VOLUME III

ENUMERATION OF PLANTS

NYCTAGINACEAE TO POACEAE

PTERIDOPHYTES

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NYCTAGINACEAE

Plants woody, generally armed; leaves alternate; flowers subtended by coloured bracts ..................................... **Bougainvillea**

Plants herbaceous, unarmed; leaves opposite; flowers without coloured bracts:

Flowers large, in calyx like involucral bracts ..................................... **Mirabilis**

Flowers small, in heads or umbels; with minute bracts ..................................... **Boerhavia**

**Bougainvillea** Comm. ex Juss. (nom. cons.)

**Bougainvillea spectabilis** Willd. Sp. Pl. 2: 348, 1799;
C. 2: 483; Bor & Raizada, 269, Pl. 98; Bailey, Man. Cult. Pl. 358 & Cycl. Hort. 533; Sant. 221;
Maheshwari, 292.

A woody, armed and climbing shrub with long sarmen-tose branches. Leaves ovate-orbicular, hairy. Flowers creamy white, subtended by large, variously coloured bracts. Achene 5-ribbed.

Under cultivation in private and public gardens.
throughout the area.

Flowers and Fruits: Profuse flowering from November to June.

Padate 326, 3498.

Indigenous to East and Central Brazil, now cultivated in all tropical countries.

*Mirabilis* Linn.


An erect, much-branched herb or undershrub. Flowers large, showy, red, purple, yellow or of mixed colours, enclosed in a calyx-like involucre of bracts.

A common ornamental herb grown for its flowers. Flowers generally open in the afternoon and hence known as 'Four O'clock Plant'.

Local name: Gulbas.

Flowers: August to February.

Padate 337, 3465.

A native of Tropical America, cultivated throughout the tropics.
Boerhavia Linn.

Prostrate or scandent herbs; inflorescence terminal or axillary ......................... *diffusa*

Scandent or climbing herbs; inflorescence umbels or whorled racemes:

- Flowers 3-8 in an umbel at the end of the peduncle ......................... *chinensis*
- Flowers arranged in whorls on a peduncle .................................. *verticillata*


**Boerhavia repens** Linn. Sp. Pl. 3, 1753; FBI. 4: 709; D. & G. 213.

**Boerhavia procumbens** Roxb. Fl. Ind. 1: 146, 1820; Wt. Icon. t. 874.

Prostrate to ascending herb with swollen nodes and purplish stems. Leaves opposite, unequal in pairs, with subcordate or rounded base. Flowers small, dark pink, in umbellate heads; stamens not or slightly exserted.
A very common weed of open waste lands, lawns and cultivated fields and on old walls.

Local name: Punarnava, Satodi.

Flowers and Fruits: Almost throughout the year.

Padate 110, 1636, 3451.

Throughout India, mostly in drier regions.

Ceylon, Tropical and sub-tropical Asia, Africa and America.


**Valeriana chinensis** Burm. f. Fl. Ind. 15, t. 6, f. 3, 1768.


A diffuse, glabrous or pubescent herb. Leaves opposite, nearly equal with truncate or cordate base. Flowers pink, in long-stalked umbels. Stamens well exserted.

Very common, found along hedges.
Local name: Punarnava, Satodi.

Flowers and Fruits: September to January.

Padate 331, 2021, 2925.

Throughout India.

Ceylon, Pakistan.


Boerhavia stellata Wight, Icon. t. 875; D. & G. 213.

A climbing herb with long, pale, glabrous branches. Leaves ovate or sub-orbicular, sinuate with cordate base. Flowers pink-rose, in distant, racemose whorls on slender peduncle. Stamens not much exserted. Fruit with a large terminal gland.

Commonly noted among hedges in almost all ravines.

Flowers and Fruits: September to January.

Padate 1412, 3347.

Punjab, W. Peninsula, Gujarat.

Afghanistan, Pakistan and Westward to Syria and Tropical Africa.
AMARANTHACEAE

1. Leaves opposite or clustered :
   2. Anthers 1-celled :
      3. Flowers in terminal heads;
         stigma bifid ......................... Gomphrena
      3. Flowers in axillary heads;
         stigma usually capitate ............... Alternanthera
   2. Anthers 2-celled :
      4. Stamens with interposed fimbriate staminodes ............ Achyranthes
      4. Stamens without staminodes :
         5. Flowers perfect, in spikes ....... Nolthosaerva
         5. Flowers clustered, 1-3 perfect, surrounded by several imperfect ones with hooked bristles, on long spikes .......... Pupalia

1. Leaves alternate :
   6. Staminodes interposed with stamens or forming a hypogynous cup ............. Aerva
   6. Staminodes absent :
      7. Ovary 2-many-ovuled .................. Celosia
7. Ovary 1-ovuled:

8. Flowers bisexual, pink; fruit
   a crustaceous nut .................Digera

8. Flowers unisexual or polygamous;
   fruit indehiscent or circumsciss....Amaranthus

Gomphrena Linn.

Flowers red, crimson or deep purple, in
globose heads; plants cultivated ............globosa

Flowers white or dirty white in ovoid or
cylindrical spikes; plants wild .............celosioides

Gomphrena globosa Linn, Sp. Pl. 224, 1753; FBI. 4: 732;
C. 2: 584; Gr. 169; Bailey, Man. Cult. Pl. 356, f.
58 B.; Sant. 226; Maheshwari, 297; Pavagadh, 200.

An erect, annual. Leaves elliptic or oblong to ovate.
Flowers crimson, red or deep-purple, in globose terminal
heads; heads subtended by 2 leafy bracts.

Commonly grown for its beautiful flowers; probably a
native of American tropics.

English name: Globe Amaranth.

Flowers: October to February.
301, 1826; Sant. 226; Raizada, in JBNHS. 48:
675, 1949; Sanduith, in Kew Bull. 29, 1946; Chavan
& Padate, in Ind. For. 86(4): 215, 1960; Maheshwari,
298; Pavagadh, 200.

A prostrate herb with smooth, silvery hairs. Leaves
spathulate or oblong-elliptic. Flowers white or dirty white
in cylindrical or oblong terminal heads; heads subtended
by two leafy bracts. Fruits enclosed in the perianth.

Commonly noted in open waste places, roadsides, culti­
vated fields and other habitats; throughout the area.

Flowers and Fruits: Almost round the year.

Padate 96, 1070, 3625.

An introduced weed, native of S. Brazil, Paraguay,
Uruguay and Argentina, spreading throughout India and has
become a pest in some parts of the country.

Alternanthera Forsk.

Leaves nearly circular, inflorescence
spinous; stamens 5 ..................... pungens
Leaves linear or oblanceolate; inflorescence not spinous; stamens 3 ............... sessilis


**Alternanthera echinata** Sm. in Rees, Cyclop. 39: Suppl. No. 10, 1819.


**Achyranthes repens** Linn. Sp. Pl. 205, 1753.


Noted in dense patches on open waste places, banks of ponds. It is rare in the ravines.

**Flowers and Fruits:** August to March, sometimes upto early April.

Padate 271, 1853, 3548.
It is a native of Tropical America; introduced into this country towards the beginning of the century and has spread all over peninsular India and also recently reported from the Upper Gangetic Plain and Punjab plains.


**Gomphrena sessilis** Linn. Sp. Pl. 225, 1753.


**Alternanthera triandra** Lamk. Encycl. 1: 95, 1783; C. 2: 584; G. 825.

A prostrate to sub-erect much-branched herb, usually rooting at nodes. Leaves linear-oblong, lanceolate or elliptic. Flowers small, white, in axillary, sessile clusters. Seeds sub-orbicular.

A very common herb of moist-wet places throughout the area, a common weed of cultivated fields and lawns during monsoon; noted on sandy beds of Mahi, Meshri and Karad.

Local name: Jal Jambuo, Panini Bhaji.
Flowers and Fruits: July to May.

Padate 28, 2292, 3478.

Throughout the warmer parts of India in damp places.

Ceylon and all warm countries.

Achyranthes Linn.

Achyranthes aspera Linn. var. porphyristachya Hook. f. in FBI. 4: 730; C. 2: 580; Sant. 224; Chavan & Padate, in Ind. For. 86(4): 215, 1960; Maheshwari, 299; Pavagadh, 196.

Achyranthes porphyristachya Wall. Cat. 6925, 1832.

Achyranthes aspera Cooke, 2: 580, pro parte.

An erect, much-branched herb or undershrub. Leaves thick, few, elliptic or ovate, acute or acuminate. Flowers greenish white, in long terminal spikes. Bracts and bracteoles, persistent, spiny and fall off with fruit. Utricle oblong.

Common weed of open waste places, cultivated fields, along roadside and various other habitats.

Local name: Aghedo, Aghado.

