

# A STUDY OF FLORAL ELEMENTS OF IGATPURI FOREST OF NASIK DISTRICT (M.S)

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## ABSTRACT

The variation in climate & diversity in the topography of various regions of Nasik have allowed to penetrate the Eastern as well as Western species & endemic flora has been affected abruptly, which can be seen from the present study. The phytogeographical elements are fundamental elements for understanding flora of any area. It is clear that floristic work is incomplete without any account of floral elements any area. The floral elements occur in Igatpuri forest. These floral elements are such as Indian, Indo-Malayan, Tropical, Paletropical, Pantropics, Neotropical, Cosmopolitan, Perso-Arabian & Mediterranean decreasing order & their percentage is also different. Analysis of a flora of Igatpuri forest in such a way indicates status of a forest & such type of analysis is also essential for origin & development of flora.

**Keywords :** Floral elements, Igatpuri forest, Nasik District.

## INTRODUCTION

Forests are the main components of earth hence they act as a life supporting system. But since the last few decades the biodiversity of these forests is disappearing at an alarming rate. India with its varied climatic, topographical & edaphic conditions has nearly all types of such habitats where the survival of plant species is possible. Therefore, the vegetation of India is very rich & is an assemblage of floristic elements of various phytogeographical regions. From neighbouring countries several plants entered India & were naturalized in its vegetation in remote past. Therefore, it becomes necessary to determine the various floristic elements present in the vegetation of the country.

The study area of Igatpuri forest is located in the Western Ghats & surrounded by the highest peaks of Sahyadri i.e. Western Ghats. Western Ghats is one of the well known world's biodiversity hotspots. The present study site is within the Western Ghats of India, hence the present work is an attempt to know the status of vegetation in Igatpuri forest. Hooker (1904) & Champion (1936), working on the flora & vegetation of India, believed that there was no endemic plant in the Indian subcontinent & all the plant species present, have migrated from other countries. Later on several Indian workers like Chattrajee (1939), Wulf, E.V. (1943), Bharucha & Meher – Homji (1965), Meher – Homji (1970) have studied the vegetation in different parts of India & discarded this imperialistic view of early British workers & concluded that the flora of Indian subcontinent contains a significant percentage of endemic plants. Various workers Cheria, P.J. & Pataskar, R.D. (1971), Menon, A.R.R. & Shah, G.L. (1982), Yadav, S.S. & Mathew, V. (1994), Joshi et al. (2004), Asish Kumar, Marcot, B.C. &

Ajai Saxena (2006) & Mishra, V.K.& Sharma A.C.(1910),have studied floristic elements, phytogeography & endemic plants in the vegetation of different parts of India , but Igatpuri forest of nasik district , which rich in its floristic elements ,has not been explored so far.Therefore, the present investigation has been taken.

**MATERIAL AND METHOD:**

The Igatpuri forest is vegetationally very rich.It lies between 20N latitude & 74 E longitude of 599 mm above main sea level. The Igatpuri is extreme south- west & bounded on the north by part of Nasik ,on east by Jalgaon & Auragabad & on south by Ahmadnagar & west by Thane district. The climate is cool through out the year. The soil type is black & red .Vaitarna & Darana are two main rivers. The average rainfall is 10345 mm. The temperature range from 18°C to 46°C. During the rainy seasons the entire area shows green cover due to plant growth. Ecological conditions favour the growth of many herbs,shrubs, climbers & number of trees are significant for biological diversity.

**Field work :** For the vegetation studied eleven areas localities were selected randomly throughout forest. Quadrates of 10 x 10 meters were laid down in different direction in each places in different forest. Altogether 11 plots were laid down for trees & shrubs in the entire area studied. Thus the sampling was done for the total area of 1100 square meter in the forest.

**Laboratory work:** The study of plant diversity of Igatpuri forest was undertaken during the course (2005 to 2010).All plants are arranged according to Bentham & Hooker’s system of classification .The plants were collected in different seasons & identified with the help of floras (Hooker, 1872- 1897),(Cooke,1967), (Almeida,S.M.,1990) (Lakshminarashimhan P.1990),(Naik, V.N.1998),

**Discussion :**

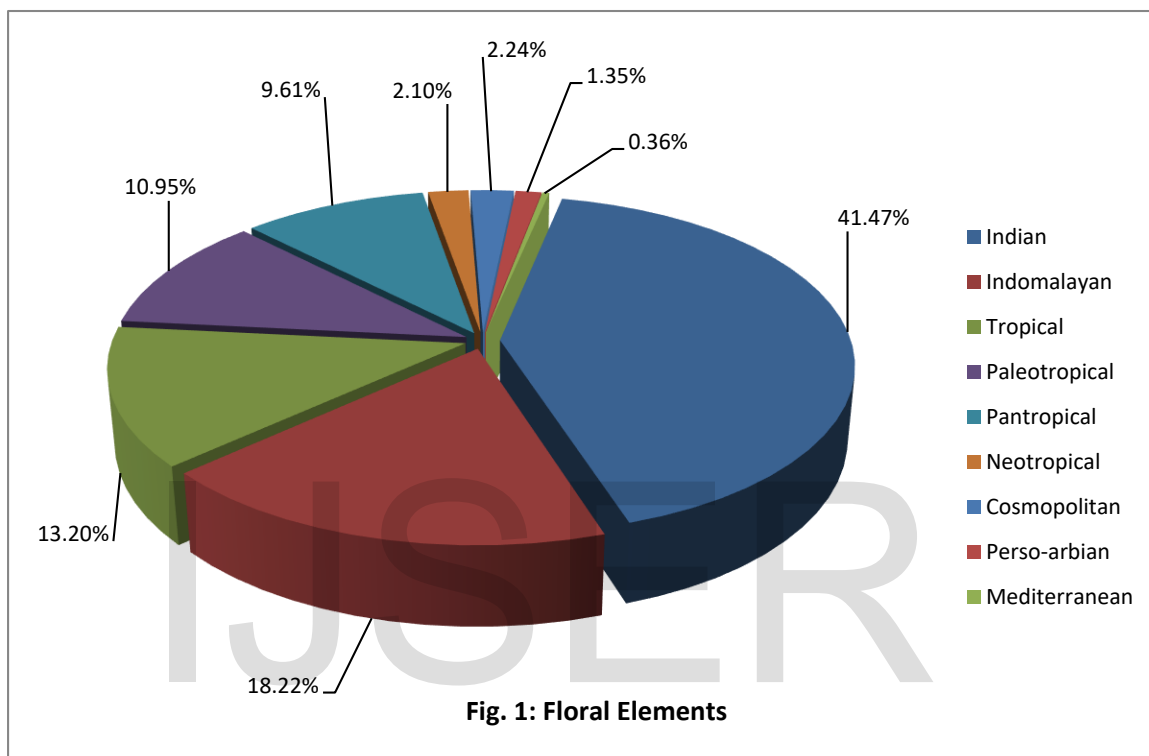
The number & Percentage of species in different floral elements is presented in table 1.

The Indian elements constitutes the largest number (41.47%) followed by Indomalayan elements (18.22%), Tropical elements (13.20%), Palaeotropical elements (10.95%), Pantropical (9.61%), Neotropical (2.60%), Cosmopolitan (2.24%), Perso-arabian (1.35%) and Mediterranean elements relatively very few (0.36%).

