula	Herb	
107	*Croton bonplandianus* Baill.	Euphorbiaceae	-	Herb	AT137
108	*Cryptolepis buchanani*i R.Br.ex R	Periplocaceae	Kavali	Twining shrub	
109	*Cucumis sativus* Cogh	Cucurbitaceae	Kakdi	Herb	
110	*Cucurbita maxima* Duch. Ex Lam.	Cucurbitaceae	Tambada Bhopala	Herb	
111	*Cullen corylifolia* (L) Medik.	Fabaceae	Bavachi	Herb	AT111
112	*Cyanotis cristata* (L) D.Don	Commelinaceae	-	Herb	AT138
113	*Cyanotis fasciculata* (Heyne ex Roth) J.A & J. H. Schult.	Commelinaceae	-	Herb	AT139
114	*Cyathocline purpurea* (Buch-Ham. ex D.Don) O.ktze.	Asteraceae	-	Herb	AT120
115	*Cymbopogon citratus* (DC.) stapf.	Poacaeae	Gavati Chaha	Herb	AT241
116	*Cynodon dactylon* (L.)Pers.	Poaceae	Harali	Herb	AHMA 27539
117	*Cyperus arenarius* Retz.	Cyperaceae	-	Herb	AT265
118	*Cyperus difformis* L.	Cyperaceae	Lavala	Herb	AT143
119	*Cyperus exaltatus* Retz.	Cyperaceae	-	Herb	AT264
120	*Cyperus iria* L.	Cyperaceae		Herb	AT196
121	*Cyperus nutans* Vahl.	Cyperaceae	-	Herb	AT142
122	*Cyperus rotundus* L.	Cyperaceae	Nagarmotha	Herb	AT141
123	*Cyphostemma auriculatum* (Roxb) Sigh & Shetty.	Vitaceae	Jungli Kajorni	Climber	
124	*Dactyloctenium aegyptium* (L.) willd	Poaceae	-	Herb	AHMA 27541
125	*Datura metal* L.	Solanaceae	Kaladhotara	Herb	
126	*Datura quercifolia* H.B.& K.	Solanaceae		Herb	AT211

127	*Desmodium dichotomum* (Wild) DC.	Fabaceae	chikta	Herb	AT184
128	*Desmodium triflorum* (L) DC	Fabaceae	Ranmethi	Herb	AHMA 27559
129	*Dichanthium annulatum* (Forssk.) Stapf.	Poaceae	Janjva	Herb	AT157
130	*Dichanthium pertusum* (L.) W.D.Clayton	Poaceae	Palva	Herb	AT158
131	*Dicoma tomentosa* Cass	Asteraceae	-	Herb	
132	*Digera muricata* (L.) Mart.	Amaranthaceae	-	Herb	AT134
133	*Digitaria abludens* (R.& S.) Veldk.	Poaceae	-	Herb	AT159
134	*Digitaria stricta* Roth.- ex R. & S.	Poaceae	-	Herb	AT160
135	*Dimeria ornithopoda* Trin Fund..	Poaceae	-	Herb	
136	*Dinebra retroflexa* (Vahl.) Panz.	Poaceae	-	Herb	AT161
137	*Dopatrium junceum* (Roxb.) Buch – Ham.ex.Benth.	Scrophulariaceae	-	Herb	AHMA 27561
138	*Echinocola crusgalli* (L) P. Beauv	Poaceae	Pakad	Herb	AT179
139	*Eclipta prostrata* (L) L.	Asteraceae	Maka	Herb	AHMA 27568
140	*Eleusine coracana* (L.) Gaertn.	Poaceae	-	Herb	AT162
141	*Eleusine indica* (L.) Gaerth.	Poaceae	-	Herb	AT258
142	*Elytrophorus spicatus* (Willd.)ACamus.	Poaceae	-	Herb	AT174
143	*Embelia ribes* Brum,f.	Myrisinaceae	Vavding	Shrub	
