

### 3.7. The Biological Environment – Flora

#### 3.7.1 Sampling locations

Survey was carried out in selected areas of Jonai District situated on the northern bank of the Brahmaputra River and bordering Arunachal Pradesh on the south. This report is exclusively based on primary data. The sampling locations (total 8) are listed in Table 3.34.

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#### Sampling locations for the floral survey in Jonai District

S/N	Name of the location	Approximate area covered
1	Jonai town	1 – 2 km <sup>2</sup>
2	Joa Kareng	Do
3	Telam	Do
4	Simen	Do
5	Laimekuri	Do
6	Kali	Do
7	Kobo	Do
8	Near Arunachal border northeast of Telam	Do

#### 3.7.2 Vegetation Types in the study area of Jonai

The vegetation of the study area is predominantly tropical. Based on the floristic composition the vegetation types of the area may be classified into:

##### (i) Tropical Moist Evergreen Forests

This type of vegetation is found in the foothills area of Jonai bordering Arunachal Pradesh in the northern side. The forest trees include

- Dillenia indica,
- Daubanga grandiflora,
- Magnolia globosa,
- Vitex peduncularis,

- *Dysoxylum hamiltonium*,
- *Dysoxylum binectariferum*,
- *Ailanthus grandis*,
- *Adina cordifolia*,
- *Albizia odoratissima*,
- *Albizia stipulata*,
- *Zanthoxylum oxyphyllum*, etc.

*Thunugia grandiflora*, *Thunbugia coccinia*, *Banhiva vahili*, *Milletia pachycarpa*, etc. are the lianes; common shrubs are *Sarcochlamys pulcherrima*, *Phlogacanthus thrysiflorus*, *Phlogacanthus tubitrus*, *Morinda angustifolia*, *Gomphrena parviflora*, etc. Common herbs are *Impatiens balsamina*, *Elastostima platyphylla*, *Amorphophalus paconifolius*, etc. Luxuriant growth of floristic elements was noted in some pockets of this region.

(ii) Hydrophytes in Wetlands:

Wetlands are common in the entire district and aquatic vegetation was noted in fair number in the study area. Based on ecological adaptations hydrophytic vegetations have been noted under the following categories (i) Free floating, (ii) Submersed suspended, (iii) Submersed anchored, (iv) anchored with floating leaves, (v) Floating shoots anchored, (vi) Emergent anchored and (vii) Swamps, marshy hydrophytes. The common species are –

- *Ceratopteris thalietrooides* ,
- *Marsilea minuta* ,
- *Azolla pinnata* ,
- *Salvinia natans* ,
- *Trapa natans* ,
- *Hydrolea zeylanica*,
- *Hydrilla verticillata* ,
- *Polygonum hydroipiper* ,
- *P. bonbatum* ,
- *Hygrophila auriculata*,
- *Eichhornia crassipes*,

- Carex sp.,
- Scirpus grossus, etc.

(iii) Psammophytes on the bank of the river

Plants growing on the sand and mud of Brahmaputra river beds of Jonai area are:

- Arundo donax,
- Imperata cylindrica,
- Phragmites karka,
- Erianthus ravanea,
- Saccharum arundinaccum,
- Saccharum spontaneum,
- Tamarix dioica,
- Phragmites communis,
- Hygrohiza aristata,
- Vossia procera,
- Panicum proliferum,
- Aptuda varia, Andropogon jwaraneua,
- Nardus contortus,
- Setaria glauca,
- Barringtonia acutangula,
- Melastoma malabathricum,
- Lagerostromia speciosa etc.

(iv) Degraded Forests:

Degradation of primary forests is widespread in the study area which has resulted in the disappearance of primary vegetation. Original forest has now been transformed into secondary vegetation showing degraded forests and scrub jungles. The common species are

- Melastoma malabathricum,
- Phlogacanthus thyrsoiflorus,
- Clerodendrum indicum,

- *C. serratum*,
- *Eupatorium odoratum*,
- *Meyna laxiflora*,
- *Randia campanulata*, etc.

(v) Wastelands

Wastelands include fallow lands in the outskirts areas, residential areas, unused or abandoned croplands, roadsides etc. The vegetation in such land is usually composed of annual and perennial weeds, shrubs, climbers, creepers with rare presence of tree species. Trees, shrubs, herbs and climbers are commonly observed in residential areas most of which include cultivated species of horticultural and ornamental types. In most areas herbs are the dominant component (Table 3.34).