Flowers and Fruits: September to April.
Throughout India.

Ceylon, Tropical Asia, Africa, Australia and America.

**Nothosaerva** Wight


*Achyranthes brachiata* Linn. Mant. 1: 50, 1767.


*Eseudanthus brachtetus* Wt, Icon. 5: t. 1776 (excl. analyses) & 6: t. 1776 bis. f. B.

A small, glabrous, straggling herb. Leaves opposite, thin, membranous, ovate-lanceolate, softly tomentose. Flowers all perfect, in distinct clusters forming spikes. Stamens 2.

Common in moist situations and along the margins of roadside ditches.

*Flowers and Fruits* : September to January.

Padate 609, 3158.
Achyranthes lappacea Linn. Sp. PI. 204, 1753.

A straggling, tomentose undershrub. Leaves opposite, elliptic-ovate, hairy on both sides. Flowers white or greenish white, in distinct clusters forming long terminal spikes. Fruits with glabrous, hooked awns; seeds ellipsoid, compressed, smooth and black.

Commonly found in hedges in almost all localities.

Local name: Dhole Jipto.

Flowers and Fruits: August to April.

Padate 77, 540, 2603.

Gujarat, Maharashtra, Karnataka, W. Tropical Himalaya, Punjab, Bihar, W. Peninsula.

Tropical Asia and Africa.
Aerva Forsk. (nom. cons.)

Plants erect, flowers bisexual and unisexual, spikes all axillary .......... lanata

Plants sub-erect undershrubs, often climbing, flowers bisexual, spikes terminal and axillary ...................... sanguinolenta

Aerva lanata (Linn.) Juss. in Ann. Mus. Par. 2: 131, 1808;
  FBI. 4: 728; C. 2: 578; Sant. 223; Chavan & Padate,
  in Ind. For. 86(4): 215, 1960; Maheshwari, 294;
Pavagadh, 197.
Achyranthes lanata Linn. Sp. Pl. 204, 1753 (non
  Celosia lanata Linn. ibid. 205).

Erect herb with long tap root. Stem and branches covered with soft, woolly hairs. Leaves alternate, elliptic, obovate or suborbicular, obtuse or acute, white-woolly beneath. Flowers greenish white or white, in dense, axillary spikes. Seeds smooth and black.

A weed quite abundant throughout the area, generally found along roadsides, open waste places, ravines, cultivated fields and crevices of old walls.

Local name: Kapuri - madhuri.
Flowers and Fruits: Mostly throughout the year.

**Padate** 29, 1066, 2632.

Throughout India.


*Aerva sanguinolenta* (Linn.) Blume. Bijdr. 547, 1825;
Backer, in Fl. Males. I, 4(2): 85, 1949; Sant. 223;
Chavan & Padate, in Ind. For. 86(4): 215, 1960;
Pavagadh, 197.


*Aerva scandens* Wall. Cat. 691, 1829; Moq. in DC.
Prodr. 13(2): 302, 1849; FBI. 4: 727; C. 2: 492;
Wt. Icon. t. 724 (excl. sem. & utr.); G. 1178.

A suberect undershrub, often climbing. Leaves alternate and opposite, elliptic-lanceolate, acute, finely mucronate. Flowers bisexual, white, in terminal and axillary spikes. Seeds lenticular, smooth and black.

Not common. Collected only from Savli, Bhaderva and Mevli along roadside.

Flowers and Fruits: November to April.
Padate 1078, 2482.

Assam, Punjab, Lower Himalaya, Central India, Bihar, Western Peninsula.

China, Malay Islands, Philippines and Tropical Africa.

**Celosia** Linn.

Flowers in white or pink, dense, unbranched spike .........................argentea

Flowers in red or yellow, branched spikes, forming a cockscomb ...............cristata

**Celosia argentea** Linn. Sp. Pl. 205, 1753; FBI. 4: 714;

Wt. Icon. t. 1767; C. 2: 570; Sant. 221; Maheshwari, 295; Pavagadh, 195.

An erect, glabrous herb. Leaves linear, ovate-lanceolate. Flowers white or pink, in dense, conical or oblong, terminal spikes. Capsule ellipsoid.

A weed of some winter crops; not very common.

Local name: Lenpadi, Lemadi,

Flowers and Fruits: November to February.

Padate 430, 1414.
Common throughout India, Africa, Trop., Asia, Ceylon and America.


An erect, annual herb, cultivated in beds for the red or yellow branched spikes, fasciating to form a cockscomb.

Grown as an ornamental herb; noted only at Savli.

*Flowers*: December to March.

*Padate* 2733.

Cultivated throughout the tropics.

Digera Forsk.


*Achyrantes alternifolia* Linn. Mant. 50, 1767.

*Digera alternifolia* (Linn.) Aschers. in Schwfrth. Bactr. Fl. Aethiopiens 180, 1867; Maheshwari, 295;


*Digera arvensis* Forsk. Fl. Aeg.-Arab. 65, 1775; FBI.
A herb with glabrous, spreading branches. Leaves alternate, ovate, elliptic or lanceolate with long petioles, margin sometimes reddish. Flowers pink or rose, in lax, axillary pedunculate spikes. Seeds yellowish brown.

A very common weed of cultivated fields, open waste places and other habitats.

Local name: Kanajero.

Flowers and Fruits: July to March even upto May in moist shady places.

Padate 197, 2609.

N. W. Provinces, Gujarat, Maharashtra, Karnataka, Bengal, Ceylon, Afghanistan, Pakistan, Arabia, N. Africa.

Amaranthus Linn.

Ripe utricle indehiscent or at last bursting irregularly:

Ripe utricle very strongly corrugated, only seedless conical beak slightly emerging from perianth......viridis

Ripe utricle smooth or faintly rugulose, top of the seed containing
part slightly emerging from perianth .....lividus
Ripe utricle circumsciss a little
below the middle:
Tepals in all flowers 3, provided
with long apical awn .................tricolor
Tepals in all or most flowers 5,
shortly mucronate:
Leaf axils with spines ..............spinosus
Leaf axils without spines ..........hybridus
ssp. cruentus var. paniculatus

descr. et Herb. Linn. excl. ref. Bauhin et
Tournefort; FBI. 4: 720; C. 2: 575; Merrill, in
*Amer. J. Bot.* 23: 611, 1936; Van. Steenis, in

Sant. 222; Maheshwari, 297.

An erect, much-branched, glabrous annual with grooved
branches. Flowers small, green, shortly stalked, in small,
axillary clusters or in terminal or axillary, paniculate
spikes.
A weed of cultivated fields and open waste places. Common throughout the area.

Local name: Dhimdo.

Flowers and Fruits: July to February.

Padate 611, 2735.

Throughout India.

Ceylon, All tropical countries.


Amaranthus blitum (non Linn.) Miq. Fl. Ind. Bot. 1: 1033, 1858; FBI. 4: 721.

A much-branched, erect or prostrate herb with grooved branches. Leaves long-petioled, ovate-oblung or rhomboid, cuneate at the base. Flowers greenish, in small, axillary clusters and large terminal spikes or panicles. Utricle indehiscent, more or less smooth.

Common on waste lands and in moist situations.

Flowers and Fruits: August to November.

Padate 2647, 3769.

Throughout India.

Ceylon, Malay Islands, temperate and tropical regions.
Amaranthus tricolor Linn. Sp. Pl. 989, 1753; Becker, in Fl.
Males, I, 4(2): 77, 1949; Sant. 222; Maheshwari, 297.

Amaranthus gangeticus Linn. Syst. 1268, 1759; FBI. 4: 719; C. 2: 574.

Amaranthus polygamus Linn. Amoen. Acad. 4: 294, 1759;
FBI. 4: 721; C. 2: 575.

A tall, erect or diffuse herb. Leaves variable in size, ovate-oblong or lanceolate with a cuneate base. Flowers in axillary clusters forming long, terminal, interrupted, spikes. Tepals 3, provided with long, apical awns. Utricle flask-shaped, circumsciss; seeds lenticular, smooth and shining.

Common along roadside ditches and in waste places.

Flowers and Fruits: September to March.

Padate 3501, 3767.

Throughout India.

Ceylon, Trop. Africa, Asia, America.

Amaranthus spinosus Linn. Sp. Pl. 991, 1753; FBI. 4: 718;
C. 2: 573; Wt. Icon. t. 513; Sant. 221; Chavan & Padate, in Ind. For. 86(4): 215, 1960; Maheshwari, 296; Pavagadh, 195.

An erect, herbaceous, armed, glabrous herb. Stems grooved. Leaves ovate or lanceolate, obtuse. Flowers small,
sessile, green, in axillary or terminal dense panicles.

A very common weed found throughout the area.

Local name: Kantalo Dabho.