**Table 1: Number and Percentage of floral elements of Igatpuri.**

Sr. No.	Floral elements	Number	Percentage
1	Indian	462	41.47
2	Indomalayan	203	18.22
3	Tropical	147	13.20
4	Paleotropical	122	10.95%
5	Pantropical	107	9.61%
6	Neotropical	29	2.10%
7	Cosmopolitan	25	2.24%
8	Perso-arabian	15	1.35

9	Mediterranean	04	0.36%
	<b>Total</b>	<b>1114</b>	<b>100</b>



**1.Indian:** *Clematis hedysarifolia* DC., *Clematis heynei* M.A.Rau., *Dillenia pentagyna* Roxb., *Anamirta cocculus* (L.) Wight & Arn., *Cissampelos pareira* L., *Tinospora cordifolia* (Willd) Miers ex Hook., *Cardamine trichocarpa* Hochst.ex A. Rich., *Clemoe simplicifolia* (Camb.) Hook., *Casearia tomentosa* Roxb., *Flacourtia latifolia* (Hook. f. & Thoms) T. Cooke., *Tamarix dioica* Roxb., *Tamarix ericoides*, var. *pungens* (Roxb.) Hochr., *Ablemoschus tuberculatus* Pal & Singh., *Hibiscus hispidissimus* Griff., *Hibiscus talbotii* (Rakshit) Paul & Nayar., *Eriolaena quinquelocularis* (Wight & Arn.) Wight., *Melochia corchorifolia* L., *Sterculia urens* Roxb., *Corchorus olitorius* L., *Grewia flavescens* A. Juss., *Triufettmpatiens malabarica* Koen ex Rottb., *Linum mysorens* Heyne ex Bth., *Reinwardtia indica* Dumort., *Aspidopterys cordata*(Heye ex Wall) A. Juss., *Gernium ocellatum* Camb., *Monsonia senegalensis* Guill & Perr., *Impatiens balsamina* L., *Impatiens dalzellii* Hook f.& Thoms., *Impatiens minor* (DC.)Bennet., *Atalantia racemosa* Wight Arn ., *Murraya koenigii* (L.) Spr., *Mimosa hamata* Willd. Sp. Pl., *Soymida febrifuga* A. Juss., *Rhamnus hirsuta* Wight & Arn., *Ventilago bombaiensis* Dalz., *Ziziphus caracutta* Roxb., *Zizphus nummularia* (Burm. f.) White & Arn., *Zizphus rugosa* var. *rugosa* Lam., *Cissus pallida* (Wight & Arn.) Planch., *Rhus mysorensis* G. Don., *Moringa concanensis* Nimmo ex Dalz. &Gibs., *Alysicarpus homosus* Edgew., *Butea superba* Roxb. ex Willd., *Cajanus sericeus* (Bth. ex Baker) van der Maesen., *Clitoria biflora* Dalz., *Crotalaria filipes* Bth. in Hook., *Crotalaria juncea* L., *Crotalaria mysorensis* Roth., *Crotalaria stocksii* Bth. ex Baker., *Desmodium ritchiei* Sanj., *Desmodium triangulare* (Retz.) Merr., *Dolichous trilobus* L., *Geissaspis cristata* Wight & Arn., *Indigofera cassioides* Rottl. ex DC., *Indigofera glandulosa* Wendl ., *Ougeinia oojeinensis* (Roxb.) Hochr., *Psoralea corylifolia* L., *Pterocarpus marsupium* Roxb., *Smithia bigemina* Dalz., *Smithia purpurea* Hook., *Smithia racemosa* Heyne ex Wight & Arn., *Smithia sensitiva* Ait. Hort., *Taverniera cuneifolia* (Roth.) Arn. Nov., *Uraria rufescens* (DC.) Schindl., *Vigna dalzelliana* (O. Ktze.) Verdc., *Bauhinia foveolata* Dalz., *Bauhinia malabarica* Roxb., *Bauchinia phoenicea* Heyne ex Wight & Arn., *Hardwickia binata* Roxb., *Acacia catechu* (L. f.) Willd., *Acacia nilotica* (L.) Willd. ex Del., *Acacia torta* (Roxb) Craib., *Albizia odoratissima* (L. f.) Bth in Hook., *Neptunia triquetra* (Vahl.) Bth., *Prosopis cineraria* (L.) Druce., *Anogissus latifolia* (Roxb. ex DC.), *Terminalia chebula* Retz. Obs., *Terminalia cuneata* Roth., *Eucalyptus camaldulensis* Dehnh., *Combretum albidum* G., *Eucalyptus camaldulensis* Dehnh., *Syzygium heyneanum* (Duthie) Wall ex Gamble., *Osbeckia muralis* Naud., *Lagersteroemia microcarpa* Wight., *Lindernia parviflora* Roxb., *Rotaia occultiflora* Koehne., *R. serphyllifolia* (Roth.) Bremek., *Punica granatum* L., *Ctenolephis garcinii* (Burm. f.) C.B.Cl., *Cucumis setosus* Cong., *Dicoelospermum ritchiei* C.B.Cl., *Luffa acutangula* (L.) Roxb., *Begonia crenata* Dryand., *Begonia picta* J. E. Sm., *Pimpinella adscendens* Dalz., *Pimpinella heyneana* (Wall.ex DC.) Kurz., *Pimpinella tomentosa* Dalz. ex C.B.Cl., *Pimpinella wallichiana* (Miq.ex Hohen.) Gandhi., *Pinda concanense* (Dalz.) P. K. Mukh. & Constance., *Canthium dicocum* (Gaertn.) Teijsm & Binn ., *Gardenia gummifera* L., *Gardenia latifolia* Soland., *Hedyotis affinis* R. & S. Sys., *Hedyotis aspera* Heyne ex Roth., *Hedyotis pumila* L., *Hymenodictyon orixense* (Roxb.) Mabb., *Ixora brachiata* Roxb *Ixora pavetta* Andr., *Morinda citrifolia* L ., *Neanotis foetida* (Hook. f.) W. H. Lewis., *Neanotis lancifolia* (Hook. f.) W. H. Lewis., *Neanotis latifolia* (Dalz.) Deb. & Dutta., *Neanotis montholoni* (Hook. f.) W. H. Lewis., *Spermadictyon suaveolens* Roxb., *Artemisia nilagirica* (C. B. Cl.) Pamp., *Blumea eriantha* DC., *Blumea malcolmii* (C. B. Cl.) Hook., *Blumea obliqua* (L.) Druce., *Caesulia axillaris* Roxb., *Conyza leucantha* (D. Don.) Ludlow & Raven., *Cosmos bipinnatus*., Cav *Cyathocline lutea*LawexWight., *Flaveria trinervia* (Spr.) C. Mohr., *Glossocardia bosvallea* (L. f.) DC.*Goniocaulon indicum* (Klein ex Willd.) C.B.Cl., *Guizotia abyssinica* (L. f.) Cass., *Gynura bicolor* (Roxb. ex Willd.) DC., *Kleinia gradiflora* (Wall. ex DC.) N. Rani., *Lagascea mollis* Cav., *Launaea intybacea* (Jacq.) Beauv ., *Nanothamnus sericeus* T. Thoms., *Notonia grandiflora* DC. Guill. Arch., *Phyllocephalum scabridum* (DC.) Kirkman., *Pulicaria wightiana* (DC.) C.B.Cl., *Senecio bombayensis* Balakr., *Senecio dalzellii* C. B. Cl., *Senecioedgeworthii* Hook. f., *Senecio hewrensis* (Dalz.) Hook. f., *Siegesbeckia orientalis* L,

