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SYSTEMATIC SURVEY OF SUB-FAMILY PAPILIONACEAE (FABACEAE) OF ANGIOSPERMS FROM SABARMATI RIVER OF GUJARAT STATE, INDIA

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ABSTRACT:

The present study deals with enumeration and systematic survey of plant species of family Papilionaceae (Fabaceae) *grow in the area* of Sabarmati river of Gujarat state, India. Plant exploration was conducted to determine plant species of family Papilionaceae (Fabaceae). Taxonomic position of these plant species is described in various available Floras. Plant species of family Papilionaceae (Fabaceae) from Sabarmati riverbed –riverside area, have been listed systematically which counts 43 species of 27 genera, these plants species *grow* wild as well as cultivated.

KEY WORDS: *Papilionaceae, Fabaceae, Sabarmati river.*

INTRODUCTION:

The Papilionaceae (Fabaceae) commonly known as the legume or bean family, are a large and economically important *family* of *Angiosperms*. It includes *trees, shrubs, undershrubs, twiners, herbs and climbers, life span* is perennials or annuals, Plants of this family easily recognized by their Flower (Papilionous) and *fruit (legume)*, The group is widely distributed and is the third-largest *land plants* family in terms of number of species *in the world*. Along with the *cereals* some *fruits* source of protein have been a staple human food for millennia. Plants of Papilionaceae (Fabaceae) have nodules formed by rhizobium *which helps in* Biological Nitrogen Fixation.

The present work reported *enumeration and systematic survey of Papilionaceae (Fabaceae) family* from mentioned area. Earlier, The Plants of

Northern Gujarat published by Saxton, W. T. and Sedgwick L. J. (1918) ,Shah, C. K. (1963) enumerate the sedges of Sabarmati ,Bhatt, R. P. et.al (1969) reported A study of the vegetation and flora of Khedbrahma region. Sabnis , S. D. et.al (1975) reported the forest vegetation and phytogeography of Khedbrahma region. Shah, G. L. (1978) published the flora of Gujarat State. Yogi, D. V. (1970) submit thesis of the flora of North Gujarat .Earlier many research workers explore the North Gujarat region but not much explore the river Sabarmati.

STUDY AREA:

The geographical situation of the Sabarmati river is between 22° 30' to 24° 30' North latitude and 72° 30' to 73° 30' East longitude. It originates from Arvalli hills, near Vekaria in Rajasthan State and enters in the Gujarat state at the boundary of the Sabarkantha district .It passing through across the Northern to central part of the Gujarat state .It flows through seven districts of the Gujarat state , namely Banaskantha, Sabarkantha , Mehsana ,Gandhinagar, Ahmedabad , Kheda and Anand and finally enters into the Gulf of Khambhat (Cambay). Sabarmati river is one of the longest river in the state and its length is about 418 km.It has total 5475 sq.km catchments area.

MATERIAL AND METHODS:

The study on angiosperms of family Papilionaceae (Fabaceae) from the Sabarmati river of Gujarat, India is based on the results obtained from both extensive and intensive studies of the vegetation of area under study. Field survey was carried out for collection of plants. Identification of plant species during field work was done by compiling different floras available and authenticated by experts from University department and research institutes.The photographs of all the plant species were taken during field trip. This piece of work is survey based. Surveys were made for a five years to collect and identify the flowering plants. The collected plants were categorized according to their systematic positions on the levels of family and order, following Bentham & Hookers classification system. The checklist of plant species with their Family, Scientific name, Vernacular name and Habit represent in description.

RESULTS:

The list of collected plants is given in Table 1.

Table 1. LIST OF SURVEYED PLANT SPECIES

No	BOTANICAL NAME	LOCAL NAME (In Gujarati)	HABIT	CULTIVATED or WILD	REMARKS
01	<i>Abrus precatorius</i> L.	Chanothi	Cl	W	Common
02	<i>Alysicarpus longifolius</i> (Rottl.ex. Spreng)	Ghoda samervo	H	W	Very common
03	<i>Alysicarpus tetragonolobus</i> Edgew.	Samervo	H	W	Very common
04	<i>Alysicarpus vaginalis</i> (L.) Dc.	Samervo	H	W	Common
05	<i>Butea monosperma</i> (Lam.) Taub.	Khakharo	T	W	Common
06	<i>Butea superba</i> Roxb.	Khakharvel	Tw	W	Not common
07	<i>Cajanus cajan</i> (L.) Millsp.	Tuver	S	C	Common
08	<i>Canavalia gladiata</i> (Jacq.) Dc.	Abbo	Tw	W	Common
09	<i>Cicer arietinum</i> L.	Chana	H	C	Common
10	<i>Clitoria ternatea</i> L.	Garni, Bibli	Tw	W	Common
11	<i>Crotalaria burhia</i> Buch.-Ham.	Kharshan	S	W	Common
12	<i>Crotalaria juncea</i> L.	Shan, Shun	Us	W	Common
13	<i>Crotalaria linifolia</i> L.	Adabau San	Us	W	Very common
14	<i>Crotalaria medicaginea</i> Lam.	Adbau Methi	H	W	Very common
15	<i>Cyamopsis tetragoloba</i> (L.) Taub.	Gawar, Guwar	H	C	Occasional
16	<i>Dalbergia sissoo</i> Roxb.	Moto sisam	T	W	Common
17	<i>Derris indica</i> (Lam.) Bennet.	Kanaji, Karanj	T	W	Common
18	<i>Desmodium gangeticum</i> (L.) Dc	Salvan	Us	W	Common
19	<i>Gliricidia sepium</i> L.	Gliricidia	T	C	Not common
20	<i>Goniogyna hirta</i> (Willd) Ali	<i>Goniogyna</i>	H	W	Very common
21	<i>Indigofera cordifolia</i> Heyne.		H	W	Common
22	<i>Indigofera linifolia</i> Retz.	Jinki Gali	H	W	Not common
23	<i>Indigofera linnaei</i> Ali.	Fatakiya	H	W	Common
24	<i>Indigofera tinctoria</i> L.	Gali, Nil	S	C	Very common
25	<i>Medicago sativa</i> L.	Rajko	H	C	Very common
26	<i>Melilotus alba</i> Lam.	Jangli Methi	H	W	Not common
27	<i>Melilotus indica</i> Ali.		H	W	Not common
28	<i>Mucuna prurita</i> Hk.f.	Kaucha	Tw	W	Common