144	*Emblica officinalis* Gaertn	Euphorbiaceae	Awala	Tree	
145	*Emilia sonchifolia* (L.) DC.	Asteraceae	Sadmandi	Herb	AHMA 27522
146	*Ensete superbum* (Roxb) Cheesm.	Musaceae	Rankel	Herb	
147	*Epaltes divaricata* (L).Cass.	Asteraceae	-	Herb	AT272
148	*Eragrostiella bifaria* (Valh)Bor	Poaceae	-	Herb	AT163
149	*Eragrostis japonica* (Thumb) Trin.	Poaceae	-	Herb	AT188
150	*Eragrostis unioloides* (Retz.) Nees.ex. Stead.	Poaceae	-	Herb	AHMA 27571
151	*Eriocaulon cinereum* R. Br.	Eriocaulaceae	-	Herb	AHMA 27546
152	*Eriocaulon elenorae* Fyson.	Eriocaulaceae	-	Herb	AT261
153	*Eriocaulon heterolepis* Steud.	Eriocaulaceae	-	Herb	AT262
154	*Eriocaulon redactum* Ruhl.	Eriocaulaceae	-	Herb	AT263
155	*Eriocaulon trilobum* Buch.Ham.ex Koern.	Eriocaulaceae	-	Herb	AT217
156	*Eriochloa procera* (Retz.) C. E. Hubb.	Poaceae	-	Herb	AT164
157	*Erythrina variegata* L.	Fabaceae	Pangara	Tree	
158	*Eucalyptus globulus* Lab.	Myrtaceae	Nilgiri	Tree	
159	*Eulalia fimbriata* (Hack) O.Ktze.	Poaceae	-	Herb	
160	*Euphorbia geniculata* Orteg.	Euphorbiaceae	Dudhani	Herb	AHMA 27517
161	*Euphorbia hirta* L.	Euphorbiaceae	-	Herb	AHMA 27530
162	*Euphorbia prostrata* Ait.Hort.Kew.	Euphorbiaceae	-	Herb	AT223
163	*Euphorbia pycnostegia* Boiss	Euphorbiaceae	-	Herb	AHMA 27517
164	*Evolvulus alsinoides* (L.) L.	Convolvulaceae	Vishnu kranta	Herb	AHMA 27520
165	*Exacum pedunculatum* L.	Gentianaceae	-	Herb	AT232
166	*Ficus racemosa* L.	Moraceae	Umber	Tree	
167	*Fimbristylis dichotoma* (L.)Vhal.	Cyperaceae	-	Herb	AT243
168	*Flaveria trinervia* (Spreng.)C.Mohr.	Asteraceae	-	Herb	AT121
169	*Fuirena ciliaris* (L.) Roxb.	Cyperaceae	-	Herb	AT228
170	*Fuirena wallichiana* Kunth.	Cyperaceae	-	Herb	AT248
171	*Geissapis cristata* Wight & Arn	Fabaceae	-	Herb	AT274
172	*Glinus lotoides* L.	Molluginaceae	-	Herb	AT273
173	*Glinus oppositifolius* (L) DC.	Molluginaceae	-	Herb	AHMA 27515

174	*Gloriosa superba* L.	Liliaceae	Kalalavi	Herb	
175	*Glossocardia bosvalle* (L.f.) DC.	Asteraceae	Pittapapada	Herb	AT122
176	*Gmelina arborea* Roxb.	Verbenaceae	Shivan	Shrub	
177	*Gnaphalium polycaulon* Pers.	Asteraceae	-	Herb	AT271
178	*Gomphrena serrata* L.	Amaranthaceae	-	Herb	AHMA 27531
179	*Grewia asiatica* L.	Tiliaceae	Phalsa	Shrub	
180	*Grewia serrulata* DC.	Tiliaceae	Kaladhaman	Shrub	
181	*Grewia tiliifolia*Vahl.	Tiliaceae	Dhaman	Tree	
182	*Guizotia abyssinica* (L.f.) Cass.	Asteraceae	Karale	Herb	