Flowers and Fruits: Almost throughout the year.

Padate 91, 610, 3500.

Throughout India.

Ceylon, Malaysia and many tropical countries.

Amaranthus hybridus Linn. ssp. cruentus (Linn.) Thell.

var. paniculatus Thell. in Aschers. & Graebn. Syn.


Amaranthus paniculatus Linn. Sp. PI. 1406, 1763; FBI.

4: 718; C. 2: 573.

A tall, handsome, much-branched herb. Stems stout, grooved, purple coloured. Leaves ovate, ovate-lanceolate, acute or acuminate. Spikes dense, reddish-green or yellow, in panicles.

Observed either under cultivation or as an escape.

Local name: Rajgaro.

Flowers and Fruits: December to February.
Pedate 60, 1077.

Cultivated for its grains, which forms the staple food of poorer classes in many parts of India.

Cultivated or as an escape in E. and W. Asia and Africa.

**CHENOPODIACEAE**

*Chenopodium* Linn.


*Chenopodium viride* Linn. Sp. Pl. 219, 1753; Gr. 171.

An erect, green annual. Stems often striped. Leaves thick, toothed or irregularly lobulate, lanceolate, rhomboid or deltoid-ovate. Flowers greenish, in axillary or terminal clusters, forming condensed spikes. Seeds black orbicular, compressed.

A very common weed of cultivated fields, generally of winter crops; found in plenty on moist waste places. Also cultivated as a pot-herb.

Local name: Chilni Bhaji.

Flowers and Fruits: December to May.
Throughout India and almost everywhere,

BASELLACEAE

Basella Linn.


**Basella alba** Linn. Sp. Pl. 272, 1753.

A succulent, glabrous, twining herb. Leaves entire, broadly ovate, cordate, alternate. Flowers red, sessile, in axillary elongated spikes. Fruit a black or red, ovoid utricle.

Only found in cultivation. Leaves used as vegetable; not common.

Local name: Poi.

Flowers and Fruits: September to January.

Padate 1410, 3278.

Throughout India, wild or cultivated.

Ceylon, Tropical Asia and Africa.
POLYGONACEAE

Erect or prostrate herbs with orchreate stipules .................. Polygonum

Climbing shrubs without orchreate stipules. Antigonon

Polygonum Linn.

Erect or diffuse herbs; leaves large; flowers in spikes ................. glabrum

Prostrate herbs; leaves small; flowers in axillary clusters .......... plebeium

Polygonum glabrum Willd. Sp. Pl. 2: 447, 1799; FBl. 5: 34;
C. 3: 5; Sant. 227; Chavan & Padate, in JMSU. 11(3):
63-78, 1962; Maheshwari, 306.

An erect or decumbent, glabrous herb. Stems polished with a dark, reddish-brown, ring at each node. Leaves lanceolate, acuminate; stipules ochrate. Flowers pink, in terminal spike or panicle. Nut biconvex, polished.

Observed along streams; rare.

Flowers and Fruits: December to February.

Padate 2490.
Throughout India.

Ceylon, Pakistan, Australia, China, Africa, America.

*Polygonum plebejum* R. Br. Prodr. 420, 1810; FBI. 5: 27;
C. 3: 4; Sant. 226; Chavan & Padate, in Ind. For. 86(4): 215, 1960; Maheshwari, 305; Pavagadh, 201.

A branched, prostrate herb, with reddish brown stems. Leaves small, linear, oblong; stipules short, hyaline, fimbriate. Flowers pink or red, in axillary clusters.

It is very variable and shows different forms according to its habitats; very common in the area and is found growing on dry ponds or roadside ditches in association with *Clodenia*, *Grangea* and *Heliotropium supinum*.

Local name: Nano Okhrad.

Flowers and Fruits: November to May or at places up to early June.

*Padate* 30, 1091, 3039.

Throughout tropical and subtropical India.

Afghanistan, Tropical Asia, Java, Philippines, Australia, Madagascar, Egypt, Trop. and South Africa.

*Antigonon* Endl.

A large climber. Leaves large, ovate, cordate, acute to acuminate; stipules 0. Flowers pink or rose, in long racemes with peduncles terminating into tendrils.

Usually grown for its flowers; also found at some places as escape.

English name: Ice-cream creeper.

Flowers and Fruits: September to April.

Padate 921, 3764.

A native of South America, now commonly grown throughout the country.

ARISTOLOCHIACEAE

Aristolochia Linn.

Aristolochia bracteolata Lamk. Encycl. 1: 258, 1783;

Aristolochia bracteata Retz. Obs. Bot. 5: 29, 1789;
Aristolochia bracteolata Lamk.
FBI. 5: 75; C. 3: 16; Maheshwari, 308.

A prostrate herb. Leaves simple, broadly ovate or somewhat reniform. Flowers dark-purple, tubular with trumpet-shaped mouth, solitary, axillary. Capsule ribbed, oblong.

A weed of waste places; rare.

PLATE No. 56.

Local name: Kidamari.

Flowers and Fruits: August to January.

Padate 3768, 3769.

Gujarat, W. Peninsula, South India, Bengal.

Tropical Africa, Arabia, Ceylon.

PROTEACEAE

Grevillea R. Br. (nom. cons.)

Grevillea robusta A. Cunn. in R. Br. Prot. Nov. 24, 1830; Bailey, loc. cit. 345; Maheshwari, 308.

A tall, robust tree. Leaves bi- or tripinnate; leaflets pinnatifid. Flowers orange-yellow, in one-sided, showy racemes.
Grown in Panchayat garden at Savli.

English name: Silk-Oak.

Flowers: January to May.

Pedate 2737.

A native of Australia in Queensland and New South Wales; planted in gardens in India.

LORANTHACEAE

Dendrophthoe Mart.


Loranthus falcatus Linn. f. Suppl. 211, 1781.

Loranthus longiflorus Desr. in Lamk. Encycl. 3: 598, 1789; FBL. 5: 214; C. 3: 42; Gr. 86; G. 1250; Wt. Icon. t. 302.

A branched, incomplete parasite. Leaves thick, leathery, linear, oblong or elliptic. Flowers white with a greenish tinge or white.

A common pest on Mangifera indica. Also noted on
Azadirachta indica, Manilkara hexandra, Ailanthus excelsa, Cordia dichotoma etc.

Local name: Vando.

Flowers and Fruits: November to May.

Padate 56, 831, 3405.

More or less throughout India.

Ceylon.

SANTALACEAE

Santalum Linn.

Santalum album Linn. Sp. Pl. 349, 1753; FBI. 5: 531; C. 3: 49; Pavagadh, 204; Padate, in JMSU. 17 & 18(3): 109, 1968 & 69.

A small tree (supposed to be a root parasite) with greyish bark. Leaves elliptic-ovate. Flowers purple to chocolate brown, not scented, in axillary, paniculate cymes. Fruit a black drupe.

Commonly planted in gardens.

Local name: Chandan, Sukhad.

Flowers and Fruits: December to April.

Padate 835.
Indigenous to Deccan Peninsula; cultivated elsewhere.

EUPHORBIACEAE

1. Plants twining .................................. Dalechampia

1. Plants not twining:

2. Flowers in cymathia:

3. Involucre regular ......................... Euphorbia

3. Involucre obliquely
   zygomorphic ......................... Pedilanthus

2. Flowers not in cymathia:

4. Cells of the ovary 1-ovuled:

5. Petals present in one or
   both sexes, or if absent,
   calyx petaloid:

6. Flowers in androgynous
   spikes or racemes ............. Chrozophora

6. Flowers in androgynous
   cymes ......................... Jatropha

5. Petals absent in both the
   sexes:

7. Stamens many; capsules
   prickly .......................... Ricinus
7. Stamens few; capsules not prickly ..................Acalypha

4. Cells of the ovary 2-ovuled:

8. Petals present, small; calyx valvate ..................Bridelia

8. Petals absent; calyx imbricate:

9. Pistillodes in males large; disc present in both sexes.....Securinega

9* Pistillodes absent in males:

10. Herbs; fruits dry, capsular ..................Phyllanthus

10. Shrubs or trees; fruits fleshy:

11. Shrubs; fruits small, dark purple ...........Kirkangalia

11. Trees; fruits large, pale yellow:

12. Leaves very small; stamens 3, filaments united in a column ...........Emblica

12. Leaves large; stamens 4, filaments free....Cicca
Dalechampia scandens L. var. cordofana
(Hochst.) Muell.-Arg.
**Dalechampia Linn.**

**Dalechampia scandens** Linn. var. **cordofana** (Hochst.)

Muell.-Arg. in DC. Prodr. 15(2): 1245, 1866;

**Dalechampia cordofana** Hochst. in Rich. Tent. Fl.
Abyss. 2: 244, 1851.

A slender twiner, with striate, sparsely hairy stems.
Leaves alternate, stipulate, deeply 3-lobed; lobes serrulate. Flowers in androgynous heads, raised on long peduncles, subtended by two, conspicuous involucral bracts; bracts yellowish-green, trilobed, serrulate, prominently veined. Involucre head consists of 3 female flowers and a number of male flowers; male flowers stalked, anthers raised on a central column; female flowers sessile with glandular calyx, which enlarges and persists in fruit. Fruit 3-celled with 1-seed in each cell; seeds rounded-oval, creamy yellow.