29	<i>Pisum sativum</i> L.	Vatana	H	C	Common
30	<i>Psoralea corylifolia</i> L.	Barchi	H	C	Common
31	<i>Pterocarpum marsupium</i>	Biyo	T	W	Not common
32	<i>Rhynchosia minima</i> (L.) Dc.	Nahni Kamalvel	Cl	W	Common
33	<i>Sesbania bispinosa</i> (Jacq.) W.F.	Ikad	Us	W	Common
34	<i>Tephrosia purpurea</i> (L.) Pers.	Sarpankho	H	W	Very common
35	<i>Tephrosia trigosa</i> (Dalz.) Sant. & Mah.	Sarpankho	H	W	Common
36	<i>Tephrosia villosa</i> (L.) Pers.	Runchhali sarpankho	H	W	Very common
37	<i>Trigonella foenum-graecum</i> L.	Methi	H	C	Common
38	<i>Trigonella occulata</i> L.	Methi	H	W	Common
39	<i>Vigna unguiculata</i> (L.) Walp.	Choli	H	C	Common
40	<i>vigna mungo</i> L.	Adad	H	C	Common
41	<i>Vigna triloba</i> L.	Magamathi	H	C	Common
42	<i>Vigna radiate</i> L.	Mung	H	C	Common
43	<i>Zornia gibbosa</i> Span.	Samarapani	H	W	Common

[T-Tree , S-Shrub , Us-Undershrub , H-Herb , Cl-Climber , Tw-Twiner , W- wild , C- cultivated]

Family PAPILIONACEAE (FABACEAE)

The keys to the genera and species were made mainly on the basis of macro—morphological characters. The recent nomenclature for naming taxa on the basis of current Index. With nomenclature and enumeration, brief descriptions of each species, flowering and fruiting period, local names and short information on economic uses wherever available are mentioned. Simple dichotomous keys to species under each genus are provided for identification. Descriptions of the genera are not given separately.

Key to the Genera:

1. Trees or shrubs, Leaves imperipinnate, leaflets exstipulate, stamens monodelphous,
2. Trees
 3. Leaflet 3 *Butea*
 3. Leaflet more than 3
 4. Pod many seeded *Derris*
 5. leaflet 9-21, pod linear... *Gliricidia*
 5. leaflet 15-30, pod tetragonous... .. *Sesbania*
 4. Pod 1-4 seeded
 5. leaflet opposite *Derris*
 5. leaflet alternate *Dalbergia*

2. Shrubs or undershrubs, herbs
3. Flowers white, creamy yellow, pure yellow or spotted purple
 4. Pod turgid *Crotalaria*
 4. Pod not turgid *Zornia*
 5. Joint of pods echinatem, leaves bifoliate *Zornia*
 5. Pods jointed or not
 6. Leaves simple *Goniogyna*
 6. Leaves compound
 7. Leaves 3 foliate
 8. Shrubs ... *Cajanus*
 8. Herbs
 9. Pods falcate or of 2-4 spirals ... *Medicago*
 9. Pods not as above
 10. Flowers solitary.... *Psoralia*
 10. Racemes long *Melilotus*
 10. Racemes short *Trigonella*
 7. Leaves more than 3 foliate
 8. Leaflets pair 2 *Arachis*
 8. Leaflet pair more than two... .. *Sesbania*
3. Flowers red , reddish purple , bluish purple , mauve or blue
 4. Pods jointed
 5. Joints of pod tumid *Alysicarpus*
 5. Joint of pod flat *Desmodium*
 4. Pods not jointed
 5. Pods flat *Clitoria*
 5. Pods not flat
 6. Leaves simple
 4. Flowers red , pod torulose *Indigofera*
 4. Flowers blue or bluish purple , pod flat *Tephrosia*
 5. Leaves 3 or more foliate *Cyamopsis*
1. Plants climbing or twining
 2. Leaflets modified into tendrils Plant glandular ... *Cicer*
 3. Plant not glandular *Pisum*
 2. Leaflets not modified into tendrils
 3. Leaves more than 3 foliate *Abrus*
 3. Leaves 3 foliate
 4. Pods rugose pubescent, flat, linear oblong seeds 1

towards on end of pod... ..