183	*Habenaria marginata* Coleb	Orchidaceae	-	Herb	
184	*Hedyotis corymbosa* (L.) Lam.	Rubiaceae	--	Herb	AT173
185	*Hedyotis diffusa* Willd.	Rubiaceae	-	Herb	AHMA 27563
186	*Hemidesmus indicus* (L.) R.Br.	Periplocaceae	Anantmul	Shrub	
187	*Heteropogon contortus* (L.) P.Beauv.ex. R. & S.	Poaceae	Kusali Gavat	Herb	AT165
188	*Hibiscus lobatus* (Murray) O.Ktze.	Malvaceae	-	Herb	AT204
189	*Hibiscus rosa – sinensis* L.	Malvaceae	Jashwand	Shrub	
190	*Holarrhena pubesens* (Buch-Ham).Wall.ex G.Don.	Apocynaceae	Bidikuda	Shrub	
191	*Hydrolea zeylancia* (L) Vahl	Hydrophyllaceae	-	Herb	AT194
192	*Hygrophila schulli* (Buch – Ham) M.R. & S.M.	Acanthaceae	Kolshinda	Herb	AT181
193	*Hygrophila serphyllum* (Nees) Anders.	Acanthaceae	-	Herb	AT278
194	*Impatiens balsamina* L.	Balsaminaceae	Terada	Herb	AHMA 27547
195	*Indigofera cordifolia* Heyne ex Roth.	Fabaceae	Godhadi	Herb	AT112
196	*Indigofera glandulosa* Wendl.	Fabaceae	Barbada	Herb	AT221
197	*Indigofera linifolia* (L.f.) Retz.	Fabaceae	Pandhav phalli	Herb	AT113
198	*Indigofera triata* L.f.	Fabaceae	-	Herb	
199	*Ipomoea aquatica* Forssk.	Convolvulaceae	-	Herb	AT239
200	*Ipomea pes-tigridis* L.	Convolulaceae	-	Twiner	
201	*Ipomea eriocarpa* R.Br.	Convolvulaceae	-	Climber	
202	*Ipomea obscura* (L.) Ker Gawler.	Convolvulaceae	Pungali	Climber	
203	*Isachne elegans* Dalz.	Poaceae	-	Herb	AT249
204	*Isachne globosa* (Thunb) O.Ktze.	Poacaeae	-	Herb	AT245
205	*Isachne miliacea* Roth.ex R&S.	Poaceae	-	Herb	AT250
206	*Ischaemum pilosum* (Klein ex Willd)Wight	Poaceae	Kunda	Herb	
207	*Ischaemum rugosum* Salisb.	Poaceae	-	Herb	AT251
208	*Jatropha curcas* L.	Euphorbiaceae	Mogali erand	Shrub	
209	*Justica adathoda* L.	Acantheceae	Adulsa	Shrub	
210	*Justicia glauca* Rottl	Acanthaceae	-	Herb	
211	*Juncus prismatocarpus* R. Br.	Juncaceae	-	Herb	AT140
212	*Lablab purpureus* (L.) Sweet.	Fabaceae	Pavata	Twiner	
213	*Lagascea mollis* Cav.	Asteraceae	Tharvad	Herb	AHMA 27526
214	*Lantana camera* L.	Verbenaceae	Tantani	Shrub	
215	*Launaea procumbens* (Roxb.)Ramayya & Rajgopal	Asteraceae	Pathri	Herb	AHMA 27542
216	*Lavandula bipinnata* (Roth) O.Ktze.	Lamiaceae	Kidmari	Herb	
217	*Lemna perpusilla* Torr.	Lemnaceae	-	Herb	
218	*Leonotis neptifolia* (L) R.Br.	Lamiaceae	Dipmal	Herb	
219	*Leucas aspra* (Willd) Link.	Lamiaceae	Shankroba	Herb	AHMA 27516
220	*Leucas longifolia* Benth.	Lamiaceae	-	Herb	AT129