### 3.7.3 General observations

A few general observations can be summarized as given below:

- a) Major part of the study area is under rice cultivation.
- b) The whole area is regularly affected by seasonal flood.
- c) Aquatic diversity is rich.
- d) Scrub jungles are common in northern areas.
- e) Some plant species like *Morinda* sp., *Zanthoxylum* sp., *Ficus* spp., *Debregeasia* sp., etc, which are usually found in Arunachal Pradesh, are frequently observed in the northern part of the study area.
- f) Domestic gardening/cultivation is common among villagers. (eg, arum, ginger, turmeric, several fruit bearing trees, citrus, papaya, banana etc.)
- g) Riverside areas in the south are badly affected by recurrent flood where erosion is of common occurrence. Psamphytic vegetation is common here.

**Table 3.34: List of plants recorded in survey areas in Jonai**

S/N	Scientific Name	Family	Distribution	Habit
1	<i>Abrus precatorius</i> L.	Fabaceae	R	Cl
2	<i>Acorus calamus</i> L.	Araceae	C	H
3	<i>Ageratum conyzoides</i> L.	Asteraceae	C	H
4	<i>Allium sativum</i> L.	Liliaceae	C	H
5	<i>Alpinia allughas</i> (Retz) Rose	Zingiberaceae	C	H
6	<i>Alstonia scholaris</i> R.Br.	Apocynaceae	C	T
7	<i>Alternanthera sessilis</i> L.	Amaranthaceae	C	H
8	<i>Amaranthus spinosus</i> L.	Amaranthaceae	C	H
9	<i>Amaranthus viridis</i> L.	Amaranthaceae	C	H
10	<i>Amorphophallus paeonifolius</i> (Dennst) Nicol	Araceae	C	H
11	<i>Anamitra panieulata</i> Colehr.	Menispermaceae	C	Cl
12	<i>Ananas comosus</i> (L) Merr.	Bromaliaceae	C	H
13	<i>Andrographis paniculata</i> Nees.	Acanthaceae	R	H
14	<i>Areca catechu</i> Linn.	Arecaceae	C	Pa
15	<i>Ardisia humilis</i> Vahl.	Myrsianaceae	C	Sh
16	<i>Artocarpus heterophyllus</i> L.	Moraceae	C	T
17	<i>Asparagus racemosus</i> Willd.	Liliaceae	R	Cl
18	<i>Azadirachta indica</i> A. Juss	Meliaceae	C	T
19	<i>Baccaurea ramiflora</i> L.	Euphorbiaceae	C	T
20	<i>Bacopa monnieri</i>	Scrophulariaceae	R	H
21	<i>Bambusa nana</i>	Poaceae	R	Bm
22	<i>Bambusa balcooa</i>	Poaceae	C	Bm
23	<i>Bambusa bambos</i>	Poaceae	R	Bm
24	<i>Bambusa nutans</i>	Poaceae	R	Bm
25	<i>Bambusa pallida</i>	Poaceae	C	Bm
26	<i>Bambusa spinosa</i>	Poaceae	C	Bm
27	<i>Bambusa tulda</i>	Poaceae	C	Bm
28	<i>Bambusa vulgaris</i>	Poaceae	C	Bm
29	<i>Benincasa hispida</i>	Cucurbitaceae	C	Cl
30	<i>Bischofia javanica</i> Bl	Euphorbiaceae	R	H
S/N	Scientific Name	Family	Distribution	Habit
31	<i>Bixa orellana</i> L.	Bixaceae	C	T