Butea

4. Pods not as above , more than 1 seeded

5. Flowers creamy yellow, yellow or tinged red

6. Leaflet gland dotted beneath

Rhynchosia

6. Leaves not as above... ..

Vigna

5. Flowers white , bright rosy purple, mauve , blush purple or blue

6. Pods turgid

Canavalia

6. Pods not turgid

Mucuna**Key to the Species and Description :****01. *Abrus precatorius* L. (Chanothi)**

Syst. (ed. 12) 472. 1767; FBI 2 : 175 ; FBP 1 : 382 ; FGS 1: 176 ; FOS 1 :158 ;PNG 259 ; BBM 019

Perennial deciduous twiners; stem slender, glabrous, and woody ;, leaflets oblong or elliptic-oblong , glabrous, membranous, hairy beneath with rounded base ; flowers pinkish-purple, pedicellate in compact racemes ; pods pubescent, beaked, linear-oblong ; Seeds scarlet, black spotted, , oblong or ovoid, smooth, glabrous.

Fls. & Frs. : Aug.-Jan. common in the hedges on shrubs and trees.***Alysicarpus* Desv.****Key to species**

1. Calyx shorter or very slightly longer then the first joint of the pod.

2. Pods not moniliform... ..

A. vaginalis

1. Calyx much longer than the first joint of pod

2. Pods monilifer, reticulately veined... ..

A. longifolius

2. Pods transversely ribbed... ..

A. tetragonolobus**02. *Alysicarpus longifolius* (Rottl.ex.Spreng) W. & A. (Ghoda samervo)**

Prodr. 233. 1834; FBI 2 : 159 ; FBP 1 : 370 ; FGS 1: 179 ; PNG 259 ; FOS 1 : 148 ; BBM 360

Slender, erect, glabrous herbs;leaves elliptic oblong or ovate oblong, ovate lanceolate or linear lanceolate, appressed hairy beneath ; flowers bright reddish purple, geminate in spicate racemes. Pods 3-6 jointed, reticulately veined, glabrous. Seeds globose, brown, smooth, polished.

Fls. & Frs. : Sep.-Mar. common, among grasses and in the cultivated fields.**03. *Alysicarpus tetragonolobus* Edgew. (Samervo)**

Journ.As.Soc.Bengal 21:169.1853; FBI 2: 159 ; FBP 1:372 ;FGS 1:182; PNG 249 ; FOS 1 : 150 ; BBM 215

Sub erects or diffuse, slender, glabrous or sparsely hairy herbs. Leaves linear to linear- oblong or linear-lanceolate, glabrous above, appressed-hairy beneath sessile. Flowers bright reddish purple, in racemes. Pods sub

quadrangular, glabrous, apiculate, 2-6-jointed, joints transversely ribbed. Seeds ellipsoid to ellipsoid oblong, smooth, glabrous, brown.

Fls. & Frs. : Aug.-Nov. found in plains; common among grasses.

04. *Alysicarpus vaginalis* (L.) DC. (Betho samervo)

Prodr. 2:353. 1825; FBI 2 : 158 ; FBP 1 : 369 ; FGS 1: 182 ; PNG 258 ; FOS 1 : 148 ; BBM 463

Prostrate or sub erect, glabrous or sparsely hairy herbs, often with radically spreading branches. Leaves ovate-oblong, elliptic-oblong or nearly orbicular, glabrous above, sparsely hairy beneath. Flowers purple or violet, in 3-7 cm long, terminal and axillary, lax or compact racemes. Pods 6-8-jointed, reticulately veined and at length glabrous. Seeds ellipsoid-oblong, glabrous, brown and smooth.

Fls. & Frs. : July-Dec throughout, common.

Butea Koen ex. Roxb.

Key to species

1. Trees...	...	...	...	...	...	...	...	<i>B. monosperma</i>
1. Woody twiners...	...	...	...	...	...	...	...	<i>B. superba</i>

05. *Butea monosperma* (Lam.) Taub. (Khakharo , Kesudo)

in Engl & Prantl, Pfam. 3(3):366. 1894; FBI 2 : 194 ; FBP 1 : 395 ; FGS 1: 185 ; FOS 1 : 163 ; BBM 216

An erect tall, deciduous trees, with rough, ash coloured or dark-brown bark. Leaves 3-foliate, petiolate, stipules lanceolate, leaflets coriaceous, obtuse, glabrous above, hairy, obovate, oblong. Flowers red-orange, pedicellate, in racemes. Pods sandy-brown, oblong, one seeded, hairy. Seeds dark-brown, elliptic-oblong, rounded or edges.

Fls. & Frs. : Dec.-May found on hilly slopes.

06. *Butea superba* Roxb. (Khakhar- vel)

Pl. Cor. 1:23. t. 22. 1795 & Fl. Ind.3:247. 1832; FBI 2 : 195 ; FBP 1 : 396 ; FGS 1: 186 ; FOS 1 : 164 ; BBM 088

Woody twiner, leaflets coriaceous, glabrescent, ovate-rhomboid or elliptic-oblong. Flowers orange-red, in 8-28 cm long, terminal and axillary, compact racemes or panicles. Pods oblong, pale brown coloured, hairy, reticulately veined.

Fls. & Frs. : Feb.-Dec. occasional, in riverside vegetation.