221	*Leucaena latisiliqua* (L.) Gillis2	Mimosaceae	Subabhul	Tree	
222	*Leucas cilliata* Benth.	Lamiaceae		Herb	AT231
223	*Leucas indica* (L) R. Br.ex Vatke.	Lamiaceae		Herb	AHMA 27516
224	*Limnophila aquatica* (Roxb) Alston	Scrophulariaceae		Herb	AT192
225	*Limnophila aromatic* (Lam.) Merrill	Scrophulariaceae		Herb	AT225
226	*Limnophila heterophylla* (Roxb) Benth.	Scrophulariaceae	Undri	Herb	AT193
227	*Limonia acidissma* L.	Rutaceae	Kavath	Tree	
228	*Linum mysurense* Heyne ex Benth.	Linaceae		Herb	AT275
229	*Lobelia alsinoides* Lam.	Lobeliaceae		Herb	
230	*Lobelia heyneana*. Sch. R. & S.	Lobeliaceae		Herb	AT270
231	*Lophopogon tridentatus* (Roxb.)Hack.	Poaceae	-	Herb	AT166
232	*Ludwigia octovalvis* (Jacq.)Raven	Onagraceae		Herb	AT257
233	*Ludwigia perennis* L.	Onagraceae	Pan-Lavang	Herb	AT256
234	*Mangifera indica* L.	Anacardiceae	Amba	Tree	
235	*Malvastrum coromandelianum* (L) Grackte	Malvaceae		Herb	AT205
236	*Martynia annua* L.	Martyniaceae	Winchu	Herb	
237	*Melia azedarach* L.	Meliaceae	BakyanaNimb	Tree	
238	*Merremia gangetica* (L.) Cuford.	Convolvulaceae	Undirkani	Herb	AT212
239	*Mimosa pudica* L.	Mimosaceae	Lajalu	Under shrub	
240	*Mimulus strictus* Benth	Scrophulariaceae		Herb	AT280
241	*Mnesithea granularis* (L.) Koning & Sosef.	Poaceae	-	Herb	AT167
242	*Monochoria vaginalis* (Burn. f.)Pers.	Poritederiaceae		Herb	AT267
243	*Momordica dioica* Roxb. ex Willd.	Cucurbitaceae	Kortoli	Climber	
244	*Moringa oleifera* Lam	Moringaceae	Shevga	Tree	
245	*Mukia maderaspatana* (L.) Roem.	Cucurbitaceae		Herb	AT215
246	*Neanotis montholoni* (Hook. f.)Lewis	Rubiaceae		Herb	AT214
247	*Nicandra physalodes* (L.) Gaertn.	Solanaceae	Ranpopti	Herb	AT190
248	*Ocimum gratissimum* L.	Lamiaceae		Herb	AHMA 27534
249	*Oplismenus burmannii* (Retz.)P. - Beauv.	Poaceae	-	Herb	AHMA 27569
250	*Oropetium thomaeum* (L.f.) Trin	Poaceae	-	Herb	AT168
251	*Oxalis corniculata* L.	Oxilidaceae	Ambushi	Herb	AT209
252	*Panicum paludosum* Roxb	Poaceae	-	Herb	AT253
253	*Panicum psilopodium* Trin	Poaceae	-	Herb	AT254
254	*Panicum repens* L.	Poaceae	-	Herb	AT255
255	*Parthenium hysterophorus* L.	Asteraceae	Congress	Herb	AHMA 27537
256	*Paspalum scrobiculatum* L.	Poaceae	-	Herb	AT185
257	*Pennisetum pedicellatum* Trin.	Poaceae	-	Herb	AT169
258	*Persicaria glabra* (Willd.) Gomez de la Maza	Polygonaceae	-	Herb	AT135
259	*Phoenix sylvestris* (L) Roxb	Arecaceae	Sindhi	Tree	