*Tricholepis glaberrima* DC., *Tricholepis radicans* (Roxb.) DC., *Vernonia anthelmintica* (L.) Willd., *Vernonia divergens* (Roxb.) Edgew., *Wedelia urticaefolia* DC., *Xanthium indicum* L. Koen., *Campanula dimorphantha* Schweinf Beitr., *Wahlenbergia erecta* (Roth ex R. & S.) Moeliona & Tuyn., *Lobelia heyneana* R. & S., *Lobelia nicotianaefolia* Roth.exR.&S., *Diospyros chloroxylon* Roxb., *Diospyros melanoxylon* Roxb., *Jasminum arborescens* Roxb., *Jasminum malabaricum* Wight., *Nyctanthes arbor-tristis* L., *Olea dioica* Roxb., *Catharanthus pusillus* (Murr.) G. Gen., var. *adscendens* var. *fimbriata* (Wall.) Grav., *Ceropegia hirsuta* Wight. & Arn., *Ceropegia lawii* Hook. f., *Ceropegia media* (Huber)Ansari., *Ceropegia sahyadrica* Ansari., *Telosma pallida* (Roxb.), *Tylophora dalzellii* Hook., *Cryptostegia grandiflora* R. Br., *Hemidensmus indicus* (L.) Schultes in R., *Canscora concanensis* C. B.Cl., *Centaurium meyeri* (Bunge) Druce., *Exacum lawii* C. B.Cl., *Exacum pedunculatum* L., *Exacum petiolare* Griseb. DC., *Exacum pumilum* Griseb., *Exacum tetragonum* Roxb., *Hoppea dichotoma* Heyne ex Willd., *Swertia minor* (Griseb.) Knobl., *Cordia dichotoma* Forst., *Cordia gharaf* (Forssk.) Ehrenb. & Asch., *Cynoglossum zeylanicum* (Vahl. ex Hornem.) Thunb. ex Lehm., *Paracaryopsis coelesina* (Lindl.) R. Mill., *Paracaryopsis malabricum* (C. B. Cl.) R. Mill., *Trichodesma inaequale* Edgew., *Argyrea sericea* Dalz. & Gibs., *Argyrea strigosa* (Roth.) Roberty., *Convolvulus rottlerianus* Choisy., *Ipomoea clarkei* Hook. f. *Ipomoea hederifolia* L., *Ipomoea nil* (L.) Rothi., *Ipomoea sindica* Staff., *Ipomoea triloba* L., *Porana racemosa* Roxb., *Rivea hypocrateriformis* (Desr.) Choisy., *Rivea laotica* Ooststr., *Cuscuta chinensis* Lam., *Nicandra physalodes* (L.) Gaertn *Nicotiana tabacum* L., *Kickxia ramosissima* (Wall.) Janchen., *Limnophila indica* (L.) Druce., *Lindenbergia indica* (L.) Vatke., *Rhamphicarpa longiflora* (Arn.) Bth., *Sopubia delphinifolia* (L.) G. Don., *Stemodia viscosa* Roxb *Stemodia densiflora* (Bth.) Comp., *Sutera dissecta* (Del.) Wall., *Utricularia uliginosa* Vahl. Enum., *Dolichandrone falcate* (Wall. ex DC.) Seem., *Heterophragma quadriloculare* (Roxb.) K. Schum., *Stereospermum colais* (Buch.-Ham.ex Dillw) Mabb., *Sesamum orientale* L., *Asystasia dalzelliana* Sant., *Barleria prattensis* Sant., *Carvia callosa* (Wall.) Bremek., *Cynarospermum asperrimum* (Nees.) Vollesen., *Dicliptera nasikensis* Lakshmi & Shirma., *Dipteracanthus prostratus* (Poir) Nees., *Dyschoriste nagchana* (Nees.) Bennet., *Eranthemum roseum* (Vahl) R. Br., *Hemigraphis latebrosa* (Heyne ex Roth.) Nees., *haplanthodes neilgherryensis* (Wight) R. B. Majumdar., *Haplanthodes plusoma* (T. And.) Panigar & G. C. Das., *Haplanthodes tentaculata* (L.) R. B. Majumdar., *Haplanthodes verticillata* (Roxb.) R. B. Majumdar., *Hemigraphis crenata* (Bth. ex Hohen.) Bremek., *Indoneesiella echiolodes* (L.) Sreem., *Justica betonica* L., *Lepidagathis cristata* Willd., *Lepidagathis cuspidata* Nees., *Lepidagathis subarmata* (C. B. Cl.) Gamble., *Lepidathis trinervis* Wall. ex Nees., *Neuracanthus sphaerostachyus* (Nees.), *Neuracanthus trinervius* Wight Ic., *Nilgirianthus heyneanus* (Nees.) Bremek., *Nilgrianthus reticulates* (Stapf.) Bremek., *Rostellularia quinqueangularis* (Koen. ex Roxb.) Nees., *Rungia elegans* Dal., *Rungia repens* (L.) Nees., *Thelepaepale ixiocephala* (Bth.) Bremek., *Callicarpa tomentosa* (L.) Murr., *Clerodendrum inerme* (L.) Gaertn. Fruct., *Clerodendrum multiflorum* (Burm. f.) O. Ktze., *Clerodendrum serratum* (L.) Moon., *Lantana camara* L var. *aculeata* (L.) Moldenke., *Anisochiluseriocephalus* Bth., *Anisomeles heyneana* Bth., *Anisomelus malabarica* R. Br. ex Sims, *Leucas cephalotes* (Roth.) Spr., *Leucas ciliata* Bth., *Leucas deodikarii* Billore et Hemadri., *Leucas mollissima* Wall., *Leucas stelligera* Wall., *Nepeta hindostana* (Heyne ex Roth.) Haines., *Plectranthus caninus* Roth., *Plectranthus mollis* (Ait.) Spr., *Plectranthus stocksii* Hook. F., *Pogostemon benghalensis* (Burm. f.) O. Ktze., *Pogostemon plectranthoides* Desf., *Boerhavia repens* L., *Commicarpus boissieri* (Heimerl.) Cufod., *Alternanthera pungens* Kunth., *Amaranthus dubius* Mart. ex Thells., *Amaranthus palmeri* Wats., *Persicaria auriculata* (Meissn.) Dixit., *Rumex vesicarius* L., *Dalzellia ceylanica* (Gardn.) Wight., *Aristolochia indica* L., *Scurrula parasitica* L., *Tolypanthus lagenifer* (Wight.) van. Tiegh., *Santalum album* L., *Acalypha malabarica* Muell.-Arg., *Baridelia squamosa* (Lam.) Gehrm., *Chrozophora prostrata* Dalz. & Gibs., *Croton gibsonianuo* Nimmo., *Croton roxburghii* Balakr., *Euphorbia erythroclada* Boiss., *Euphorbia fusiformis* Buch. Ham. ex D. Don., *Euphorbia lanciniata* Panigr., *Euphorbia pycnostegia* Boiss., *Euphorbia rosea* Retz., *Euphorbia zornoides* Boiss., *Glochidion ellipticum* Wight., *Phyllanthus fraternus* Webster., *Macaranga peltata* (Roxb.) Mull-Arg., *Phyllanthus scabrifolius* Hook. F., *Phyllanthusurinaria* L., *Sapium insigne* Bth., *Trewia polycarpa* Bth., *Boehmeria macrophylla* Hornem., *Atrocarpus heterophyllus* Lam., *Ficus*