07. *Cajanus cajan* (L). Millsp. (Tuver)

in Field. Columb. Mus. Bot. 2:53. 1900; FBI 2 : 217 ; FBP 1 : 435 ; FGS 1: 186 ; FOS 1 : 181 ; BBM 499

Small, erect, 1.5-3m tall shrubs. Leaves petiolate, stipulate, leaflets elliptic, oblong, lanceolate, dotted. Flowers yellow, with marron markings in few-flowered axillary racemes. Capsule 2-4.5cm long, 3-5 seeded, linear-lanceolate. Seeds green marron markings, smooth, globose.

Fls. & Frs. : Sep.-Apr. cultivated in field on riverbank.

08. *Canavalia gladiata* (Jacq.) DC. (Abbo)

Prodr. 2:404. 1825; FBI 2 :195 ; FBP 1 : 397 ; FGS 1: 188 FOS 1 : 165 ; BBM 500

Stout, glabrous, lignose twiner. Leaflets subcoriaceous, glabrous or nearly so. Racemes, compact at ends of stout, axillary peduncle. Pods glabrous, straight or slightly falcate. Seeds ellipsoidal, compressed, smooth, glabrous.

Fls. & Frs. : Aug.-Jan. found in hedges and also on lower slopes.

09. *Cicer arietinum* L. (Chana)

Sp. Pl. 738. 1753; FBI 2 : 176 ; FBP 1 : 435 ; FGS 1: 189 FOS 1 : 181 ; BBM 405

Small annual, diffuse herbs, leaflets ovate, toothed, stipulate, pubescent. Flowers creamy white or violate-purple, axillary, solitary. Pods turgid, 1-2 seeded, hairy and glandular. Seeds smooth, brown, hairy, pointed at one end.

Fls. & Frs. : Oct.-Feb. cultivated in field on riverbank.

10. *Clitoria ternatea* L. (Garni bibli)

Sp. Pl. 753. 1753; FBI 2 : 208 ; FBP 1 : 405 ; FGS 1: 190 ; PNG 260 ; FOS 1 : 172 ; BBM 020

Perennial slender, rambling twiners. Leaves alternate, imparipinnate, petiolate, stipulate, 3-5cm long leaflets (5-7), glabrous, slightly hairy, stipulate, elliptic-oblong, ovate-oblong. Flowers axillary, solitary, pedicellate, blue or white. Pods linear-oblong, flat, hairy, beaked, slightly falcate 6-10, seeded. Seeds oblong, smooth, compressed, yellowish-brown, glabrous.

Fls. & Frs. : Almost around the year. common in the hedges on low shrubs and trees.

***Crotalaria* L.**

Key to species

1. Leaves compound...	...	...	...	...	...	<i>C. medicaginea</i>
1. Leaves simple						
2. Pods glabrous...	...	...	...	...	...	<i>C. linifolia</i>
2. Pods hairy						
3. Plants bushy under shrubs...	...	...	...	...	...	<i>C. burhia</i>
3. Plants usually erect 0.75-2.5m tall...	...	...	...	...	...	<i>C. juncea</i>

11. *Crotalaria burhia* Buch.-Ham. (Kharshan)

in Wall. Cat. 5836. 1831-32 (nomen) ex Bth. in Hk. Lond. Journ. Bot. 2:474. 1843; FBI 2 : 66 ; FBP 1 : 311 ; FGS 1: 193 ; PNG 255 ; FOS 1 : 116 ; BBM 269

Bushy, pubescent, undershrubs. Leaves few, subsessile, elliptic-oblong lanceolate, rounded, silky-pubescent, sessile. Flowers yellow, pedicellate, in 5-24cm long, terminal racemes. Pods pubescent to almost villous. Seeds dark-brown, compressed, smooth, glabrous.

Fls. & Frs. : Almost around the year, common in the loose soil.

12. *Crotalaria juncea* L. (Shun)

Sp. Pl. 714. 1753; FBI 2 : 79 ; FBP 1 : 320 ; FGS 1: 195 ; PNG 255 ; FOS 1 : 118 ; BBM 406

Erect, rigid, 0.4-2 m tall, silky-pubescent undershrub. Leaves linear-lanceolate or elliptic-lanceolate, subsessile, appressed-pubescent. Flowers bright-yellow, in terminal and lateral, lax racemes. Pods obovate-oblong. Seeds subreniform, compressed, brown or yellowish-brown, smooth, glabrous.

Fls. & Frs. : Nov.-Jan. Throughout cultivation.

13. *Crotalaria linifolia* L. (Adabau shun)

f. Suppl. 322. 1781; FBI 2 : 72 ; FBP 1 : 317 ; FGS 1: 195 ; PNG 255 ; FOS 1 : 114 ; BBM 268

Erect, suffruticose, appressedly silky-hairy undershrubs. Leaves alternate, obovate-oblong, sessile or subsessile, appressed-hairy beneath. Flowers yellow, in simple or branched, terminal, lax racemes. Pods ovoid-oblong, smooth, minutely apiculate, deflexed. Seeds pale-brown, smooth, glabrous, reniform.

Fls. & Frs. : Aug.-Jan. not common among grasses and forest undergrowth; rarely on sandy river beds.