32	<i>Boerhaavia diffusa</i> L.	Nyctaginaceae	C	H
33	<i>Bombax ceiba</i> L.	Bombacaceae	C	T
34	<i>Brassica nigra</i> (L) Kosh	Brassicaceae	C	H
35	<i>Bryophyllum pinnatum</i>	Crassulaceae	C	H
36	<i>Butea frondosa</i> Koeing et. Roxb.	Fabaceae	C	T
37	<i>Caesalpinia bonducella</i> Vent.	Caesalpinaceae	C	Sh
38	<i>Calamus rotang</i>	Arecaceae	C	Ca
39	<i>Canavalia ensiformis</i>	Papilionaceae	R	Cl
40	<i>Capsicum annuum</i> L.	Solanaceae	C	Sh
41	<i>Capsicum frutescens</i> L.	Solanaceae	C	Sh
42	<i>Carex</i> sp.	Cyperaceae	R	H
43	<i>Carica papaya</i> L.	Caricaceae	C	H
44	<i>Cassia alata</i> L.	Caesalpinaceae	C	Sh
45	<i>Cassia fistula</i> L.	Caesalpinaceae	C	T
46	<i>Centella asiatica</i>	Apiaceae	C	H
47	<i>Chrysophyllum roxburghii</i> G.Don	Sapotaceae	R	Sh
48	<i>Cissampelos pareira</i> L.	Menispermaceae	C	Cl
49	<i>Citrus grandis</i>	Rutaceae	C	T
50	<i>Citrus limon</i> (L) Burm.f.	Rutaceae	R	Sh
51	<i>Citrus medica</i>	Rutaceae	R	Sh
52	<i>Citrus reticulata</i>	Rutaceae	C	Sh
53	<i>Clerodendrum colebrookianum</i> Walp.	Verbinaceae	C	Sh
54	<i>Clerodendrum indicum</i> (L) Kunt	Verbinaceae	C	Sh
55	<i>Clitoria ternatea</i>	Papilionaceae	C	Cl
56	<i>Coix lachrama-jobi</i> L.	Poaceae	C	Sh
57	<i>Commelina benghalensis</i> L.	Commelinaceae	C	H
58	<i>Croton caudatus</i> Geisel.	Euphorbiaceae	R	T
59	<i>Croton tiglium</i>	Euphorbiaceae	R	Sh
60	<i>Cucumis sativus</i>	Cucurbitaceae	C	Cl
61	<i>Cucurbita moschata</i>	Cucurbitaceae	C	Cl
62	<i>Curcuma caesia</i>	Zingiberaceae	C	H
63	<i>Curcuma longa</i>	Zingiberaceae	C	H
64	<i>Cyperus rotundus</i>	Cyperaceae	R	H
65	<i>Dendrocalamus giganteas</i>	Poaceae	C	T

66	<i>Dendrocalamus hamiltoni</i>	Poaceae	C	T
67	<i>Dillenia indica</i> L.	Dilleniaceae	C	T
68	<i>Diplazium esculantum</i> (Retz) Sw.	Diptridaceae	C	H
69	<i>Embllica officinalis</i> Gaertn	Euphorbiaceae	C	Sh
70	<i>Euphorbia nerifolia</i> L.	Euphorbiaceae	C	Sh
71	<i>Eichhornia crassipes</i>	Pontodariaceae	C	H
72	<i>Ficus cunia</i>	Moraceae	C	T
73	<i>Ficus morella</i>	Moraceae	R	T
74	<i>Garcinia cowa</i>	Clusiaceae	R	T
75	<i>Garcinia lancefolia</i>	Clusiaceae	R	Sh
76	<i>Garcinia morella</i>	Clusiaceae	C	T
77	<i>Garcinia pedunculata</i>	Clusiaceae	C	T
78	<i>Garcinia xanthochymus</i>	Clusiaceae	C	T
79	<i>Gloriosa superba</i>	Liliaceae	C	Sh
80	<i>Gomphrena parviflora</i>	Lamiaceae	C	Sh
81	<i>Hibiscus mutabilis</i> L.	Lamiaceae	C	Sh
82	<i>Hibiscus rosa sinensis</i> L.	Lamiaceae	C	Sh
83	<i>Houltuynia cordata</i> Thumb.	Houltuyniaceae	C	H
84	<i>Hydrocotyl rotundifolia</i>	Apiaceae	C	H
85	<i>Justicia zeylanica</i>	Acanthaceae	C	Sh
86	<i>Lagerstromia speciosa</i>	Lythidiaceae	C	T
87	<i>Lasia spinosa</i> (L) Thow	Araceae	C	H
88	<i>Lawsonia intermis</i> L.	Lythraceae	R	Sh
89	<i>Leucas plukentii</i> Spreng.	Lamiaceae	C	H
90	<i>Licuala peltata</i> Roxb.	Arecaceae	R	Pa
91	<i>Litsea monopetala</i> L.	Lawraceae	R	T
92	<i>Livistona jenkinsiana</i> Griff.	Arecaceae	R	Pa
93	<i>Mangifera indica</i> L.	Anacardiaceae	C	T
94	<i>Manihot esculanta</i>	Euphorbiaceae	C	Sh
95	<i>Melastoma malabathricum</i> L.	Melastomaceae	C	H
96	<i>Meliosma pinnata</i> Roxb.	Sabiaceae	R	Sh
97	<i>Mentha arvensis</i>	Lamiaceae	R	H
98	<i>Mesua ferrea</i> L.	Clusiaceae	C	T
99	<i>Mikania micrantha</i> H.B. & K.	Asteraceae	C	Cl