Noted in the ravines at Mokshi.

**PLATE No. 57.**
Flowers and Fruits: July to October.

**Padate** 3856, 3857.
Widespread in Tropical Africa, from where possibly it has been introduced in India. Dalzell, in 1866 and other subsequent works collected it from Kathiawar (Saurashtra) and wrongly identified it as Dalechampia indica Wt. Both D. indica and D. scandens var. cordofana can be separated by the characters of their leaves (Chavan, Sabnis & Bedi). It is concluded that D. indica Wt. does not at all occur in this part of the country and that all the plants so far been published as D. indica are referable to D. scandens Linn. var. cordofana Muell.-Arg.

_Euphorbia_ Linn.,

1. Shrubs or Trees:

2. Plants armed with stipular spines:

3. Small, woody shrubs; flowers crimson ..................................... _millii_

3. Erect shrubs or trees; flowers yellowish .................................. _nerifolia_

2. Plants unarmed:

4. Stems green, cylindrical; leaves small, deciduous ....................... _tirucalli_

4. Stems and leaves not as above .......... _pulcherrima_

1. Annual or perennial herbs:
5. Involucre with a single, large gland ..................heterophylla

5. Involucral glands not large:

6. Leaves exstipulate, alternate below, opposite above or all alternate, except the upper most floral leaves:

7. Involucre with 2-glands; bracts linear-lanceolate...........dracunculoides

7. Involucre with 4-glands; bracts short, suborbicular........perbracteata

6. Leaves all opposite, stipulate or if stipules absent, the opposite pairs of leaves joined by interpetiolar line:

8. Glands of involucre with a conspicuous, petaloid limb; capsule hairy ..................hypericifolia

8. Glands of involucre without a petaloid limb, or limb not conspicuous:

9. Erect or ascending herbs; leaves up to 35 mm. long............hirta
9. Prostrate herbs; leaves
   less than 12 mm. long:

10. Stems glabrous or nearly
    so; capsule glabrous
    all over ................microphylla

10. Stems hairy:

11. Capsules pubescent
    all over ...............thymifolia

11. Capsules pubescent
    only at the angles,
    glabrous elsewhere..prostrata

   Linn. Bordeaux 1: 27-30, Pl. 1, 1826; Bailey, Man.
   Cult. Pl. 617.

Euphorbia splendens Boj. ex Hook. in Bot. Mag. t.
   2902, 1829; C. 3: 66.

A small, armed, woody shrub. Leaves spathulate or
   obovate; stipules spiny. Cyathia, subtended by 2 hemi-
   spheric, apiculate, bright red-crimson bracts and arranged
   in dichotomous cymes.

Grown in public gardens at Savli and Vejpur.

Flowers: All round the year.

A fleshy, armed shrub. Leaves fleshy, obovate-oblong, alternate, deciduous. Leafless during flowering and fruiting. Cyathia yellowish or greenish yellow.

Usually grown as a hedge plant round the fields and gardens, for protection.

Local name : Thor.

Flowers and Fruits : November to May.

Padate 1086 (Preserved flowers & fruits only ).

Throughout India.

Burma, Pegu, Malay Islands, Ceylon.

Euphorbia tirucalli Linn. Sp. Pl. 452, 1753; FBI. 5: 254; C. 3: 66; G. 1272 & 1276; Cr. 179; D. & G. Suppl.
A leafless, unarmed, deciduous shrub or a small tree. Branches green and cylindrical. Leaves absent, when present very small.

Rare in wild condition, often cultivated as hedge plants.

Local name: Kharsani or Kharsaniyo Thor.

Flowers and Fruits: August to September; rarely noted.

A native of South Asia.

Euphorbia pulcherrima Willd. ex Klotz. in Otto & Distr.

Allgem. Gartenz. 2: 27, 1834; FBI. 5: 239; C. 3: 66; Bailey, loc. cit. 618; Maheshwari, 311.

Poinsettia pulcherrima R. Grah. in Edinb. N. Phil.

Journ. 20: 412, 1836; Bor & Raizada, 171, Pl. 60, 61.

An erect, attractive, garden shrub. Leaves ovate-elliptic to lanceolate, long-petioled; bracteal leaves rayed, bright vermilion-red or crimson-scarlet. Cyathia arranged in cymes. Involucres with a large, yellow gland on the sides.
Grown in public gardens.

English name: Poinsettia.

Flowers: November to April.

Padate 3502.

A native of Mexico and Central America; commonly grown throughout India.


An erect, annual herb. Leaves elliptic, lanceolate to ovate, very variable. Flowers in cyathia. Involucres 5-lobed with one, conspicuous, lateral gland. Capsule usually 3-celled.

Noted on moist soil along irrigation canals; not common, though locally abundant.

Flowers and Fruits: August to February.

Padate 892, 3771.

A native of tropical and subtropical America, now
naturalized in various parts of the country.

Euphorbia dracunculoides Lamk. Encycl. Method. 2: 428,
1788; FBI. 5: 262; C. 3: 66; Santapau, loc. cit.
11; Maheshwari, 312; Pavagadh, 207; Padate, in JMSU. 17 & 18(3): 109, 1968 & 69.

An erect, apparently, dichotomously branched, annual herb. Leaves opposite to alternate, linear-lanceolate. Floral and vegetative leaves more or less similar. Cyathia on short stalk in the fork of the branches.

A weed of cultivated fields, more common in wheat fields after harvest. Noted only at Savli in association with Euphorbia perbracteata, Chrozophora rottleri.

Flowers and Fruits: November to March.

Padate 2655, 2998.

Throughout India in the plains and low hills.

Arabia, Tropical Africa.

Euphorbia perbracteata Gage, in Kew. Bull. 1914: 238,
A coarse annual with pale stems, 2-3-chotomously paniculately branched above. Lower leaves alternate, sessile, narrow, oblong, deciduous, upper opposite, broader and rounded at the tip. Involucral glands 4, truncate, broadly oblong with a reflexed horn each side.

Collected as a weed from cultivated fields, in association with Chrozophora rottleri, Euphorbia dracunculoides and Asphodelus tenuifolius; rare though locally abundant.

Flowers and Fruits: December to April.

Padate 2663, 2982.

Gujarat, Bihar, Orissa. This plant is not mentioned by Cooke and Hooker.

_Euphorbia hypericifolia_ Linn. Sp. PI. 454, 1753; FBI. 5: 249 (pro parte); Airy Shaw, loc. cit. 265.


_Euphorbia parviflora_ Linn. Syst. (ed. 10) 1047, 1759; Roxb. Fl. Ind. 2: 472; Gr. 179; Sant. 243; Santapau, loc. cit. 13; Pavagadh, 207.

_Euphorbia hypericifolia var. parviflora_ Prain, Beng. Pl. 2: 924, 1903; C. 3: 63.
An erect or spreading herb. Leaves opposite, oblique to oblong, serrulate. Inflorescence axillary with a conspicuous, petaloid, pink gland. Capsule subglobose, hairy.

Not very common; noted growing along roadside, cultivated fields, open waste places during monsoon.

Local name: Dudheli.

Flowers and Fruits: August to October.

\textit{Padate} 606, 2641.

Common throughout the hotter parts of India.

Ceylon, Tropics generally except Australia and the Pacific Islands.


\textit{Euphorbia pilulifera} \textit{auct.} (\textit{non Linn.}); \textit{FBL.} 5: 250; \textit{C.} 3: 64.


An erect or ascending annual. Stems and branches covered by long yellowish brown crisped hairs. Leaves oblique, oblong-lanceolate; reddish or green with serrate margin.

A common weed usually found along roadsides, open waste lands, cultivated fields, etc. Found in abundance throughout the area.

Local name: Nagala Dudheli.

Flowers and Fruits: Throughout the year.

Padate 830, 1083, 3766.

Throughout the hotter parts of India.

Ceylon, most tropical and subtropical countries.

Euphorbia microphylla Heyne, in Roth, Nov. Pl. Sp. 229, 1821 (non Lank. 1786); FBI. 5: 252; C. 3: 65;
Chavan & Padate, in Ind. For. 86(4): 215, 1960;
Airy Shaw, loc. cit. 266.