14. *Crotalaria medicaginea* Lam. (Adabau methi)

Encycl. Meth. Bot. 2:201. 1786; FBI 2 : 81; FBP 1 : 322 ; FGS 1: 196 ; PNG 255 ; FOS 1 : 119 ; BBM 156

Perennial 30-80cm tall, hairy, erect herbs. Leaflets 3 foliate, petiolate, leaflets subsessile, glabrous, oblanceolate, silky beneath. Flowers yellow, in terminal or leaf-opposed racemes. Pods 2 seeded, obliquely subglobose and beaked. Seeds smooth, glabrous, and dark-brown.

Fls. & Frs. : Aug.-Jan. common, found as a weed in waste places

15. *Cyamopsis tetragonoloba* (L.) Taub. (Guwar)

in Pfam. 3 (3) : 259. 1894; FBI 2 : 92 ; FBP 1 : 328 ; FGS 1: 200; PNG 256 ; FOS 1 : 122 ; BBM 502

Erect, annual, appressed-hairy herbs, Leaves 3-foliate, petiolate; leaflets broadly ovate, rarely elliptic-lanceolate, appressed-hairy. Flowers pale-rosy-purple or light-violet, in condensed, short, axillary racemes. Pods linear, long beaked, nearly glabrous or coarsely hairy. Seeds subtetragonous, greyish-black, microscopically tuberculate.

Fls. & Frs. : Throughout the year. Cultivated for vegetable.

16. *Dalbergia sissoo* Roxb. (Moto sisam)

Hort. Beng. 53. 1814 (nomen) & Fl. Ind. 3:223. 1832; FBI 2 : 231; FBP 1 : 421; FGS 1: 202 ; PNG ; FOS 1 : 179 ; BBM 090

A tall trees, with thick, grayish-black or light-brown, longitudinally furrowed bark. Leaves alternate, petiolate, stipulate, leaflets distantly alternate, suborbicular, lanceolate, glabrous, reticulate. Flowers pale yellow, subsessile in axillary panicles. Pods 1-4 seeded, glabrous. Seeds brown, glabrous.

Fls. & Frs. : Jan.-Sep. common planted and also naturally found.

17. *Derris indica* (Lam.) Bennet (Karanj)

in Journ. Bombay nat. Hist. Soc. 68:303. 1971; FBI 2 : 240 ; FBP 1 : 429 ; FGS 1: 203 ; PNG ; BBM 271

Trees, 7-15m tall tree, with greyish-white or light black, rough soft, green bark. Leaves pale-green, petiolate, stipulate, alternate, leaflets 5-9 opposite, ovate-oblong, or elliptic, acute, glabrous, entire. Flower white with purple tinge, in axillary racemes. Pods oblong or obovoid, glabrous, smooth. Seeds oblong, brown.

Fls. & Frs. : Feb.-July common along the river bank.

18. *Desmodium gangeticum* (L.) DC. Var. *maculatum* (L.) (Salvan)

Baker in Hk. f. 1876; FBI 2 : 168 ; FBP 1 : 379 ; FGS 1: 207 ; PNG 259 ; FOS 1 : 156 ; BBM 468

A tall under shrubs, grey-downy in younger parts. Racemes axillary and terminal, slender, 10-40 cm long. Pods 2.3-4.5 cm long, falcate, 4-6-jointed, compressed, clothed with hooked hairs.

Fls. & Frs. : Aug.-Nov, occasional, found in the undergrowth of forests.

19. *Gliricidia sepium* (Jacq).

Walp. Repert. Syst. 1 : 679, 1842 ; FGS 1: 214 ; BBM 091

A small trees ; leaves imparipinnate, leaflets oblong, blunt at apex black spot below ; flowers pinkish purple ; Pods long, flat.

Fls. & Frs. : Jan.-Apr Common planted in garden.

20. *Goniogyna hirta* (Willd.)

Ali in Taxon 16:463. 1967; FBI 2 : 65 ; FBP 1 : 310 ; FGS 1: 214 ; BBM 021

Prostrate . slender, patently hairy much branched herb. Leaves numerous, simple, alternate, subsessile, ovate, glabrous, hairy. Flowers long, subsessile, yellow, axillary, solitary. Pods brown, oblong, flat, 2-seeded, hairy, glabrous, persistent calyx present. Seeds brown, smooth.

Fls. & Frs. : Aug.-Feb. common, found in plains among grasses.

Indigofera* L.*Key to species****1. Leaves simple**

2. Leaves linear to linear oblong, pod 1 seeded... ..

I. linifolia

2. Leaves broadly ovate to ovate oblong, pod 1-2 seeded ...

I. cordifolia

1. Leaves compound

2. Flower in axillary, sessile or short peduncled, head...

I. linnaei

2. Flower in axillary racemes... ..

I. tictoria

21. *Indigofera cordifolia* Heyne ex Roth,

Nov. Pl. Sp. 357. 1821; FBI 2 : 93 ; FBP 1 : 331 ; FGS 1: 220 ; PNG 256 ; FOS 1 : 125 ; BBM 154

Diffuse, branched, pubescent to tomentose or almost woody annual herbs. Leaves across, simple, subsessile, hairy, ovate and stipulate. Flowers subsessile, bright-red, few. Pods 2-seeded, oblong, minutely beaked, densely pubescent to almost woody. Seeds small long, glabrous, globose.

Fls. & Frs. : Almost around the year common, found in plain open sandy beds.