260	*Phyllanthus amarus* Schuachm & Thonn	Euphorbiaceae	Bhui Awali	Herb	AHMA 27551
261	*Phyllanthus maderaspatensis* L.	Euphorbiaceae	-	Herb	AHMA 27551
262	*Phyllanthus reticulatus* Poir.	Euphorbiaceae	Kangoni	Herb	
263	*Phyllanthus urinaria* L.	Euphorbiaceae		Herb	AHMA 27525
264	*Physalis longifolia* Nutts.	Solanaceae	Popati	Herb	AT240
265	*Physalis minima* L.	Solanaceae	Popati	Herb	

266	*Pimpinella adscendens* Dalz	Apiaceae	-	Herb	
267	*Plumbago zeylanica* L.	Plumbaginaceae	Chitrarak	Shrub	
268	*Plectranthus mollis* (Ait) Spreng.	Lamiaceae	-	Herb	AT187
269	*Pongamia pinnata* (L) Pierre	Fabaceae	Karanj	Tree	
270	*Pogostemon benghalansis* (Burm.f.)Ktze.	Lamiaceae	Pangali	Shrub	
271	*Pogostemon deccanensis* (Panigr.)Pers.	Lamiaceae	-	Herb	AT277
272	*Polygala arvensis* Willd	Polygalaceae	-	Herb	AHMA 27524
273	*Polygonium plebejum* R.Br.	Polygonaceae	-	Herb	AHMA 27566
274	*Portulaca oleracea* L	Portulacaceae	Ghol	Herb	AT200
275	*Portulaca quadrifida* L.	Portulacaceae	Chighal	Herb	AT201
276	*Psidium guajava* L.	Myrtaceae	Peru	Tree	
277	*Ricinus communis* L.	Euphorbiaceae	Erand	Shrub	
278	*Roripa indica* (L.) Hiern	Brassicaceae	-	Herb	
279	*Rostellularia quinqueangularis* (Koen x ex. Roxb) Nees	Achanthaceae	-	Herb	AT186
280	*Rotala fimbriata* Wt.	Lytheraceae	-	Herb	AT246
281	*Rotala indica*(Willd)Kohne	Lytheraceae	-	Herb	AT247
282	*Sacciolepis indica* (L.)A	Poaceae	-	Herb	AT252
283	*Sacciolepis myosuroides* (R.Br.)A camus	Poaceae	-	Herb	AT240
284	*Salvia aegyptiaca* L.	Lamiaceae	-	Herb	AT229
285	*Santalum album* L.	Santalaceae	Chandan	Tree	
286	*Sapindus laurifolius* Vahl.	Sapindaceae	Ritha	Tree	
287	*Schoenoplectus articulatus* (L) palla.	Cyperaceae	-	Herb	
288	*Scirpus afflinis Roth*	Cyperaceae	-	Herb	AT260
289	*Securinega leucopyrus* (Willd).Muell-Arg.	Euphorbiaceae	Pandharphalli	Shrub	
290	*Semecarpus anacardium* L. f.	Anacardiaceae	Bibba	Tree	
291	*Sesbania sesban* (L) Meer.	Fabaceae	Shevari	Shrub	AT227
292	*Sesbenia bipinosa* (Jacq) Steud.ex Wight	Fabaceae	Ranshevari	Herb	AT218
293	*Setaria pumila* (Poir.) R. & S.	Poaceae	-	Herb	AHMA 27572
294	*Sida acuta* Burm.f.	Malvaceae	-	Herb	AT234
295	*Sida cordifolia* L	Malvaceae	-	Herb	AT206
296	*Sida rhombifolia* L.	Malavaceae	-	Herb	AT216
297	*Smithia bigemina* Dalz.	Fabaceae	Berki	Herb	AT176
298	*Smitha conferta* J.E.Smith.	Fabaceae	Kavala	Herb	
299	*Smitha hirsuta* Dalz.	Fabaceae	Kasai	Herb	