A prostrate, glabrous herb with numerous spreading branches. Leaves nearly as broad as long, elliptic or obovate, rounded or emarginate, margins occasionally pink.
Capsule glabrous.

A common weed of a variety of habitats; noted in cultivated fields, open waste places, roadsides, on banks etc.

Flowers and Fruits: August to May.

Padate 886, 2738, 3127.

Bengal, Bihar, Tirhut, W. Peninsula.

Java.

Euphorbia thymifolia Linn. Sp. Pl. 453, 1753; Fai. 5: 252;
C. 3: 64; Sant. 241; Santapau, loc. cit. 16;
Maheshwari, 313; Pavagadh, 208; Airy Shaw, loc. cit.
267.

Chamaesyce thymifolia (Linn.) Millsp. in Publ. Field

A small, prostrate herb. Stems and branches hispidly pubescent. Leaves opposite, obliquely oblong, crenulate. Flowers solitary or 2-3 in axil, surrounded by greenish or pink involucre. Capsule erect, hairy all over.

A common roadside weed among grasses and on the banks of ponds in patches.

Flowers and Fruits: July to October.

Padate 1333, 3708.
Throughout India.

Ceylon and all hot countries except Australia.

_Euphorbia prostrata_ Ait. Hort. Kew (ed. 1) 2: 139, 1789;

FBl. 5: 266; G. 1272 and 1276; Santapau, in JBNHS.

46: 360 and _loc. cit._ 16; Maheshwari, 313; Pavagadh, 208; Airy Shaw, _loc. cit._ 266.


A small prostrate herb. Leaves small, oblong, oblique at base, minutely serrate at the apex. Capsule hairy on the angles of the cocci.

Noted on lawns; rare.

Flowers and Fruits: December to April.

_Radate_ 1202, 3503.

A native of W. Africa and the Mauritius, which has spread to Deccan and Karnatak, Upper Gangetic Plain and recently in Bombay and the Punjab plains.

The plant is not mentioned by Cooke. For a detail description, please refer to Santapau, _loc. cit._
Pedilanthus Neck.


Euphorbia tithymaloides Linn. Sp. Pl. 453, 1753; D. & G. Suppl. 76.


Commonly grown as a hedge plant.

Local name: Velati-Kharsani.

Flowers: February to April.

Padate 1528, 3481.

A native of South Africa; grown in many parts of India.


Plants erect; leaves glandular at the base; hairs sessile ................rottleri

Plants prostrate; leaves not glandular at the base; hairs stipitate ...............prostrata

Chrozophora rottleri (Geis.) Juss. ex Spreng. Syst. 3:
An erect, woody, annual herb. Leaves hairy, ovato-orbicular or obscurely 3-lobed, with crisped margins. Flowers yellowish, in pedunculate, hairy racemes. Capsule densely hairy when young, red-purple on maturity.

Common weed of cultivated and fallow fields; also noted on sandy river beds.

PLATE No.
Flowers and Fruits: October to June.

Crete 185, 2676.

Throughout India in the drier parts.

Westward to Spain and N. Africa.

Chrozophora prostrata Delz. in D. & G. 223, 1861; C. 3:
105 (excl. sp. afric.); G. 1316; Sant. 249; Chavan & Padate, in Ind. For. 86(4): 215, 1960; Maheshwari, 315.
Chrozophora plicata (forma 3) Hook. f. in FBI. 5:410.

A prostrate, stellately woolly herb. Leaves broadly ovate or rounded, wrinkled, dark-purplish brown, eglandular at the base. Flowers unisexual, in short, axillary racemes. Capsule densely woolly.

A typical inhabitant of the dry beds of ponds, puddles and ditches, in association with Polygonum plebeium, Granges, Coldenia and Heliotropium supinum; also noted as a weed in cultivated fields.

Local name : Betho Okhrad.

Flowers and Fruits : October to June.

Padate 25, 1082, 3404.

Throughout India in the drier parts.

North Africa.

Jatropha Linn.

Leaves lobed, eglandular; flowers yellowish-green ............................................ curcas

Leaves lobed, margin with a row of short, viscid glands; flowers red ......................... gossypifolia

Jatropha curcas Linn. Sp. Pl. 1006, 1753; FBI. 5: 383;
G. 3: 95; Sant. 248; Padate, in JMSU. 17 & 18(3): 111, 1968 & 69.

A small tree. Leaves large, glabrous, 3-5-lobed or angled. Flowers yellowish-green, in terminal, cymose panicle. Capsule subglobose, ellipsoid.

Grown in garden around temples.

Flowers and Fruits: September to May.

**Pedate** 2486, 3255.

Indigenous to Panama, now in gardens throughout India.

_Jatropha gossypifolia_ Linn. Sp. Pl. 1006, 1753; FBI. 5: 383; C. 3: 94; Bor & Raizada, 175, f. 108, Pl. 64;


Noted on waste lands and open grounds and sometimes in hedges.

Flowers and Fruits: September to April.

**Padate** 2722, 3504.

Cultivated or naturalized in many parts of India.
Native of Brazil; Burma and Trop. Africa.

**Ricinus Linn.**

*Ricinus communis* Linn. Sp. Pl. 1007; 1753; FBI. S: 457;
C. 3: 125; Sant. 252; Chavan & Padate, in Ind. For.
86(4): 215, 1960; Maheshwari, 316; Pavagadh, 214.

A shrub or a small tree. Leaves large, palmately lobed, peltate, long-petioled. Flowers in racemes; male flowers at the upper end, stamens many; female flowers below. Capsule 3-lobed, echinate; seeds oblong, mottled.

Cultivated in fields and gardens.

Local name : Divelo, Erando.

English name : Castor Oil Plant.

Flowers and Fruits : October to March.

**Padate** 20, 176, 3349.

Probably a native of Africa, cultivated or naturalized throughout India, near human habitations.

**Acalypha Linn.**

Herbs:

Bracts of female flowers dentate, truncate...*indica*

Bracts of female flowers fimbriate with
long, hispid teeth ....................**ciliata**

Shrubs ..................................**wilkesiana**

*C.* 3: 108; *Wt. Icon.* t. 877; *Chavan & Padate,* in
*Ind. For.* 86(4): 215, 1960; *Maheshwari,* 316;
*Pavagadh,* 213.

An annual, erect herb. Leaves ovate, rhomboid, acute, 
cuneate at the base, crenate-serrate, long-petiolated.
Flowers in lax, axillary, androgynous spikes; male flowers 
at the top and female below; female flowers subtended by 
foliaceous bracts. Capsule hispid, enclosed in the bract.

A common weed of all waste places.

Local name: *Vichhi Kante.*

Flowers and Fruits: July to February, sometimes 
upto April.

*Padate* 172, 1794, 336C.

Throughout India.

Tropical Africa, Ceylon, Philippines.

*Acalypha ciliata* Forsk. *Fl.* Aeg.-Arab. 162, 1775; *FBI.* 5:
417; *C.* 3: 109; *Trimen,* *Fl.* Ceylon 4: 59; *Chavan*
An erect herb. Leaves alternate, finely serrate, acuminate, long-petioled. Flowers in axillary, androgynous spikes; male flowers at the top, minute, sessile; female flowers crowded at the base, subtended by large, veined, fimbriate bracts. Capsule concealed in the bracts.

A common weed of waste places, although not as common as the previous one.

Flowers and Fruits: July to January.

Padate 451, 3485.

More or less throughout India.

Ceylon, Arabia, Trop. Africa.


A tall shrub. Leaves broadly ovate, cordate, acuminate, crenate, variously mottled with shades of red and purple or the leaves are perfectly red or brown. Flowers bright red, in slender, pendulous catkins.

Grown in gardens as ornamental shrubs.

Flowers September to May.
Padate 2769.

Grown in many parts of India.

Native of Fiji Islands.

Bridelia Willd.

Bridelia squamosa (Muell.-Arg.) Gehrm. in Engl. Bot. Jahrb. 41, Beibl. 95: 30, 1908; Santapau, in JBNHS. 50: 305, 1951; Sant. 243; Pavagadh, 209.

Bridelia retusa Spreng. var. squamosa Muell.-Arg. in DC. Prodr. 15(2): 493, 1866; FBI. 5: 268.

Bridelia retusa Hook. f. in FBI. 5: 268; C. 3: 68;
(\textit{ambo pro parte, non Spreng.}).

A medium-sized tree with greyish bark. Leaves elliptic-oblong to ovate-lanceolate, rigidly coriaceous, tomentose beneath, crenate. Flowers yellowish green, in axillary clusters or on long axillary panicked spikes. Fruit a fleshy drupe.

Not common, noted few trees at Shardagram near Vejpur and Bhaderva.

Flowers and Fruits: September to February.