22. *Indigofera linifolia* Retz. (Jinki gali)

Obs. Bot. , 4 : 29 .1786 ; FBI 2 : 92 ; FBP 1 : 331 ; FGS 1 : 221 ; PNG 256 ; FOS 1 : 124 ; BBM 467

Prostrate, copiously branched, appressed-pubescent herbs, somewhat woody near base. Leaves appressed hairy, sessile. Flowers red. Pods long, globose, glistening with appressed-silvery-white pubescent. Seed brownish black, globose, very shallowly pitted.

Fls. & Frs. : July-Feb. common.

23. *Indigofera linnaei* Ali (Fatakiya)

in Bot. Notis. 111:549. 1958; FBI 2 : 94 ; FBP 1 : 332 ; FGS 1 : 222 ; FOS 1 : 126 ; BBM 155

Annual prostrate, much branched herbs with radically spreading, hairy, glabrous, branches. Leaves subsessile, stipulate, alternate, leaflets (5-11), obovate, hairy. Flowers small, red in small heads. Pods long, cylindrical, 2-seeded, oblong, hairy. Seeds globose, brown, and smooth.

Fls. & Frs. : July-Dec. common, among grasses in plain open area.

24. *Indigofera tinctoria* L. (Gali , Nil)

Sp. Pl. 751. 1753; FBI 2 : 99 ; FBP 1 : 339 ; FGS 1 : 224 ; FOS 1 : 131 ; BBM 092

A tall, erect, appressed-hairy to nearly glabrous, shrubs. Leaves alternate; leaflets oblong to nearly obovate, hairy beneath. Flowers red, axillary, spicate racemes. Pods linear, slightly falcate, stiff, deflexed, brown. Seeds brown, cylindric, glabrous, truncate at ends.

Fls. & Frs. : Aug.-Jan. Not common.

25. *Medicago sativa* L. (lachko)

Sp. Pl. 778.1753; FBI 2 : 90 ; FBP 1 : 327 ; FGS 1 : 230 ; BBM 093

Hairy, erect, almost glabrous, perennial herb, 30-90cm tall. Leaves trifoliate, petiolate oblanceolate, toothed and glabrous few hairs on mid-nerve beneath. Flowers purple, small, compact, axillary and terminal. Pod fruits pale-brown, twisted, slightly pubescent.

Fls. & Frs. : Almost throughout the year cultivated, fodder for livestock.

Melilotus Adans.

Key to species

1. Flower white... ..

Melilotus alba

1. Flower yellow... ..

Melilotus indica

26. *Melilotus alba* Lam. (Jangli methi)

Encycl. 4:63. 1789; FBI 2 : 89 ; FBP 1 : 325 ; FGS 1: 230 ; PNG 256 ; BBM 501

Erect, glabrous herbs. Leaflets elliptic obovate, serrate. Flower in racemes, 5-12 cm long terminal. Pods 0.2-0.4 cm across, one seeded. Seed brown, compressed, smooth.

Fls. & Frs.: Dec.-June as a weed in the cultivated field.

27. *Melilotus indica* Ali.

Fl. Pedem. 1:308. 1785; FBI 2 : 89 ; FBP 1 : 325 ; FGS 1: 230 ; PNG 256 ; BBM 361

Erect, almost glabrous herbs, 30-45 cm tall. Leaflets , elliptic obovate or oblanceolate, serrate, glabrous. Racemes 5-12 cm. long, terminal. Pods 1-seeded, ellipsoid-oblong, glabrous. Seed brown, compressed, smooth, glabrous.

Fls. & Frs. : Sep.-Apr. Common, as a winter weed in the cultivated field.

28. *Mucuna prurita* Hk. f. (Kaucha)

in.Bot.Misc.2:348.1830-31; FBI 2 : 187 ; FBP 1 : 389 ; FGS 1: 234; PNG 259 ; FOS 1 : 160 ; BBM 465

Annual extensive, lignose, hairy twiners with slender branching. Leaves 3-foliolate, petiolate, stipules lanceolate, leaflets membranous, hairy, ovate-triangular, ovate-lanceolate or rhomboid. Flowers in long racemes flowers solitary, pedicellate. Pods winged on margins, 4-6-seeded, sandy-brown. Seeds small, elliptic, dark-brown, spotted black, smooth, glabrous.

Fls. : Sep.-Nov. **Frs. :** Oct.-Dec. found on hedges, also on low trees and shrubs.

29. *Pisum sativum* L. (Vatana)

FBI 2: 181 ; FBP 1 : 436 ; FGS 1: 235 ; BBM 023

Twining, glabrous annual , hairy herbs ; leaflets ovate- elliptic , sessile; flowers white few in axillary racemes ; pods, linear- oblong, pubescent, compressed, 2-seeded. Seeds globose, dark-brown.

Fls. & Frs. : Aug.-Feb. common cultivated in the field .

30. *Psoralea corylifolia* L. (Bavchi)

sp. Pl. 764.1753. FBI 2 : 103 ; FBP 1 : 341 ; FGS 1: 236 ; BBM 409

An erect , tall pubescent herbs ; leaflets ovate -elliptic; flower axillary, solitary in racemes ; pods long , ovoid ; seed black, smooth.

Fls. & Frs. : Aug.-Feb. common , throughout in the along river margin .