300	*Smitha racemosa* Heyne ex Wt.&Arn.	Fabaceae		Herb	
301	*Smitha sensitiva* Ait.	Fabaceae	Barka	Herb	
302	*Solanum anguivi* Lam.	Solanaceae	Chicharti	Under Shrub	AT127
303	*Solanum nigrum* L.	Solanaceae	Kanguni	Herb	AT126
304	*Solanum virginianum* L.	Solanaceae	-	Herb	
305	*Sopubia delphinifolia* (L) G. Don.	Scrophulariaceae	-	Herb	AT183
306	*Sorghum halepense* (L).Pers.	Poaceae	-	Herb	
307	*Sphaeranthus indicus* L.	Asteraceae	-	Herb	AT123
308	*Spilanthus calva* DC.	Asteraceae	Akkalkara	Herb	AT124
309	*Spilanthus calva* DC.	Asteraceae	Akkalkara	Herb	AT124
310	*Sporobolus indicus* (L.) R.Br.	Poaceae	-	Herb	AT170
311	*Striga densiflora* (Benth) Benth.	Scrophulariaceae	-	Herb	
312	*Stylosanthes fruticosa* (Retz.) Alst.	Fabaceae	-	Herb	AT114

313	*Synedrella nodifora* (L.)Gaertn.	Asteraceae	-	Herb	AHMA 27529
314	*Syzygium cumini* (L.)Skeels.	Myrtaceae	Jambhul	Tree	
315	*Tagetus erecta* L.	Astaraceae	Zendu	Herb	
316	*Tamarindus indica* L.	Caesalpinaceae	Chinch	Tree	
317	*Tectona grandis* L.	Verbenaceae	Sagwan	Tree	
318	*Tephrosia purpurea* (L.) Pers.	Fabaceae	Unahali	Herb	
319	*Terminalia alata*Heyne ex Roth	Combretaceae	Ain	Tree	
320	*Terminalia bellerica* (Gaertn.) Roxb.	Combretaceae	Behada	Tree	
321	*Terminalla chebula* Retz	Combretaceae	Hirda	Tree	
322	*Themeda quadrivalvis* (L.)O. Ktze.	Poaceae	Bhati	Herb	AT171
323	*Themeda triandra* Forssk.	Poaceae	-	Herb	AT172
324	*Tinospora cordifolia* (Wild) Miers	Menispermaceae	Gulvel	Twiner	
325	*Tribulus terrestris* L.	Zygophyllaceae	Sarata	Herb	AT208
326	*Trichodesma indicum* (L) Lehm.	Boraginaceae	-	Herb	AT236
327	*Tricholepis amplexicaulis* Cl.	Asteraceae	-	Herb	
328	*Trichosanthes tricuspidata* Lour.	Cucurbitaceae	Kaundal	Climber	
329	*Tridax procumbens* L	Asteraceae	Kurmudi	Herb	AHMA 27540
330	*Triumfetta pilosa* Roth	Teliaceae	-	Herb	AT219
331	*Triumfetta rhomboidea* Jacq	Teliaceae	-	Herb	AT207
332	*Urena lobata* L.	Malvaceae	Van Bhendi	Under shrub	
333	*Verbascum chinese* (L.)Sant	Scrophulariaceae	-	Herb	AHMA 27536
334	*Vernonia anthelmintica* (L.) Willd.	Asteraceae	Ranjire	Herb	
335	*Vernonia cinere* (L) Less.	Asteraceae	Sahadevil	Herb	AT125
336	*Vetivera zizanioildes* (L.) Nash	Poaceae	Gavatichaha	Herb	
337	*Utricularia stellaris* L.f.	Lentibulariaceae	-	Herb	AT279
338	*Utricularia reticulata* Smith.	Lentibulariaceae	-	Herb	AHMA 27570
339	*Vigna trilobata* (L.) Verd.	Fabaceae	Moogi	Herb	