Padate 1967.
Gujarat, Maharashtra, Karnataka, throughout India.

Ceylon, Burma.

Securinega Juss. (nom. cons.)

Securinega virosa (Roxb. ex Willd.) Pax, & Hoffm. in Pfam. (ed. 2) 19 C: 60, 1931; Sant. 244; Maheshwari, 318; Padate, in JMSU. 17 & 18(3): 110, 1968 & 69; Airy Shaw, loc. cit. 340.


Flueggea microcarpa Bl. Bijdr. 580, 1826; FBI. 5: 328; C. 3: 77.

An erect, unarmed shrub. Leaves obovate, or rounded 3-7 cm. long. Flowers in axillary clusters. Fruit a globose berry.

Noted in the ravines at Timba and Bhaderva; not common.

Flowers and Fruits: September to February.

Padate 606, 2951.

Throughout India.

Trop. Africa, China, Malay Islands, Australia.

Phyllanthus Linn.

Stipules peltate:
Leaves scattered on the branches;
capsule smooth .......................... \textit{maderaspatensis}

Leaves closely set on the branches;
capsule not as above .......................... \textit{simplex}

Stipules not peltate .......................... \textit{asperulatus}

\textbf{Phyllanthus maderaspatensis} Linn. Sp. Pl. 982, 1753; FBI. 5: 292; C. 3: 82; G. 1289; Wt. Icon. t. 1895, f. 3; Sant. 246; Maheshwari, 319; Pavagadh, 210; Padate, in JMSU. 17 & 18(3): 110, 1968 & 69.

An erect, glabrous herb, Leaves scattered, obovate-cuneate, mucronate. Male flowers in clusters, small, sub sessile; females large, axillary, solitary, shortly pedicellate. Capsule smooth, depressed-globose, 3-lobed.

Common among grasses on open grounds and as a weed in cultivated fields.

\textit{Flowers and Fruits} : August to January.

\textbf{Padate} 603, 1966, 3720.

In the drier regions of India,

Tropical Africa, Arabia, Ceylon, China, Java, Australia.

\textbf{Phyllanthus simplex} Retz. Obs. 5: 29, 1789; FBI. 5: 295;
A prostrate or ascending herb. Leaves linear-oblong, distichous, closely set, often overlapping. Flowers unisexual, females borne below the males. Capsule globose, minutely warty, crustaceous.

A common weed of cultivated fields, observed growing on the banks of canal.

Flowers and Fruits: August to November.

Pedate 982, 1954, 3761.

Throughout India.

Ceylon, Malay Islands, China, Pacific Islands.

Phyllanthus asperulatus Hutch, in Kew Bull. 1920: 27-28; 1920; Webster, in JAA. 37: 14, 1956; Sant. 245.

Phyllanthus niruri auct. non Linn.; FBI. 5: 298; C. 3: 84; WT. Icon. t. 1894; Chavan & Pedate, in Ind. For. 86(4): 215, 1960.

A small, erect herb. Branches spreading. Leaves simple, oblong, distichous. Flowers pale yellow or yellowish white, axillary, hanging down below the branchlets; males 1-3 together, female solitary. Capsule globose, smooth; seeds trigonous, pale brown, longitudinally ribbed.
A common weed of waste places; also noted in cultivated fields.

Local name: Bhonya Amla.

Flowers and Fruits: July to April.

Padate 18, 2274, 2694.

Throughout India.

Ceylon, tropics generally.

Kirganelia Baill.

Kirganelia reticulata (Poir.) Baill. Etud. Gen. Euph. 613, 1858; G. 1294; Sant. 246; Chavan & Padate, in Ind. For. 86(4): 215, 1960; Maheshwari, 320; Pavagadh, 211.

Phyllanthus reticulatus Poir. in Lamk. Encycl. 5: 298, 1804; FBI. 5: 288; C, 3: 81.

A large, glabrous, straggling shrub with drooping branches. Leaves oblong-elliptic, distichous. Flowers greenish-yellow, in axillary fascicles on leaf bearing branchlets; female flowers solitary, axillary on long peduncles. Berry globose, smooth, dark purple.

Noted wild in hedges, on the elevated banks of rivers and in ravines.
Local name: Kamboi.

Flowers and Fruits: July to April.

Padate 900, 2485, 3505.

Throughout Trop. India.

Trop. Africa, China, Malay Islands.

**Emblica Gaertn.**

**Emblica officinalis** Gaertn. Fruct. 2: 122, 1791; Wt. Icon. t. 1896; G. 1295; Sant. 246; Maheshwari, 320; Pavagadh, 211; Padate, in JMSU. 17 & 18(3): 109, 1968 & 69.

**Phyllanthus emblica** Linn. Sp. Pl. 982, 1753; FBI. 5: 289; C. 3: 81.

A middle-sized tree with spreading branches. Leaves linear-oblong, distichous. Flowers yellow or greenish-yellow, in axillary fascicles below the leaves. Male flowers many, on short, slender pedicels; female flowers few, sub-sessile. Fruits fleshy, globose, pale yellow.

Commonly cultivated for its edible fruits.

Local name: Amla.

Flowers and Fruits: March to June.

Padate 608, 3621.
Throughout Trop. India.
Ceylon, Malay Islands.

*Cicca Linn.*


*Cicca disticha* Linn. Mant. 1: 124, 1767.

*Phyllanthus distichus* Muell.-Arg. in DC. Prodr. 15(2): 413, 1866; FBI. 5: 304; C. 3: 85.

A small tree. Older branches with large scars where foliage-branches have fallen. Leaves distichous, obliquely ovate, acute. Flowers small, reddish, clustered along a rachis on the old wood. Fruit a berry up to 1.5 cm. diam., edible.

Rare; cultivated in gardens for its edible fruits.

Local name: Rai Amla, Khata Amla.

English name: Gooseberry tree.

Flowers and Fruits: March to April.

*Padate* 1702, 3609.
Cultivated throughout India.

Native of Malay Islands, Madagascar.

ULMACEAE

Holoptelea Planch.

**Holoptelea integrifolia** (Roxb.) Planch. in Ann. Sc. Nat. (ser. 3) 10: 259, 1848; FBI. 5: 481; C. 3: 123;

Wt. Icon. t. 1968; Chavan & Padate, in Ind. For. 86(4): 215, 1960; Sant. 252; Maheshwari, 321.

**Ulmus integrifolia** Roxb. Pl. Cor. 1: 56, t. 78, 1798.

A medium-sized, deciduous tree. Leaves broadly-ovoid or ovate, acuminate. Flowers greenish, in fascicles at the scars of fallen leaves. Fruit a samara, orbicular with reticulately veined wings.

Planted at few places. The tree is leafless when fruiting.

Local name: Kanajo, Kanaji.

Flowers and Fruits: February to April.

**Padate** 64, 250, 3482.

More or less throughout India, especially in the deciduous forests.
Ceylon, Cochin-china.

MORACEAE

Flowers in short spikes or heads; stamens inflexed in bud with reversed anthers..............*Streblus*

Flowers crowded on the inside of fleshy receptacles; stamens not inflexed in bud ...........*Ficus*

*Streblus* Lour.


*Spicarpurus orientalis* Blume, Bijdr. 488, 1825;


A large shrub or a small tree. Leaves elliptic, obovate, acute or acuminate, rough like sandpaper. Flowers unisexual; male in shortly pedunculate, globose heads; female solitary on axillary, fascicled pedicels. Fruit yellow, loosely enclosed in the enlarged perianth.

Common in hedges and on the elevated banks of rivers and ravines.

Local name: Sarero.

Flowers and Fruits: November to April.
Padate 230, 1659, 3399.

Drier parts of India.
Ceylon, Malay Islands, Cochinchina, China, Siam.

Ficus Linn.

1. Receptacles sessile:

2. Leaves glabrous:

3. Leaves broadly ovate, cordate, acuminate; aerial roots absent .......... religiosa

3. Leaves elliptic or narrowly oblong-ovate, acute; aerial roots often present ......................... amplissima

2. Leaves tomentose beneath ..................... benghalensis

1. Receptacles stalked:

4. Leaves alternate ......................... racemosa

4. Leaves opposite ......................... hispida


Urostigma religiosum Gasp. Ric. Caprif. 82, t. 7, ff.
A large tree without aerial roots. Leaves ovate, cordate, acuminate, shining. Receptacles depressed-globose, dark purple when ripe.

A sacred tree for Hindus. It is commonly planted near temples and near habitations. Small seedlings commonly noted on old walls.

Local name: Pimplo.

Flowers and Fruits: October to April.

Ficus amplissima Sm. in Rees Cyclop. 14: 1; Santapau & Janardhanan, 46.