100	<i>Mimosa pudica</i>	Mimosaceae	C	H
101	<i>Mimusops elengi</i> L.	Sapotaceae	R	T
102	<i>Mollugo pentaphylla</i>	Rubiaceae	C	H
103	<i>Morinda angustifolia</i>	Rubiaceae	C	Sh
104	<i>Morinda citratus</i>	Rubiaceae	C	Sh
105	<i>Moringa oleifera</i> Lamk.	Moringaceae	C	T
106	<i>Murraya koenigii</i> (L)	Spreng Rutaceae	C	Sh
107	<i>Musa balbisiana</i>	Musaceae	C	H
108	<i>Musa balbisima</i> Colla	Mussaceae	C	H
109	<i>Musa ornate</i>	Musaceae	R	H
110	<i>Musa paradisica</i>	Musaceae	C	H
111	<i>Musa velutina</i>	Musaceae	C	H
112	<i>Mussaenda roxburghii</i>	Rubiaceae	C	Sh
113	<i>Natsiatum herpeticum</i> Buch-Ham ex.Arn	Icacinaceae	C	Cl
114	<i>Nelumbo nucifera</i> Gaert.	Nelumbonaceae	C	H
115	<i>Nyctanthes arbortristis</i> L.	Oleaceae	C	Sh
116	<i>Nymphaea nouchali</i> Burm.f.	Nympheaceae	C	H
117	<i>Ocimum basilicum</i> L.	Lamiaceae	C	H
118	<i>Ocimum sanctum</i> L.	Lamiaceae	C	H
119	<i>Oryza glutinosa</i>	Poaceae	C	H
120	<i>Oryza sativa</i>	Poaceae	C	H
121	<i>Osbeckia nepalensis</i> Hook.f.	Melastomaceae	C	H
122	<i>Paedaria foetida</i> L.	Rubiaceae	C	Cl
123	<i>Pandanus tinctoria</i>	Pandanaceae	C	H
124	<i>Papaver somniferum</i> L.	Papaveraceae	C	H
125	<i>Perilla frutescens</i>	Lamiaceae	R	H
126	<i>Phaseolus vulgaris</i>	Papilionaceae	C	Cl
127	<i>Phoenix sylvestris</i>	Arecaceae	R	Pa
128	<i>Piper longum</i> L.	Piperaceae	R	Cl
129	<i>Piper betel</i> L	Piperaceae	R	Cl
130	<i>Plumeria alba</i>	Apocynaceae	C	T
131	<i>Plumeria rubra</i>	Apocynaceae	C	T
132	<i>Pogostemon benghalensis</i> L	Lamiaceae	C	H
133	<i>Polygonum cymosum</i>	Polygonaceae	C	H

134	<i>Polygonum perfoliatum</i>	Polygonaceae	C	Cl
135	<i>Pseudostachyum polymorphum</i>	Poaceae	C	H
136	<i>Psidium guajava</i> L.	Myrtaceae	C	T
137	<i>Psopocarpus tetragonoloba</i>	Papilionaceae	R	Cl
138	<i>Rhus semialata</i>	Anacardiaceae	R	T
139	<i>Ricinus communis</i> L.	Euphorbiaceae	C	Sh
140	<i>Saccharum officinarum</i> L.	Poaceae	C	Sh
141	<i>Sapindus mukorossi</i> Gaertn.	Sapindaceae	R	T
142	<i>Scirpus grossus</i>	Cyperaceae	R	H
143	<i>Scoparia dulcis</i>	Asteraceae	C	H
144	<i>Sesamum indicum</i>	Peduliaceae	C	H
145	<i>Sida cordifolia</i>	Malvaceae	C	H
146	<i>Solanum indicum</i> L.	Solanaceae	C	H
147	<i>Spilanthes paniculata</i>	Asteraceae	C	H
148	<i>Spondias pinnata</i>	Anacardiaceae	R	T
149	<i>Streblus asper</i> L.	Moraceae	C	T
150	<i>Talauma hodgsonii</i> Hook.f.&Thoms	Magnoliaceae	R	T
151	<i>Terminalia arjuna</i> (Roxb) Wt.et.Arn	Combretaceae	C	T
152	<i>Terminalia bellerica</i> (Gaertn)Roxb	Combretaceae	R	T
153	<i>Terminalia chebula</i> Retz.	Combretaceae	C	T
154	<i>Thysanolaena maxima</i> (Roxb)D.Ktze	Poaceae	R	Cl
155	<i>Tinospora cordifolia</i> Miers	Menispermaceae	R	Cl
156	<i>Vanda teres</i> Lindl.	Orchidaceae	C	Or
157	<i>Vitex negundo</i> L.	Verbinaceae	C	Sh
158	<i>Zanthoxylum oxyphylum</i> Edgw.	Rutaceae	C	Tr
159	<i>Zea mays</i>	Poaceae	C	H
160	<i>Zingiber officinale</i> Rose.	Zingiberaceae	C	H
161	<i>Zingiber zerumbet</i> (L)Rose ex.Smith	Zingiberaceae	C	H