*amplissima* J. E. Sm., *Ficus arnottiana* (Miq.) Miq., *Ficus drupacea* Thunb., *Ficus semicordata* Buch. Ham. ex Sm., *Burmannia coelestia* D. Don., *Aerides crispum* Lindl., *Aerides maculosum* Lindl., *Dendrobium aqueum* Lindl., *Dendrobium barbatulum* Lindl., *Dendrobium herbaceum* Lindl., *Dendrobium microbulbon* A. Rich., *Dendrobium peguanum* Lindl., *Eria dalzellii* (Hook. ex Dalz.), *Eria micrachilos* (Dalz.) Lindl., *Eulophia herbacea* Lindl., *Eulophia nuda* Lindl., *Eulophia ramentacea* Lindl. ex Wight., *Geodorum densiflorum* (Lam.) Schltr., *Habenaria commelinifolia* (Roxb.) Wall. ex Lindl., *Habenaria crassifolia* A. Rich., *Habenaria digitata* Lindl., *Habenaria furcifera* Lindl., *Habenaria grandifloriformis* Blatt. & McC., *Habenaria heyneana* Lindl., *Habenaria longicorniculata* Grah., *Habenaria marginata* Coleb., *Habenaria plantaginea* Lindl., *Habenaria rariflora* A. Rich., *Luisia zeylanica* Lindl., *Nervilia plicata* (Andr.) Schltr., *Nervilia plicata* (Andr.) Schltr., *Curcuma inodora* Blatt., *Curcuma pseudomontana* Grah., *Ensete superbum* (Roxb.) Cheesm., *Crinum viviparum* (Lam.) R. Ansari and V. J. Nair., *Pancratium parvum* Dalz., *Pancratium sanctae-mariae* Blatt. & Hallb., *Dioscorea belophylla* (Prain) Haines., *Disocorea oppositifolia* L., *Asparagus gonocaldos* Baker., *Asparagus laevisimus* Steud. ex Baker., *Asphodelus tenuifolius* Cavan *Chlorophytum glaucoides* Blatt., *Iphigenia indica* (L.) A. Gray apud kunth., *Iphigenia magnifica* Ansari & Rolla Rao., *Iphigenia pallida* Baker., *Iphigenia stellata* Blatt., *Commenlina hasskarlii* C.B.Cl. Commel & Cyr., *Commenlina hirsuta* (Wight) C. B.Cl.in DC., *Cyanotis concanensis* Hassk., *Cyanotis fasciculata* (Heyne ex Roxb.) J. A. & J. H. Schult., *Mudrannia semiteres* (Dalz.) Sant., *Mudrannia simplex* (Vahl) Brenan., *Tonningia cucullata* (Roth.) O. Ktze., *Phoenix robusta* (Becc.) Becc. & Hook. f., *Typha angustifolia* L., *Amorphophallus commutatus* (Schott) Engl., *Ariopsis peltata* Nimmo., *Arisaema murrayi* (Grah.) Hook., *Arisaema tortuosum* (Wall.) Schott., *Cryptocoryne spiralis* (Retz.) Fischer ex Wydler., *Pistia stratiotes* L., *Sauromatum venosum* (Ait.) Schott., *Lemna perpusilla* Torr., *Wolffia arrhiza* (L.) Horkel ex Wimer., *Wiesneria triandra* (Dalz.) Mich., *Wiesneria triandra* (Dalz.) Mich., *Eriocaulon. elenorae* Fyson., *Eriocaulon margaretae* Fyson., *Eriocaulon rouxianum* Steud. Syn., *Carex glaucina* (Boeck.) Ghildyal & Bhattacharya Cnutans Vahl., *Eleocharis atropurpurea* (Retz.) J. & K. Presl., *Eriophorum comosum* (Wall.) Wall. ex Nees., *Fimbristylis lawiana* (Boeck.) Kern., *Fimbristylis merrillii* Kern., *Fimbristylis monticola* Hochst. ex Steud., *Fimbristylis tetragona* R. Br., *Fimbristylis woodrowii* C. B.Cl., *Fuirena ciliaris* (L.) Roxb., *Mariscus konkanensis* (T. Cooke) Sedgw., *Mariscus paniceus* (Rottb.) Vahl., *Rhychospora wightiana* (Nees.) Steud., *Schoenoplectus corymbosus* (Roth. ex R. & S.) J. Raynal., *Schoenoplectus supinus* (L.) Palla., *Scirpus affinis* Roth., *Scleria stocksiana* Boeck., *Sorostachys leucocephalus* (Retz.) Lye., *Acrachne racemosa* (Heyne ex R. & S.) Ohwi., *Andropogon pumilus* Roxb., *Aristida redacta* Stapf, *Arthraxon hispidus* (Thunb.) Makino., *Arundinella metzii* Hochst. ex Miq., *Bambusa arundinacea* (Retz.) Willd., *Cloris dolichostachya* Lagasca Gen., *Cloris montana* Roxb. Fl. Ind., *Cymbapogon martinii* (Roxb.) Wats., *Desmostachya bipinnata* (L.) Stapf. in Dyer Fl., *Dichanthium armatum* (Hook. f.) Blatt., *Dichanthium concanensis* (Hook. f.) Jain & Deshpande., *Dichanthium filiculme* (Hook. f.) Jain & Deshpande., *Dichanthium foveolatum* (Del.) Roberty., *Dichanthium kuntzeana* (Hack.) Jain & Deshpande., *Dichanthium odoratum* Jain & Deshpande., *Dichanthium oliganthum* (Hochst. ex Steud.) T. A., *Digitaria abludens* R. & S. Veldk., *Digitaria ternata* (A. Rich.) Stapf. ex Dyer., *Dinebra retroflexa* (Vahl.) Panz., *Echinochloa colona* (L.) Link. Hort., *Eragrostis gangetica* (Roxb.) Steud. *Garnotia arborum* Stapf ex T., *Garnotia tenella* (Arn. ex Miq.) Jan., *Glyphochloa forficulata* (C.E.C. Fischer) W. D. Clayton, *Heteropogon ritchei* (Hook. f.) Blatt. & McC., *Isachne globosa* (Thunb.) O. Ktze., *Ischaemum diplopogon* Hook. f., *Ischaemum molle* Hook. f., *Ischaemum pilosum* (Klein ex Willd.) Wight., *Ischaemum raizadae* Hemadri & Billore., *Ischaemum santapau* Bor., *Ischaemum semisagittatum* Roxb., *Ischaemum tumidum* Stapf. ex Bor., *Iseilema antheophoroides* Hack., *Jansenella griffithiana* (C. Muell.) Bor., *Lophopogon tridentatus* (Roxb.), *Melanocenchris jacquemontii* Jaub. & Spach., *Mnesithea clarkei* (Hack.) Koning & Sosef., *Ophiuros exaltatus* (L.) O. Ktze., *Oropetium roxburghianum* (Steud.) S. M., *Oropetium thomaecum* (L. f.) Trin. Fund., *Panicum miliaceum* L., *Panicum psilopodium* Trin. Gram., *Paspalidium flavidum* (Retz.) A. Campus., *Paspalum canarae* (Steud.) Veldk., *Pennisetum hohenackeri* Hochst., *Pseudanthistiria heteroclita* (Roxb.) Hook., *Pseudoxytenathea hispida* Hook. F., *Pseudoxytenathera stocksii* (Munro), *Sehima sulcatum* (Hack.) A. Campus., *Sorghum deccanense*

Stapf., *Spodiopogon rhizophorus* (Steud.) Pilger., var. *major* (Buse) Baaijens., *Themeda laxa* (Andress.) A.Campus., *Themeda quadrivalvis* (L.) O., Ktze., *Themeda tremula* (Nees ex Steud.) Hack., *Trilobachne cookei* (Stapf.) Scenck ex Henri., *Triplopogon ramosissimus* (Hack.) Bor., *Tripogon capillatus* Jaub. & Spach., *Tripogon jacquemontii* Stapf.