340	*Vitex negundo* L.	Verbenaceae	Nirgudi	Tree	
341	*Wahlenbergia marginata* (Thunb.) DC.	Campanulaceae	-	Herb	AT269
342	*Wattakaka volubilis* (L.F.) Stapf.	Asclepiadaceae	Hirandodi	Climber	
343	*Woodfordia fruticosa* (L) Kurz.	Lytheraceae	Dhayati	Shrub	
344	*Xanthium indicum* koen	Asteraceae	Landaga	Under Shrub	AHMA 27558
345	*Xyris indica* L.	Xyridaceae	-	Herb	AT266
346	*Zornia gibbosa* Span.	Fabaceae	-	Herb	AT115
347	*Ziziphus mauritiana Lamk.*	Rhamnaceae	Bor	Tree	

Table 2: Floristic analysis – Total number of species documented

No.	Title	No. of species documented	No.	Title	No. of species documented
1	Families	74	5	Shrubs	31
2	Dicotyledons	295	6	Herbs	261
3	Monocotyledons	52	7	Climbers	12
4	Trees	38	8	Twiners	5

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Table: 3 Floristic analysis – Number of species documented from the family.

	Family	Genera	Species
1	Acanthaceae	4	6
2	Agavaceae	1	1
3	Amaranthaceae	6	12
4	Anacardiaceae	2	2
5	Annonaceae	1	2
6	Apiaceae	1	1
7	Apocynaceae	2	2
8	Arecaseae	1	1
9	Asclepidaceae	3	4
10	Asteraceae	27	31
11	Balsaminaceae	1	1
12	Bombaceae	1	1
13	Boraginaceae	1	1
14	Brassicaceae	1	1
15	Caesalpinaceae	4	8
16	Campanulaceae	1	1
17	Caricaceae	1	1
18	Celastraceae	1	1
19	Chenopodaceae	1	1
20	Cleomaceae	1	3
21	Combretaceae	2	4
22	Commelinaceae	2	7
23	Convolulaceae	5	9
24	Cucurbitaceae	5	5
25	Cyperaceae	5	11
26	Elatinaceae	1	2
27	Eriocaulaceae	1	5
28	Euphorbiaceae	8	14
29	Fabaceae	20	35
30	Gentianaceae	3	3
31	Hydrophyllaceae	1	1
32	Juncaceae	1	1
33	Lamiaceae	8	12
34	Lecythidaceae	1	1
35	Lemnaceae	1	1
36	Lentibulariaceae	1	2
37	Liliaceae	3	3
38	Lobeliaceae	1	2
39	Lytheraceae	3	4
40	Malvaceae	6	9
41	Martyniaceae	1	1
42	Meliaceae	2	2
43	Menispermaceae	1	1

44	Mimosaceae	3	5
45	Molluginaceae	1	2
46	Moraceae	2	2
47	Moringaceae	1	1
48	Musaceae	1	1
49	Myrisinaceae	1	1
50	Myrtaceae	3	3
51	Nyctaginaceae	1	1
52	Onagraceae	1	2
53	Orchidaceae	1	1
54	Oxalidaceae	2	2
55	Papaveraceae	1	1
56	Periplocaceae	2	2
57	Plumbaginaceae	1	1
58	Poaceae	38	52
59	Polygalaceae	1	1
60	Polygonaceae	1	1
61	Poritederiaceae	1	1
62	Portulaceae	1	2
63	Rhamnaceae	1	1
64	Rubiaceae	2	3
65	Rutaceae	1	1
66	Santalaceae	1	1
67	Sapindaceae	3	3
68	Scrophulariaceae	8	9
69	Solanaceae	4	8
70	Tiliaceae	3	6
71	Verbenaceae	5	5
72	Vitaceae	3	3
73	Xyridaceae	1	1
74	Zygophyllaceae	1	1

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