31. *Pterocarpus marsupium* Roxb. (Biyo)

FBI 2 : 103 ; FBP 1 : 427 ; FGS 1: 236 ; FOS 1 : 179 ; BBM 471

Tall deciduous trees with yellowish- grey bark. leaves pale-green, petiolate, stipulate, alternate, leaflets 5-9 ovate-oblong, glabrous ; flower white with purple tinge, in panical. Pods long glabrous .

Fls. & Frs. : Apr.-Jun. Not common, found in ayurvedic garden near river bank.

32. *Rhynchosia minima* (L.) Dc. (Nani kamalvel)

Prodr. 2:385. 1825; FBI 2 : 223 ; FBP 1 : 414 ; FGS 1: 239 ; PNG 261 ; FOS 1 : 177 ; BBM 022

Twining, glabrous much branched, hairy herbs. Leaves 3-foliate, petiolate, stipulate, leaflets rhomboid, ovate, glabrous, dotted. Flowers yellow in axillary racemes. Pods, obliquely oblong, pubescent, compressed, 2-seeded. Seeds globose, dark-brown.

Fls. & Frs. : Aug.-Feb. common in the hedges.

33. *Sesbania bispinosa* (Jacq.) (Ikkad)

W.F.Wight in U.S. Dept. Agr. Bur. Pl. Ind. Bull. 137:15. 1909; FBI 2: 114 ; FBP 1 : 350 ; FGS 1: 241 ; FOS 1 : 139 ; BBM 314

A tall, simple or branched, minutely prickly undershrubs. Leaves abruptly pinnate; leaflets 10-20pairs, sessile, linear-oblong or elliptic-oblong, glabrous. Flowers in axillary and terminal racemes. Pods falcate, drooping, torulose, glabrous, shortly beaked. Seeds oblong, smooth, greenish-brown.

Fls. & Frs. : Aug.-Feb. common, a weed in cultivated fields and moist places.

Tephrosia Pers.

Key to species

- | | | | | | | | |
|--|--|--|--|--|--|--|--------------------|
| 1. Leaves simple... | | | | | | | <i>T. strigosa</i> |
| 1. Leaves compound, long | | | | | | | |
| 2. Pods villous... | | | | | | | <i>T. villosa</i> |
| 2. Pods pilose or glabrescent but villous... | | | | | | | <i>T. purpurea</i> |

34. *Tephrosia purpurea* (L.) Pers. (Sarpankho)

Syn.Pl. 2:329. 1807; FBI 2 : 112 ; FBP 1 : 346 ; FGS 1: 249 ; PNG 257 ; FOS 1 : 136 ; BBM 095

Herbaceous, perennial, 30-80 cm tall plants with spreading, glabrous, branches. Leaves 3-8cm long, petiolate, stipulate, leaflets 9-13, oblanceolate, hairy beneath, glabrous. Flowers bright-rosy-purple, petiolate, slender, in leaf opposed racemes. Pods long, 5-7 seeded, slightly curved, flat, linear, glabrous. Seeds blackish-brown, oblong, smooth, glabrous.

Fls. & Frs. : Aug.-onwards common, weed in wast lands.

35. *Tephrosia strigosa* (Dalz.)

Sant. & Mahesh. in Journ. Bombay nat. Hist. Soc. 54:804.1957; FBI 2 : 111 ; FBP 1 : 344 ; FGS 1: 250 ; FOS 1 : 134 ; BBM 408

Slender 25-30cm, tall annual, erect or suberect herbs. Leaves simple, linear to linear-lanceolate, green, hairy beneath, petiolate and stipulate. Flowers pedicellate, bluish, solitary or few in leaf-opposed racemes. Pods 6-10 seeded, linear, glabrescent. Seeds rhomboid, glabrous, smooth.

Fls. & Frs. : Aug.-Sep. common among the grasses on rocky substratum.

36. *Tephrosia villosa* (L.) (Runchalo sarpankho)

Pers.Syn. Pl. 2:329. 1807; FBI 2 : 113 ; FBP 1 : 347 ; FGS 1: 251; PNG 257 ; FOS 1 : 135 ; BBM 096

A tall, perennial, hairy plant. Leaves sessile, long, alternate and stipulate, leaflets 11-19, green, glabrous, petiolate, obovate to oblanceolate, silky-pubescent beneath. Flowers bright-violet-purple, fading light-pink or blue fascicled, in racemes. Pods 6-8 seeded, linear-oblong, hairy. Seeds 6-9 brownish-black, oblong, smooth glabrous.

Fls. & Frs. : Aug.-Jan. Common, found in open lands.

37. *Trigonella foenum-graecum* L. (Methi)

Sp. Pl. 777. 1753; FBI 2 : 87 ; FBP 1 : ; FGS 1: 253 ; FOS 1 : 182 ; BBM 407

Annual 10-50cm, glabrous or faintly hairy herbs. Leaves compound, petiolate, leaflets obovate or oblanceolate, glabrous, toothed. Flowers creamy-yellow, subsessile, terminal, solitary or few condensed racemes. Pods long linear, glabrous and beaked. Seeds yellowish-brown, oblong, glabrous, smooth.

Fls. & Frs. : Through the yearcultivated.