## 2. Indo-Malayan:

*Clematis gouriana* Roxb. ex DC., *Dillenia indica* L., *Michelia champaca* L., *Polyalthia cerasoides* (Roxb.) Benth. & Hook., *Cocculus hirsutus* (L.) Theob., *Cocculus pendulus* (I. R. & G. Frost) Diels., *Capparis grandis* L. f. suppl., *Capparis zeylanica* L., *Cleome chelidonii* L., *Casearia championii* Thwaites., *Casearia graveolens* Dalz., *Abutilion persicum* (Burn F.) Merr., *Kydia calycina* Roxb., *Firmiana colorata* (Roxb.) R.Br., *Sterculia villosa* Roxb. ex DC., *Corchorus capsularis* L., *Grewia abutilifolia* Vent. Ex A. Juss., *Aegle marmelos* (L.) Corr., *Limonia acidissima* L., *Murraya paniculata* (L.) Jack., *Ailanthus excelsa* Roxb., *Garuga pinnata* Roxb., *Azadirachta indica* A. Juss., *Melia azadarach* L., *Toona hexandra* (Wall ex Roxb) Roem., *Arnicratea grahamii* (Wight) N. Halle., *Cassine glauca* (Rottb.) O. Ktze., *Reissantia indica* (Willd) Halle., *Ventilago denticulata* Willd., *Zizphus mauritiana* Lam., *Ampelocissus latifolia* (Roxb.) Planch., *Cayratia trifolia* (L.) Domin., *Cissus repanda* Vahl., *Leea asiatica* (L.) Rids. L. *macrophylla* Roxb. ex Horn., *Allophylus cobbe* (L.) Raeuth., *Sapindus laurifolius* Vahl., *Schleichera oleosa* (Lour.) Oken., *Lanea coromandelica* (Houtt.) Merr., *Spondias pinnata* (L.f.) Kruz., *Alysicarpus heyneanus* Wight & Arn., *Butea monosperma* (Lam.) Tabu., *Cajanus platycarpus* (Bth.) van. der Maesen., *Crotalaria medicaginea* Lam., *Crotalaria pusilla* Heyne ex Roth., *Dalbergia lanceolaria* L., *Dalbergia latifolia* Roxb., *Dalbergia volubilis* Roxb., *Desmodium heterocarpon* (L.) DC., *Desmodium triquetrum* (L.) DC., *Erythrina suberosa* Roxb., *Erythrina variegata* L., *Flemingia lineata* (L.) Roxb. ex Ait. Hort., *Indigofera prostrata* Willd., *Indigofera trifoliata* L., *Millettia extensa* (Bth.) Baker., *Paracalyx scariosus* (Roxb.) Ali., *Rhynchosia rothii* Bth. ex Ait., *Vigna trilobata* (L.) Verdc., *Bauhinia racemosa* Lam., *Caesalpinia decapetala* (Roth) Alst., *Cassia auriculata* L., *Cassia fistula* L., *Acacia leucophloea* (Roxb.) Willd., *Dichrostachys cinerea* (L) Weight & Arn., *Calycopteris floribunda* (Roxb.), *Terminalia bellirica* ( Gaertn.) Roxb. *Terminalia elliptica* Willd., *Syzygium cumini* (L.) Skeels in U. S., *Terminalia bellirica* ( Gaertn.) Roxb., *Syzygium cumini* (L.) Skeels., *Memecylon umbellatum* Burm. F., *Momoradica diocia* Roxb. ex Willd., *Solena amplexicaulis* (Lam.), *Trichosanthes cucumerina* L., *Mollugo pentaphylla* L., *Trachyspermum roxburghianum* (DC.) Craib., *Alangium salvifolium* (L. f.) Wangerin., *Ceriscoides turgida* (Roxb.) Tirveng., *Haldina cordifolia* (Roxb.) Ridsd., *Haldina diffusa* Willd., *Meyna laxiflora* Robyns., *Mitragyna parvifolia* (Roxb.) korth., *Morinda pubescens* J. E. Sm., *Pavetta crassicaulis* Bremek., *Rubia cordifolia* L., *Wendlandia heynei* (R. & S.) Sant. & Merch., *Blumea membranacea* DC., *Blumea oxyodonta* DC., *Conyza stricta* Willd., *Cyathocline purpurea* (Buch-Ham. ex D. Don.) O. Ktz., *Pluchea senecioides* (DC.) Theob., *Spilanthus calva* DC., *Synedrella nodiflora* (L.) Gaertn., *Lobelia alsinoides* Lam., *Embelia basaal* (R. & S.) A. DC., *Madhuca longifolia* (Koen.) Mac., *Mimusops elengi* L., *Xantolis tomentosa* (Roxb.) Raf., *Jasminum multiflorum* (Burm. f.) Andri., *Schrebera swietenoides* Roxb., *Carissa congesta* Wight. var., *Holarrhena pubescens* (Buch-Ham.) Wall., *Wrightia arborea* (Dennst.) Mabb., *Wrightia tinctoria* R. Br. ssp. *tinctoria* in Men., *Calotropis gigantea* (L.) Ait. Hort., *Holostemma annulare* (Roxb.) K., *Pergularia daemia* (Forssk) Chovi., *Wattakaka volubilis* (L. f.) Staf in Bot., *Cryptolepis buchmanii* Roem., *Mitreola petiolata* (J. F. Gmel.) Torr., *Canscora diffusa* (Vahl.) R. Br. ex R. & S., *Ehretia laevis* Roxb., *Ipomoea campanulata* L., *Cuscuta reflexa* Roxb., *Lindernia ciliata* (Colsm.) Penn., *Lindernia nummularifolia* (D. Don.) Wettist., *Striga angustifolia* (D. Don.) Sald., *Torenia indica* Sald., *Verbascum chinense* (L.) Sant., *Oroxylum indicum* (L.) Vent., *Asystasiamsurensis* (Roth.) T. And. *Barleria cristata* L., *Barleria lawii* T., *Crossandra infundibuliformis* (L.) Nees., *Dychoriste dalzellii* ( T. And. ex Bedd.) O. Ktze., *Hemigraphis hirta* (Vahl.) T. And., *Hygrophila serphyllum* (Nees.) T. And., *Rostellularia crinita* Nees., *Rostellularia japonica* (Thunb.) Ellis., *Rostellularia procumbens* (L.) Nees., *Rungia pectinata* (L.) Nees., *Thunbergia fragrans* Roxb., *Thunbergia laevis* Nees., *Clerodendrum viscosum* Vent. Jard., *Gmelina arborea* Roxb., *Tectona grandis* L. f. Suppl., *Acrocephalus hispidus* (L.) Nicols. & Sivadasan., *Anisochilus carnosus* (L.)