A glabrous tree with or without aerial roots. Leaves elliptic or narrowly oblong-ovate, acute, bright green, shining above, paler beneath; stipules ovate, acuminate. Receptacles sessile, globose, clustered at the end of branches.
Mid in northern part, commonly seen as a strangler on *Borassus flabellifer*; also grown as a roadside tree.

**PLATE No. 58.**

Flowers and Fruits: October to March.

**Padate** 1103, 2770.

Central India, Western Peninsula.

Ceylon.

**Ficus benghalensis** Linn. Sp. Pl. 1059, 1753; FBI. 5: 499;

C. 3: 145; Sant. 256; Chavan & Padate, in Ind. For. 86(4): 216, 1960; Maheshwari, 324; Pavagadh, 219.

**Urostigma bengalense** Caspar, Nov. Gen. Fic. 7, 1844;


A large, evergreen tree with long, spreading branches, sending down aerial roots. Leaves ovate, obtuse, shining above, minutely tomentose beneath. Receptacles globose, sessile, in pairs, puberulous, red when ripe.

A common avenue tree. Commonly observed in villages near temples; young seedlings are often noted in the cracks and crevices of old walls of dilapidated buildings.

Local name: Vad.

English name: Banyan.
Flowers and Fruits: October to April.

Padate 800, 1672, 3625.

"Really wild only in the sub-himalayan forests and on the lower slopes of hill ranges in S. India"; elsewhere planted for shade.

Ficus racemosa Linn. Sp. Pl. 1060, 1753; Corner, in Dansk.

Bot Arkiv. 23: 28, 1963; Sant. 259.

Ficus glomerata Roxb. Pl. Cor. 2: 13, t. 123, 1798;
FBI. 5: 535; C. 3: 154; Talb. 2: 524; Chavan & Padate, in Ind. For. 86(4): 216, 1960; Maheshwari, 326;
Pavagadh, 220.

An evergreen tree without aerial roots. Leaves ovate-oblong or elliptic-lanceolate, glabrous, prominently nerved beneath; stipules scarious, ovate-lanceolate. Receptacles shortly pedunculate, on short leafless branches, subglobose, red when ripe; male flowers sessile, with 2 stamens.

Noted in ravines; rare.

Local name: Umardo.

Flowers and Fruits: January to July or even later,

Padate 228, 3520.

Throughout India.

Ceylon, Burma.
Ficus hispida Linn. f. Suppl. 442, 1781; FBI. 5: 522;
C. 3: 154; Talb. 2: 523; Sant. 258; Pavagadh, 218;

A shrub or a small tree, hispidly pubescent in all parts. Leaves opposite, ovate or ovate-oblong, entire or toothed above the middle, hispid-pubescent on lower surface and hispid-scabrid on upper surface. Receptacles obovoid, pedunculate, hispid, in pairs or fascicled on short, tubercled branches.

Commonly found growing in waste places and in ravines. Small seedlings and even full grown shrubs observed in the crevices of old walls.

Flowers and Fruits: December to May.

Padate 601, 3269, 3476.

More or less throughout India.

Ceylon, Burma, China.

CASUARINACEAE

Casuarina Linn.

Casuarina equisetifolia ("equisefolia") Linn. Amoen. Acad.
4: 143, 1759; FBI. 5: 598; C. 3: 161; Sant. 260;
Maheshwari, 330; Pavagadh, 220; Padate, in JMSU.

A tall tree with cylindrical, jointed, ribbed stems. Leaves reduced to scales, arranged in whorls. Male spike cylindric; female flowers, in globose or ovoid heads. Nutlets thin, winged.

Commonly grown in gardens.

Local name: Vilayati Sharu.

Flowers and Fruits: August to February.


Cultivated throughout India.

Native of Malay Archipelago, Bangladesh, Australia.

CERATOPHYLLACEAE

Ceratophyllum Linn.


Ceratophyllum verticillatum Roxb. Fl. Ind. 3: 624, 1832.

A slender, submerged, rootless, much-branched, free
floating, aquatic herb. Leaves whorled, divided into filiform segments. Male and female flowers solitary.

Common in the stagnant and shallow waters of ponds, ditches and rivers.

Flowers and Fruits: October to March.

Padate 808, 1536, 1658, 3506.

Throughout India and the Andamans, in shallow waters.

CLASS II. MONOCOTYLEDONES

HYDROCHARITACEAE

1. Leaves cauline and in whorls ............... Hydrilla

1. Leaves radical:

2. Flowers unisexual ....................... Vallisneria

2. Flowers hermaphrodite ................... Ottelia

Hydrilla Rich.

Serpicula verticillata Linn, f. Suppl. 416, 1781.

A submerged, much-branched herb with cauline, whorled, oblong-linear, thin leaves. Flowers dioecious; male flowers small and pedicellate, female ones sessile.

Common in ponds and along river banks. Very often grown in aquaria.

Flowers and Fruits: October to January.

Padate 139, 809, 1704.

Throughout India.

Ceylon, Central Europe, Mauritius, Madagascar, Tropical Asia and Australia.

Vallisneria Linn.

Vallisneria spiralis Linn. Sp. Pl. 1015, 1753; FBI. 5: 660; C. 3: 171; Sant. 262; Subramanyam, loc. cit. 57, f. 39; Chavan & Padate, in JMSU. 11(3): 63-78, 1962; Maheshwari, 331.

Submerged, stoloniferous, grass-like herbs with ribbon-shaped, thin, radical leaves. Flowers unisexual; male flowers small, on short peduncles; female ones on long spirally coiled peduncles. Fruit linear and included in the spathe.
Abundant along the banks of Mahi, Kund, Karad, Meshri rivers; also abundant at places like Javla, Savli and Karachi. Commonly grown as an aquarium plant.

Flowers and Fruits: November to April.

Padate 221, 870, 3475.

Throughout India.

Westward to Spain and in warmer regions of the Old and New Worlds.

**Ottelia** Pers.

**Ottelia alismoides** (Linn.) Pers. Syn. Pl. 1: 400, 1805;

FBI. 5: 662, 1882; C. 3: 173; Subramanyam, loc. cit.

61, f. 43; Chevan & Padate, in JMSU. 11(3): 63-78, 1962.

**Stratiotes alismoides** Linn. Sp. Pl. 1: 535, 1753.

Submerged or partly floating, rooted herb. Submerged leaves narrow or oblong and the floating ones oblong-orbicular with cordate or rounded base; margin wavy. Flowers white with a yellow tinge, hermaphrodite, solitary, on a scape peduncle. Fruit winged; wings undulating, enclosed in the spathe.

Collected from shallow to deep waters at Savli, Javla
Ottelia alismoides (Linn.) Pers.
and Karachia.

PLATE No. 59.

Flowers and Fruits: August to December.

Padate 319, 1790.

Throughout India.

Ceylon, Trop. Asia, Australia.

CANNACEAE

Canna Linn.


A perennial herb with rhizomatous stem. Leaves large, oblong, lanceolate. Flowers bright red, yellow or variegated in loose, few-flowered raceme.

Very common in most of the public and private gardens.

Flowers: Almost all the year round.

Padate 112, 1928.

Introduced in India by an American.
MUSACEAE

Musa Linn.

*Musa paradisiaca* Linn. Sp. PI. 1043, 1753; Moore, in Baileya 5: 185, 1957; C. 3: 249; Maheshwari, 332.


*Musa paradisiaca* Linn. *var. sapientum* Kuntze, Rev. Gen. 2: 692, 1891; Bailey, loc. cit. 286;

*Musa sapientum* Linn. Syst. 1303, 1759; FBI. 6: 262.

A stoloniferous, large, tree like herb, with false stems formed by large, sheathing leaf-bases. Spikes drooping. Bracts many-flowered, deciduous. Fruits oblong, yellowish-green when ripe, sweet, edible.

Propagated by suckers near moist places for its fruits. Young inflorescence used as vegetable. Grown on large scale in the southern part of Savli Taluka near Manjusar - Asoj.

Local name: Kela.

Flowers and Fruits: March to September.

Padate 812, 2314, 3267.

Cultivated throughout the tropics.
AMARYLLIDACEAE

Ovary superior ................................. Allium

Ovary inferior :

  Corona absent; no scales or teeth
  between the filaments ................... Crinum

  Corona present, large, conspicuous,
  formed of the expanded filaments, often
  connate at the base into a tube .......... Pancratium

Allium Linn.

Leaves flat, not hollow ...................... sativum

Leaves cylindric, usually hollow ........... cepa

Allium sativum Linn. Sp. Pl. 296, 1753; FBl. 6: 337; C. 3: 284; Bailey, Cycl. Hort. 248,

  A annual, erect herb with radical, flat, non-fistular
  leaves; leaf bases, overlapping forming a small bulb.
  Flowers white or pinkish, in lax umbels on a long scape,
  often displaced by bulbils.