38. *Trigonella occulata* L. (Jangli methi)

FBI 2 : 87 ; FBP 1 : 325 ; FGS 1: 254 ; BBM 024

A glabrous herbs. Leaves compound, petiolate, leaflets obovate or oblanceolate, glabrous, toothed; flowers yellow, sessile, axillary condensed racemes. Pods long linear, glabrous and beaked ; seeds yellowish-brown, oblong, smooth.

Fls. & Frs. : Feb. Mar. Not common , along margin of wetland.

39. *Vigna unguiculata* (L.) (Choli)

Walp. subsp. L. Sp. Pl. 725. 1753; FBI 2 : 210 ; FBP 1 : 407 ; FGS 1: 260 ; BBM 466

Trailing or twining annuals. Leaflets ovate to ovate-lanceolate or ovate-rhomboid, glabrous. Flowers bright-purple or lilac, in condensed racemes. Pods long, olive-green, linear, torulose, glabrous. Seeds deep-pinkish-red, oblong, smooth, glabrous.

Fls. & Frs. : Aug.-Dec. Cultivated for vegetable.

40. *Vigna mungo* (L.) (Adad)

FBI 2 : 203 ; FBP 1 : 403 ; FGS 1: 258 ; BBM 270

Trailing or twining annuals ; leaflets ovate to ovate-lanceolate or ovate-rhomboid, glabrous; flowers yellow in capitate racemes. Pods long, olive-green, linear, glabrous ; seeds oblong, smooth, glabrous.

Fls. & Frs. : Aug.-Dec. Cultivated in field .

41. *Vigna trilobata* (L.) (Magamathi)

FBI 2 : 201 ; FBP 1 : 401 ; FGS 1: 259 ; BBM 094

Trailing or twining annuals. Leaflets ovate to ovate-elliptic, glabrous ; flowers yellow in capitate racemes. Pods long, linear, glabrous ; seeds brownish black smooth,.

Fls. & Frs. : Aug.-Dec. wild throught in riverside .

42. *Vigna radiata* (L.) (Mug)

FBI 2 : 203 ; FBP 1 : 402 ; FGS 1: 259 ; BBM 410

A glabrous herbs. Leaves compound, petiolate, leaflets obovate or rhomboid hairy ; flowers yellow in short condensed racemes. Pods long linear oblong ; seeds black green , shining smooth.

Fls. & Frs. : Jul. Nov. common , Throught cultivated in field .

43. *Zornia gibbosa* Span. (Samarapani)

i Linnaea 15:192. 1841 FBI 2 : 147 ; FBP 1 : 355 ; FGS 1: 261 ; PNG 258 ; BBM 531

Annual, branched, glabrous, 10-30cm tall herbs. Leaves bifoliate, petiolate, stipulate, leaflets sessile, dotted, lanceolate to ovate-lanceolate, glabrous, Flowers small, yellow, in terminal and axillary racemes. Pods 2-6 jointed. Seeds smooth, polished, yellowish-brown.

Fls. & Frs. : Aug.-Apr. among grasses in plain open forest .

STATISTICAL ANALYSIS OF FAMILY

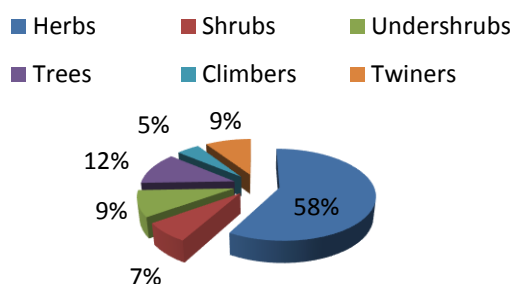
Family: Papilionaceae (Fabaceae)

Genera	27
Species	43

ANALYSIS OF HABIT

Herbs	Shrubs	Undershubs	Trees	Climbers	Twining
25	03	04	05	02	04

ANALYSIS OF HABIT

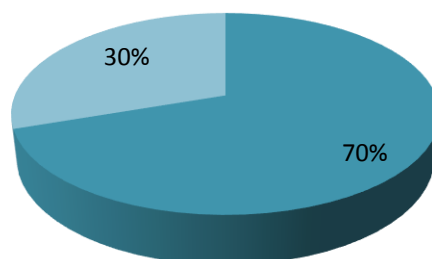


ANALYSIS OF CULTIVATED / WILD PLANTS

WILD PLANTS	CULTIVATED PLANTS
30	13

ANALYSIS OF CULTIVATED / WILD PLANTS

■ WILD PLANTS ■ CULTIVATED PLANTS



DISCUSSION & CONCLUSION:

The analysis of the plant species in the area gives the result that the total Angiosperm flora including naturalized and indigenous plants comprises of about 43 species belong to 27 genera of the family. The dominance of the plant species especially of semi-arid zone type and presence of different life forms like herbs, shrubs, climbers, twiners, lianas, and trees in a particular ratio shows clear structural of the semi arid zone to arid zone. The most of the species as weeds are mainly found in this study area. A good percentage of the herbs species present in the area. This explains one of the unique characteristics of the riparian ecology where the riverside always remain open and its influence determines abundance and presence of the medium sized evergreen and riparian tree species. There are herb 25 species, shrub 03 species, undershrub 04 species, tree 05 species, Climber 02 species, twiners 04 species. There are 27 common species, 09 very common species, 06 not common species and 01 occasional species. There are 13 cultivated plant species and 30 wild plant species.

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