Wall., *Anisomelus indica* (L.) O. Ktze., *Anisomelus malabarica* R. Br. ex Sims., *Leucas aspera* (Willd.) Link Enum, *Leucas indica* L. R. Br. ex Vatke., *Leucas zeylanica* (L.) R. Br., *Salvia plebeia* R. Br., *Commicarpus chinensis* (L.) Heimerl *Amaranthus tricolor* L., *P. glabra* (Willd.) Gomez., *Elaeagnus conferta* Roxb., *Dendrophthoe falcata* (L. f.) Etting., *Antidesma ghaesembilla* Gaertn., *Baliospermum montanum* (Willd.) Muell-Arg., *Embllica officinalis* Gartn., *Euphrobia ligularia* Roxb., *Phyllanthus virgatus* Forst. F., *Holoptelea integrifolia* (Roxb.) Planch., *Pouzolzia zeylanica* (L.) Benn., *Ficus benghalensis* L., *Ficus hispida* L., *Ficus racemosa* L., *Ficus religiosa* L., *Ficus virens* Ait. Hort, *Vallisneria spiralis* L., *Pecteilis gigantea* (J. E. Sm.) Rafin., *Rhynchostylis retusa* (L.) Bl., *Vanda testacea* (Lindl.) Reichb., *Hypoxis aurea* Lour., *Dioscorea pentaphylla* L., *Dioscorea wallichill* Hook. F., *Asparagus racemosus* Willd., *Scilla hyacinthina* (Roth.) Mc. Bride., *Commelina attenuata* Koen. ex Vahl. Enum., *Commelina maculata* Edgew., *Commelina paleata* Hassk., *Commelina suffruticosa* Bl. Enum., *Murdannia nudiflora* (L.) Brenan., *Murdannia spirata* (L.) Brueck., *Phoenix sylvestris* (L.) Roxb., *Remusatia vivipara* (Roxb.) Schott. & Endl., *Cyperus nutans* Vahl., *Fimbristylis ferruginea* (L.) Vahl., *Fimbristylis ovata* (Burm. f.) Kern., *Fimbristylis sieberiana* Kunth., *Scleria biflora* Roxb., *Aristida setacea* Ratz., *Chionachne koenigii* (Spr.) Thw., *Dendrocalamus strictus* (Roxb.) *Cyrtococcum patens* (L.) A. Camus., *Dichanthium caricosum* (L.) A. Camus., *Eulalia trispicata* (Schult.) Henr. *Ischaemum indicum* (Houtt.) Merr., *Ischaemum rugoum* Salisb., *Panicum notatum* Retz., *Sporobolus coromandelianus* (Retz.) Kunth.

**3.Tropical:** *Cyclea fissicalyx* Dunn., *Cyclea peltata* (Lam) Hook. F., *Nelumbo nucifera* Gaertn., *Nelumbo nucifera* Gaertn., *Rorippa indica* (L.) Hiern Cat., *Capparis sepiaria* L *Capparis spinosa* L., *Polygala arvensis* Willd., *Ablemoschus manihot* (L.) Medik, *Bombyx micranthus* (L. f.) Riedl., *Fioria vitifolia* (L.) Mattei., *Sida mysorensis* Wight & Arn, *Corchorus depressus* (L.) Vicary., *Corchorus fascicularis* Lam., *Erinocarpus nimmonii* Grah. ex Dalz, *Grewia damine* Gaertn., *Grewia tenax* (Forssk.) Fiori. Bos., *Grewia tiliifolia* Vahl., *Triumfetta annua* L., *Triumfetta pentandra* A. Rich., *Triumfetta pilosa* Roth, *Fagonia schweinfurthii* (Hadidi)Hadidi ex Ghafoor., *Impatiens acaulis* Arn., *Ailanthus excelsa* Roxb., *Aglaiia lawii* (Wight) Sald., *Celastrus paniculatus* Willd., *Cayratia pedata* (Lam.) Juss. ex Gagnep, *Cayratia tenuifolia* (Wight & Arn.) Gognep., *Abrus precatorius* L., *Aeschynomene aspera* L., *Alysicarpus tetragonolobus* Edgew., *Cajanus cajan* (L.) Millsp., *Cajanus scarabaeoides* (L.) du. Petit – Thours., *Canavalia africana* Wight & Arn., *Crotalaria albida* Heyne ex Roth., *Crotalaria hebecarpa* (DC.) Rudd. Ali., *Crotalaria linifolia* L. f. suppl., *Crotalaria orixensis* Willd., *Crotalaria pallida* Ait. Hort, *Desmodium velutinum* DC., *Flemingia strobilifera* (L.) Br. ex Ait., *Indigofera hendecaphylla* Forssk., *Mundulea sericea* (Willd.) A Chev., *Smithia conferta* J. E. Sm., *Smithia salsuginea* Hance, *Smithia sensitiva* Ait. Hort., *Tephrosia villosa* (L.) Pres., *Teramnus labialis* (L. f.) Spr., *Bauhinia purpurea* L., *Cassia pumila* Lam., *Tamarindus indica* L., *Albizia lebbeck* (L) Bth., *Kalanchoe pinnata* (Lam) Pres., *Albizia procera* (Roxb.) Bth. in Hook., *Coccinia grandis* (L.) Voigt., *Corallocarpus epigaeus* (Rottl. et. Willd.) Hook., *Cucumis melo* L., *Catunaregam spinosa* (Thunb.) Tirveng., *Hedyotis herbacea* L., *Pavetta tomentosa* Roxb. ex J. E. Sm., *Acanthospermum hispidum* DC., *Blainvillea acmella* (L.) Philipson., *Conyza japonica* (Thunb.) Less. ex DC., *Dicoma tomentosa* Cass., *Echinops echinatus* Roxb., *Sclerocarpus africanus* Jacq, *Anagallis pumila* Swartz., *Diospyros montana* Roxb., *Enicostema axillare* (Lam.) Raynal, *Cordia gharaf* (Forssk.) Ehrenb. & Asch., *Ehretia aspera* Roxb., *T. indicum* (L.) Lehm., *Ipomoea aquatica* Forssk., *Ipomoea sinensis* (Desv.) Choisy., *Merremia gangetica* (L.) Cufod, *Datura inoxia* Mil., *Buchnera hispida* Buch. Ham. ex D. Don., *Lindernia parviflora* (Roxb.) Haines, *Blepharis maderaspatensis* (L.) Roth., *Dicliptera leonotis* Dalz. ex C.B.Cl., *Dicliptera verticillata* (Forssk.) C. Chr., *Dipteracanthus patulus* (Jacq.) Nees., *Hygrophila schulli* (Buch. Hom.) M. R. & S. M.



Almeida., *Justicia adhatoda* L., *Peristrophe paniculata* (Forssk.) Brummitt., *Rostellularia diffusa* (Willd.) Nees., *Stachytarpheta jamaicensis* (L.) Vahl., *Leucas urticifolia* (Vahl) R. Br., *Ocimum gratissimum* L., *Plectranthus barbatus* Andr., *Aerva sanguinolenta* (L.) Bl. Bijdr., *Amaranthus tenuifolius* Willd., *Nothosaerva brachiata* (L.) Wight., *Acalypha ciliata* Forssk., *Breynia retusa* (Dennst.) Alston., *Bridelia retusa* (L.) Spreng., *Euphorbia thymifolia* L., *Mallotus philippensis* (Lam.) Mull-Arg., *Securinega leucopyrus* (Willd.) Muell-Arg.,

*Lecanthus peduncularis* (Wall. ex Royle) Wedd., *Ficus exasperata* Vahl., *Ficus tinctoria* Forst. F *Streblus asper* Lour., *Hydrilla vertifillata* (L. f.) Royle., *Ottelia alismoides* (L.) Pers. *Zeuxine strateumatica* (L.) Schltr., *Costus speciosus* (Koen.) J. E. Sm., *Dioscorea bulbifera* L *Discorea hispida* Dennst., *Chlorophytum tuberosum* (Roxb.) Baker., *Drimia indica* (Roxb.) Jessop., *Drimia polyantha* (Blatt. & McC.) Ansari & Raghavan., *Cyperus corymbosus* Rottb. Descr., *Cyperus exaltatus* Retz., *Fimbristylis tenera* Schult. in R. & S. *Mariscus squarrosus* (L.) C. B. Cl., *Mariscus sumatrensis* (Retz.) J. Raynal., *Pycreus flavidus* (Retz.) T. Koyama., *Pycreus flavidus* (Retz.) T. Koyama., *Rikliella squarrosa* (L.) J. Rayna *Schoenoplectus lateriflorus* (Gmel.) Lye., *Schoenoplectus articulatus* (L.) Palla., *Scleria parvula* Steud., *Brachiaria eruciformis* (J. E. Sm.) Griseb., *Coix gigantea* Koen. ex Roxb., *Dichanthium pertusum* (L.) W. D. Clayton., *Digitaria stricta* Roth ex R. & S., *Eragrostiella bifaria* (Vahl.) Bor., *Eragrostis tenuifolia* Hochst. ex Steud. Syn., *Eragrostis uniolooides* (Retz.) Nees ex Steud., *Eragrostis viscosa* (Retz.) Trin. in Mem., *Heteropogon triticeus* (R. Br.) Stapf ex Craib., *Ischaemum commutatum* Hack., *Ischaemum impressum* Hack. in DC., *Panicum maximum* Jacq., *Pennisetum pedicellatum* Trin., var. *flaccidus* (R & S) Veldk., *Thelepogon elegans* Roth., *Vetiveria zizanioides* (L.) Nash in Small., *Urochloa panicoides* P. Beauv.