C = common; R = rare; H herb; Sh = shrub; T = tree; Cl = climber; Bm = bamboo; Or = orchid; Pa = palm; Ca = cane.

### 3.7.4 Aquatic plants of Jonai

The following aquatic plants have been recorded from the study area.

1. *Eichhornia crassipes* (Mart.) solms (Pontideriaceae)
2. *Pistia stratiotes* L. (Araceae)
3. *Monocharia hastate* (L.) solms. (Pontideriaceae)
4. *Monocharia vaginalis* (Barm.f) prest (Pontideriaceae)
5. *Sagittaria ghayanensis* H.B.& K. (Alismataceae)
6. *Sagittaria sagittifolia* L (Alismataceae)
7. *Alisma plantago* L. (Alismataceae)
8. *Lemna perphsilla* Torry. (Lemnaceae)
9. *Wolfia arrhiza* (L.) Hork ex wimm (Lemnaceae)
10. *Naja minor* (pers.)All (Najadaceae)
11. *Carex baccans* Nees.(Cyperaceae)
12. *Cyperus compressus* L.(Cyperaceae)
13. *C. diformis* L.(Cyperaceae)
14. *C. diffusus* Vahl.(Cyperaceae)
15. *C. digitalis* Roxb.(Cyperaceae)
16. *C. haspana* L.(Cyperaceae)
17. *C. iria* L.(Cyperaceae)
18. *C. natans* Vahl.(Cyperaceae)
19. *C. pilosus* Vahl.(Cyperaceae)
20. *C. platystylis* Roxb.(Cyperaceae)
21. *Eleocharis congesta* Don.(Cyperaceae)
22. *E. dulcis* (Burm.f.) Trin.(Cyperaceae)
23. *E. ochrostachys* Stend.(Cyperaceae)
24. *Fimbristylis miliacea* (L) Vahl.(Cyperaceae)
25. *F. globulosa* (Retz.) kunth.(Cyperaceae)
26. *Schoenoplectus artichlatus* (L.) palla.(Cyperaceae)
27. *S. grossus* (L.f.) Palla.(Cyperaceae)
28. *Brachiaria mutica* (Forssk.) Stapf. (Poaceae)
29. *Echinochloa cruspavonis* (H.B.K) schutt. (Poaceae)
30. *Eragrostis atrovirens* (Dest.) (Poaceae)

31. *Hygoryza aristata* (Retz.) Neesex Wight. (Poaceae)
32. *Hymenachne assamica* (Hook,f.) Hitchc. (Poaceae)
33. *H. achtighuma* (stand). Gillitand. (Poaceae)
34. *Panicum paludosum* Roxb. (Poaceae)
35. *P. repens* Camus . (Poaceae)
36. *Paspalum longifolium* Roxb. (Poaceae)
37. *Paspalum paspaloides* (Michx) Scribn. (Poaceae)
38. *Pseudoraphis spinescens* (Roxb.) Vickery. (Poaceae)
39. *Sacciolepis interrupta* (Willd.) Stapf. (Poaceae)
40. *Euryale ferox* salisb. (Nymphaeaceae)
41. *Nymphaea pubesum* willd. (Nymphaeaceae)
42. *Nymphaea stillata* L. (Nymphaeaceae)
43. *Nelumbo nucifera* Gaertn. (Nymphaeaceae)
44. *Trapa natans* L. (Trapaceae)
45. *Ludwigia adscendem* (L) Hara. (Onagraceae)
46. *L. prostrata* Robx. (Onagraceae)
47. *Oenanthera javanica* (Bhume) DC. (Apiaceae)
48. *Ipomoea apnatica* Forssk. (Convolvulaceae)
49. *Uticularia aurea* Lour. (Lentibhlamiaceae)
50. *Ceratophyllum demersum* L. (Ceratophyllaceae)
51. *Jussiaea repens* L. (Onagraceae)
52. *Fissanacarpa linifolia* (Vahl.) Bennet. (Onagraceae)
53. *Polygonum strigosum* R. Br. (Polygonaceae)