#### 4.pantropical:

*Cleome viscosa* L., *Flacourtia indica* (Burm. f.) Merr., *Polycarpaea corymbosa* (K.) Lam., *Portulaca oleracea* L., *Abutilon indicum* L., *Sida acuta* Burm f., *Sida rhombifolia* L. ssp. *retusa* (L) Borss., *Sida spinosa* L., *Thespesia populnea* (L.) Soland ex Corr., *Urena lobata* L. ssp. *sinuata* (L.) Borss., *Waltheria indica* L., *Corchorus aestuans* L., *Triumfetta rhomboidea* Jacq., *Hiptage benghalensis* (L.) Kurz., *Tribulus terrestris* L., *Melia dubia* Cav., *Cardiospermum halicacabum* L., *Mangifera indica* L., *Moringa oleifera* Lam., *C. gladiata* (Jacq.) DC *Clitoria ternatea* L., *Crotalaria retusa* L., *Desmodium dichotomum* (Willd.) DC., *Desmodium triflorum* (L.) DC *Indigofera tinctoria* L., *Melilotus alba* Medik. ex Desr., *Melilotus indica* (L.) All., *Mucuna pruriens* (L.) DC *Pueraria tuberosa* (Roxb. ex Willd.) DC., *Zornia gibbosa* Span., *Caesalpinia bonduc* (L) Roxb., *Cassia absus* L., *Cassia occidentalis* L., *Cassia tora* L., *Albizia amara* (Roxb.) Boiv., *Glinus lotoides* L., *Glinus oppositifolius* (L.) A. DC., *Centella asiatica* (L.) Urban., *Hedyotis corymbosa* L., *Ageratum conyzoides* L., *Conyza bonariensis* (L.) Cronq *Eclipta prostrata* (L.) L., *Gnaphalium luteo-album* L., *Sonchus brachyotus* DC., *Hydrolea zeylanica* (L.) Vahl *Rotula aquatica* Lour., *Evolvulus alsinoides* (L.) L., *Lurbinata turbinata* Lag., *Merremia aegyptia* (L.) Urb *Lindernia crustacea* (L.) F. Muell., *Veronica anagallis-aquatica* L., *Ocimum tenuiflorum* L., *Achyranthes aspera* L., *Alternanthera sessilis* (L.) R. Br. ex DC., *Alternanthera viridis* L., *Celosia argentea* L., *Pupalia lappacea* (L.) A. L. Juss., *Chenopodium murale* L., *Commenlina diffusa* Burm., *Commenlina erecta* L., *Cyperus compressus* L., *Cyperus distans* L. f., *Cyperus esclentus* L., *Cyperus iria* L., *Cyperus tenuispica* Steud., *Eleocharis geniculata* (L.) R. & S., *Fimbristylis complanata* (Retz.) Link., *Fimbristylis dichotoma* (L.) Vahl., *Fuirena ciliaris* (L.) Roxb. *Kyllinga brevifolia* Rottb., *Kyllinga tenuifolia* Steud., *Pycreus sanguinolentus* Vahl. Nees ex C.B.Cl. *Pycreus pumilus* (L.) Nees ex C.B.Cl., *Aristida adscensionis* L., *Chloris barbata* Swartz. Fl. India. *Chloris virgata* Swartz. Fl. Ind., *Digitaria longiflora* (Retz.) Pers., *Eragrostis minor* Host. Gram.,

*Eragrostistenella* (L.) P. Beauv., *Eragrostis pilosa* (L.) P. Beauv. Ess. Agrost., *Heteropogon contortus* (L.) P. Beauv., *Isachne gracilis* C. E. Hubb., *Isachne pulchella* Roth. ex R., *Mensithea granularis* (L.) Koning & Sosef., *Oplismenus burmannii* (Retz.) P. Beauv., *Paspalum scrobiculatum* L. Mant. Pl., *Pennisetum setosum* (Swartz.) L. C. Rich., *Setaria intermedia* R & S Syst., *S. halepense* (L.) Pers.

### 5. Paleotropical:

*Tragus roxburghii* Panigr., *Themeda triandra* Forssk. Fl., *Sorghum nitidum* (Vahl.) Pers., *Setaria pumila* (Poir) R & S Syst., *Sehima nervosum* (Rottl.) Stapf., *Sacciolepis interrupta* (Willd.) Stapf., *Saccharum spontaneum* L. Mant., *Paspalidium geminatum* (Forssk.) Stapf., *Iseilema laxum* Hack. r *Eragrostis nutans* (Retz.) Nees ex Steud., *Eragrostis japonica* (Thunb.) Trin. , *Eleusine indica* (L.) Garten. Fruct., *Echinochloa stagnina* (Retz.) P. Beauv., *Echinochloa frumentacea* Link, Hort., *Brachiaria ramosa* (L.) Stapf., *Arundinella pumila* (Hochst. ex A. Rich.) Steud., *Arthraxon lancifolius* (Trin.) Hochst., *Arthraxon lanceolatus* (Roxb.) Hochst., *Apluda mutica* L., *Alloteropsis cimicina* (L.) Stapf., *Fimbristylis bis-umbellata* (Forssk.) Bub., *Cyperus difformis* L., *Cyperus alulatus* Kern., *Cyanotis cristata* (L.) D. Don., *Commenlia kotschy* Hassk., *Gloriosa superba* L., *Tacca leontopetaloides* (L.) O. Ktze., *Laportea interrupta* (L.) Chew., *Girardinia diversifolia* (Link.) Friis., *Trema orientalis* (L.) Bl., *Securinega virosa* (Roxb. ex Willd.) Baill., *Sebastiana chamaelea* (L.) Mull-Arg., *Phyllanthus maderaspatensis* L., *Chrozophora rottleri* (Gies.) Juss., *Acalypha indica* L., *Viscum articulatum* Burm. F., *Polygonum plebeium* R. Br., *Digera muricata* (L.) Mart. Beitr., *Amaranthus polygonoides* L., *Amaranthus cruentus* L., *Aerva lanata* (L.) Juss. ex Schult., *Ocimum americanum* L., *Leonotis nepetiifolia* (L.) R. Br., *Hyptis suaveolens* (L.) Poit., *Tectona grandis* L. f. Suppl., *Elytraria acaulis* (L. f.) Lindau., *Barleria prionitis* L., *Utricularia striatula* J. E. Sm., *Mimulus strictus* Bth. Scroph., *Bacopa monnieri* (L.) Penn., *Solanum virginianum* L., *Solanum anguivi* Lam., *Datura inoxia* Mill., *Operculina turpethum* (L.) S. Manso , *Jacquemontia paniculata* (Burm. f.) Hall. F., *Ipomoea pes-tigrides* L., *Ipomoea mauritiana* Jacq *Ipomoea eriocarpa* R. Br., *Heliotropium supinum* L., *Heliotropium ovalifolium* Forssk., *Plumbago zeylanica* L., *Wahlenbergia marginata* (Thumb.) A. DC., *Vicoa indica* (L.) DC., *Vernonia cinerea* (L.) Less., *Launaea sarmentosa* (Willd.) Schults. Bip. ex O. Ktze., *Gnaphalium polycaulon* Pres., *Erigeron sublyratus* DC., *Blumea mollis* (D. Don.) Merr., *Blumea lacera* (Burm. f.) DC., *Bidens biternata* (Lour.) Merr. & Sherff *Spermacoce pusilla* Wall., *Trianthema portulacastrum* L., *opntia stricta* (Haw.) var. *dellenii* Ker. Gawl., *Tetrameles nudiflora* R. Br., *Trichosanthes tricuspidata* Lour., *Mukia maderaspatana* (L.) Roem. *Monordica cymbalaria* Fenzl. Ex Naud., *Luffa cylindrical* (L.) M. J. Roem., *Diplocyclos palmatus* (L.) C., *Ludwigia perennis* L., *Woodfordia fruticosa* (L.) Kurz., *Rotala densiflora* (Roth ex R. & S.) Koehne., *Ammannia baccifera* L., *Acacia pennata* (L.) Willd., *Cassia uniflora* Mill Gard., *Vinga sublobata* (Roxb) Babu & Sharma., *Sesbania sesban* (L.) Merr., *Sesbania bispinosa* (Jacq.) W. F. Wight., *Rhynchosia minima* (L.) DC , *Pongamia pinnata* (L.) Pirrer., *Indigofera trita* L., *Indigofera linifolia* (L.f.) Retz., *fera cordifolia* Heyne ex Roth., *Indigofera astragalina* DC., *Desmodium laxiflorum* DC., *Maytenus rothiana* (Walp.) Lobreau-Collen., *Maytenus senegalensis* (Lam.) Excell., *Grewia serrulata* DC., *Corchorus tridens* L., *Sterculia foetida* L., *Thespesia lampas* (Cav.) Dalz. & Gibs., *Hibiscus panduriformis* Burm., *Hibiscus lobatus* (J. A. Murr.) O. Ktze., *Hibiscus caesius* Garcke., *Abelmoschus moschatus* Medik., *Sub sp. tetraphyllus* (Roxb. ex Horn.) Borss., *Abelmoschus ficulneus* (L.) Wight & Arn, *Abelmoschus esculentus* (L.) Moench., *Polycarpon prostratum* (Forssk) Aschers & Schweinf., *Polygala erioptera* DC., *Nymphaea nouchali* Burm.

**6. Cosmopolitan:** *Amaranthus roxburghianus* Nees., *Anagallis arvensis* L., *Biophytum candolleianum* Wight, *Brassica juncea* (L) Czern & Cross, *Creatophyllum demersum* L., *Chenopodium album* L., *Convolvulus arvensis* L., *Cynodon dactylon* (L) Cyprus *rotundus* L., *Dactyloctenium aegyptium* (L)

Willd, *Dopatrium junceum* (Roxb.) Buch.Ham. ex Bth. *Emilia sonchifolia* (L.) DC.. *Fimbristylis miliacea* (L.) Vahl., *Hibiscus trionum* L., *Juncellus pygmaeus* (Rottb.) C.B.Cl., *Oplismenus compositus* (L.) P.Beau. *Scripus affinis* Roth., *Setaria verticillata* (L.) P.Beau., *Solanum nigrum* L., *Sonchus aspera* (L.) Hill, *Sochus oleraceus* L. *Spergula arvensis* L., *Vaccaria pyramidaba* Medik., *Vigna vexillata* (L.) A.Rich.

**7. Perso-arabian:** *Aristida funiculata* Trin. & Rup., *Asparagus africanus* Lam., *Calatropis procera* (Ait.) R.Br., *Cenchrus pennsetiformis* Hochst. & Steud., *Chrysopogon fulvas* (Spr.) Chiov., *Commelina forsskalaei* Vahl, *Eragrostis ciliaris* (L.) R.Br., *Schult. Launaea procumbans* (Roxb.) Ramayya & Rajagopal. *Orthosiphon pallidus* Royle ex Bth., *Pennisetum polystachion* (L.) Schult. *Sriga gesnerioides* Willd, *Tetrapogon tenellus* (Koene & roxb.) Chiov. & *Withania somnifera* (L.) Dunal.

**8. Mediterranean:** *Althaea ludwigii* L., *Brassica nigra* (L.) Koch., *Juncellus laevigatus* (L.) C.B.Cl. & *Poypogon monspeliensis* (L.) Desf.

### 9. Neotropical:

*Malvastrum coromandelianum* (L.) Garcke., *Annona reticulata* L., *Annona squamosa* L. *Miliusa tomentosa* (Roxb.) Sinclair., *Argemone mexicana* L., *Malvastrum coromandelianum* (L.) Garcke., *Malvastrum coromandelianum* (L.) Garcke., *Vicia hirstuta* (L.) S. F. Gray., *Vicia sativa* L. *Cassia obtusifolia* L., *Parkinsonia aculeata* L., *Mimosa pudica* L., *Pithecellobium dulce*

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### REFERENCES :

- Almeida, S.M. (1990). The Flora of Savanantwadi, Scientific Publ. Jodhpur.
- Asish Kumar, Marcot, B.G. & Ajai Saxena (2006). Trees species diversity & distribution patterns in tropical forests of Garo Hills *Current science*, 91 (10) : 1370-1380.
- Barucha, F.R. & V.M. Meher- Homji (1965). On the floral elements of the semiarid zones of India & their ecological significance *New Phytol.*, 64-: 330-342.
- Champion, H.G. (1936). A preliminary survey of the forest type of India *Ind. For. Rec. (n.s. Bot.)*, 1: 1-286.
- Chatterjee, D. (1939). Studies on the endemic flora of India & Burma *J. Asiat. Soc. Bengal*, 5: 19-67.
- Cherian, P.J. & Pataskar, R.D. (1971). Contribution to the Flora of Saptashringi & adjoining hills, Maharashtra. *Bull. Bot. Surv. India* 11: 23-34.
- Hooker, J.D. (1872-1897). *The Flora of British India*. Vol. 1-7. L. Reeve & Co., Ltd. NR. Asford, Kent, England.
- Joshi, Vaishali, C. & M.K. Janarthanam (2004). The diversity of life from type, habitat preference & phenology of the endemics in the Goa region of the Western Ghats, India *Journal of Biogeography*, 31 (8) : 1227-1237.
- Lakshminarasimhan, P. & Sharma, B.D. (1991). Flora of Nasik District. Bot. Surv. of Calcutta, India.
- Meher-Homji, V.M. (1970). Some Phytogeographical aspects of Rajasthan, India. *Vegetatio*, 21: 299-320.

- Menon, A.R.R& Shah, G.L. (1982). Phytosociological studies of the vegetation of Saurashtra (Gujarat),*Indian Journal of forestry*. 5 (1), 53-63.
- Mishra, V.K. Sharma, A.C. (1910).Phytogeographical Analysis of the flora of Nothern- Central Uttar Pradesh , India,*The Indan Forester*. 136 (4) ,524-535.
- Naik, V.N.(1998). Flora of Marathwada. Vol.I&II,Amrut Prakashan, Aurangabad.
- Singh, N.P.& Kartikeyan, S.(2000). Flora of Maharashtra State. Dicotyledons Vol. I. Flora of Indian siries 2 . Published by B.S.I. Calcutta.
- Wulf, E.V. (1943). An introduction to historical plant geography. Walthani, Mass
- Yadhav, S.S. & Mathew ,Varghese (1994). A study on the Phytogeographical elements of Flora of South Gujarat . *Biojournal*, (6) 1&2,7-10.

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