#### Medicinal Plants of Jonai

1. *Gomphostemma parviflora* walf. (Lamiaceae)
2. *Morinda angustifolia* L. (Rubiaceae)
3. *Curcuma aromatica* Salisb. (Zingiberaceae)
4. *Curcuma caesia* Roxb. (Zingiberaceae)
5. *Acorus calamus* L. (Araceae)
6. *Croton tiglium* L. (Euphorbiaceae)
7. *Garcinia pedunculata* Roxb. (Clusiaceae)
8. *Spilanthes acmella* murr. (Rutaceae)

9. *Tinospora cordifolia* Willd. (Menispermaceae)
10. *Sarcochlamys pulcherrima* L. (Urticaceae)
11. *Zanthoxylum oxyphyllum* Edgew. (Rutaceae)
12. *Zingiber zerumbet* (L.) Rose ex Sm. (Zingiberaceae)
13. *Kaempferia galanga* L. (Zingiberaceae)
14. *Kalanchoe pinnata* pers. (Crassulaceae)
15. *Gloriosa superba*. (Liliaceae)
16. *Murraya koengii*. (Rutaceae)
17. *Scoparia dulcis*. (Asteraceae)
18. *Paedaria foetida* L.(Rubiaceae)

#### Horticultural Crop.

1. *Zingiber officinalis* Rose (Zingiberaceae)
2. *Curcuma domestica* Vent. (Zingiberaceae)
3. *Citrus grandis* (L) Osbeck (Rutaceae)
4. *Citrus assamica* Burm. F. (Rutaceae)
5. *Musa balbisiana* Colla. (Musaceae)
6. *Piper nigrum* L. (Piperaceae)
7. *Piper betel* L. (Piperaceae)
8. *Solanum melongana* L. (Solanaceae)
9. *Eryngium foetidum* L. (Apiaceae)
10. *Baccaurea sapida* (Roxb.) Muell. (Euphorbiaceae)
11. *Areca catechu* L. (Arecaceae)
12. *Dioscorea bulbifera* L. (Dioscoreaceae)

#### Bamboo species

1. *Bambusa arundinacea* (Retz.) Willd (Poaceae)
2. *B. balcooa* Robx (Poaceae)
3. *B. tulda* Roxb. (Poaceae)
4. *B. Polymorpha* Munro. (Poaceae)
5. *B. pallida* Munro. (Poaceae)
6. *Dendrocalamus hamiltomi* Nees(Poaceae)
7. *Bambusa barpatharica* Borthakur(Poaceae)

Cane species

1. Calamus erectus Roxb. (Arecaceae)
2. C. flagellum L. (Arecaceae)
3. C. leptospadix Graff. (Arecaceae)
4. C. tenuis Roxb. (Arecaceae)
5. C. rotang L. (Arecaceae)

Weed species

1. Scoparia dulcis L. (Scrophulariaceae)
2. Mollugo pentaphylla L. (Rubiaceae)
3. Eupatorium odoratum L. (Asteraceae)
4. Cryptolepis buchanaei Roem & Schult. (Asclepiadaceae)
5. Gnaphalium indicum pers. (Asteraceae)
6. Xanthium strumarium L. (Asteraceae)
7. Mikamia micrantha L. (Asteraceae)
8. Lantana camera L. (Asteraceae)
9. Borreria articularis (l.f.) Will . (Asteraceae)
10. Cassia tora L. (Caesalpiniaceae)
11. Cassia sophera L. (Caesalpiniaceae)
12. Drymaria cordata (L.) willd. (Caryophyllaceae)
13. Physalis mimima L. (Solanaceae)
14. Solanum nigrum L. (Solanaceae)
15. Amaranthus spinosus L. (Amaranthaceae)
16. Polygonum hydropiper L (Polygonaceae)
17. P. strogosum R. Br. (Polygonaceae)
18. Cynodon dactylon L. (Poaceae)

### 3.7.5 Endangered species

Two minor species of endangered category are recorded in the study area. These are

- *Gomphostema perviflora* ( Lamiaceae ) and
- *Morinda angustifolia* (Rubiaceae)

### 3.7.6 Health and productivity of the flora

All types of plants showed healthy growth during the survey. Productivity of the different types of crops including rice was reported to be high. However floods regularly damaged crops particularly in the low lying areas. Diseases of plants, including crop plants were rarely recorded.