  Cultivated as a winter crop.

  Local name : Lasan.
English name: Garlic.

Flowers and Fruits: November to May.

Padate 1152, 3353.

Widely cultivated in irrigated parts of Gujarat, Maharashtra, Karnataka, Andhra, Tamilnadu, Bengal; throughout India.

Allium cepa Linn. Sp. Pl. 300, 1753; FBI. 6: 337; C. 3: 284; Grav. Cat. 220; Dalz. & Gibbs. 92; Bailey, Cycl. Hort. 248.

A annual, erect herb with radical, hollow leaves, leaf bases arranged concentrically round a reduced stem forming a bulb. Flowers small in simple scapose umbels, subtended by 2 or 3 bracts.

Commonly cultivated in winter throughout the area.

Local name: Dungali, Dungri.

Local uses: Commonly used as vegetable. Also used medicinally.

Flowers and Fruits: February to May.

Padate 1164, 2112.

Cultivated throughout India.
Crinum Linn.

Leaves 2.5 to 5 cm. broad; perianth lobes lanceolate ..................pretense

Leaves 12.5 to 17.5 cm. wide; perianth lobes linear ..................asiaticum

Crinum pretense Herbert, Amaryllid. 256, 1837; FBI, 6: 282; C. 3: 257.

A herb with tunicated white bulb. Leaves linear, sub-erect, with entire margin. Scape lateral, compressed. Flowers white, large, showy, in umbels surrounded by large, ovate, acute bracts.

Observed on sandy river beds or at times partly submerged in running water.

PLATE No. 60.

Flowers and Fruits: October to February.

Padate 1150, 1938.

Gujarat, Maharashtra, Karnataka, Andhra.

Burma.


Herbs with large bulbs. Leaves basal, dark green. Flowers white, fragrant, large, in an umbel subtended by bracts; scape cylindrical.

Planted in gardens in lawns or near hedges.

Local name: Nagdaman.

Flowers: August to November.

Padate 1720, 3772.

A native of tropical Asia.

Pancratium Linn.


A bulbous herb. Leaves flat, linear-lanceolate. Flowers white on long scapes in umbels; bracts spathaceous. Filament bases uniting to form a membranous, conspicuous corona; anthers versatile capsule subglobose.

Planted in gardens for its ornamental flowers.

Flowers: August to October.

Padate 3799, 3800.

A native of Arabia and Egypt.
AGAVACEAE

Ovary inferior:

Flowers regular in panicles .................Agave

Flowers irregular in racemes ...............Polianthes

Ovary superior ..................................Sansevieria

Agave Linn.


A stout shrub with radical leaves. Leaves persistent, stiff, heavy with spiny apex and margins. Flowers in panicles, on stout, very long scapes.

Fairly abundant in waste places and in hedges, where the plant appears to have become naturalised.

Flowers and Fruits: June to October.

Padate 59, 1860, 3398.

Common in drier parts of India.

Polianthes Linn.

Polianthes tuberosa Linn. Sp. Pl. 316, 1753; C. 3: 260;

Erect herbs with tubers. Leaves radical, cauline and grass-like. Flowers white, slightly irregular fragrant, in pairs, in open terminal spikes.

Noted in private gardens at Savli and Desar.

Local name: Gulchhadi.

Flowers: July to March.

Padate 3487, 3773.

Possibly a native of Andes in S. America.

*Sansevieria* Thunb.


An erect perennial. Leaves flat, pale green with transverse dark green bands, apex spiny. Flowers greenish white, in long racemes.

Observed in pots and in beds in Panchayat garden at Savli and Vejpur.

Flowers: September to February.

Padate 1075, 2995.

A native of India and Ceylon.
var. laurentii Hort., a native of Trop. Africa is often cultivated.

Dioscoreaceae

Dioscorea Linn.

Dioscorea bulbifera Linn. Sp. Pl. 1033, 1753; Mt. Icon. t. 878; C. 3: 265; Gr. 219; Sant. 281; Santapau, in JBNHS. 49: 628, 1950; Burkhill, in Fl. Males. I, 4 (3): 311, 1951; Maheshwari, 335; Pavagadh, 223; Padate, in JMSU. 17 & 18(3): 110, 1968 & 69.


A climber with long tuberous roots and stems twining to the left. Leaves large glabrous, cordate with axillary bulbils of various sizes. Flowers greenish white, in spikes. Capsule glabrous, quadrately oblong.

Noted on hedges during monsoon only at Savli and along railway line between Wasanpura - Mevli. Its tubers and bulbils are edible.

Flowers and Fruits: July to October.

Padate 813, 3779.

Throughout India.
Ceylon, Malaysia.

LILIACEAE

Habit climbing:

Leaf apex tendrilar, flowers big ..............Gloriosa
Leaves reduced to scales, stems modified into green, needle-shaped cladodes,
flowers small ......................................Asparagus

Habit erect:

Leaves very thick with mucilage ..............Aloe
Leaves not thick and without mucilage........Asphodelus

Gloriosa Linn.

Gloriosa superba Linn. Sp. Pl. 305, 1753; FBl. 6: 358; C. 3: 274; WT. Icon. t. 2047; Sant. 282; Chavan & Padate, in Ind. For. 86(4): 216, 1960.

Methonia superba Dalzell & Gibson, Bom. Fl. 205, 1861.

A herbaceous climber. Leaves sessile, ovate lanceolate, apices tendrilar. Flowers generally large, axillary, solitary; perianth lobes crisped, wavy, yellow with a mixture of red or orange.
Common, noted on hedges throughout the area.

Local name: Vadhavadiyo, Vachanag.

Flowers and Fruits: August to November.

Padate 295, 811.

Throughout Tropical India.
Ceylon, Trop. Africa, Malacca, Cochinchina.

Asparagus Linn.

Asparagus racemosus Willd. var. javanica (Kunth) Baker, in JLS. 14: 624, 1874; FSI. 6: 316; C. 3: 270; Sant. 282; Rajasthan, 126.

Asparagus javanica Kunth.

A scandent, spiny, much-branched undershrub. Roots tuberous; branches angular. Leaves linear, subulate, often spinous; spines suberect or subrecurved. Cladodes 2-6-together, narrowly oblong-linear, acicular. Flowers small, white, scented, in simple or branched racemes.

Not common; noted on shrubs along Wasanpura - Vejpur railway line and in ravines.

Local name: Satavari.

Local uses: Roots eaten by local people.
Flowers and Fruits: July to December.

Padate 1149, 3407.

Gujarat, Maharashtra, Karnataka, Western Peninsula.

Java.

Aloe Linn.


Cult. Pl. 209; Maheshwari, 335.

*Aloe perfoliata var. vera* Linn. Sp. Pl. 320, 1753.

*Aloe vera* (Linn.) Webb. & Berth (non Mill.).

An erect herb with highly succulent radical leaves. Flowers yellowish green in racemes.

Usually cultivated in private gardens; not common.

Local name: Kunvarpathu.

Flowers and Fruits: March to April.

Padate 2208, 3128, 3777.

A native of Mediterranean region, now introduced throughout the tropics.

Asphodelus Linn.

*Asphodelus tenuifolius* Cav. in Ann. Gene. Nat. 3: 46, t. 27,
Annual erect, glabrous herb with radical, fistulous leaves. Flowers white with purple streaks, in lax-racemes on a scape; scapes generally simple or sometimes branched towards upper side. Capsule globose, loculicidal; seeds black, rugose.

A common weed of cultivated fields, especially of the winter crops. Commonly noted in Gram, Lucern, Tobacco and Pea fields. Common throughout the area.

Flowers and Fruits: December to April.

Padate 280, 2654, 3509.

Throughout India as a weed in cultivated fields.

Westward to the Conary Islands.

COMMELINACEAE

Fertile stamens 3, staminodes present:

Cymes enveloped in spathaceous bracts ........ Commelina

Cymes in panicles, not enveloped in spathaceous bracts ......................... Murdannia

Fertile stamens 6, staminodes absent:
Inflorescence sessile, embedded in the hollow axil of the leaf-sheath ..........**Amlschophacelus**

Inflorescence not as above ................. **Cyanotis**

**Commelina Linn.**

1. Spathes funnel-shaped or with margins connate nearly to the top:

2. Ovary 5-ovuled; capsule 3-5-seeded:

   3. Capsule 3-seeded; seeds smooth ........ **forskalii**
   
   3. Capsule 5-seeded; seeds rugose, closely pitted ......................... **benghalensis**

2. Ovary 3-2-ovuled; capsule 3-2-seeded ............ **undulata**

1. Spathes complicate with dorsal margins, free to the base:

4. Leaves ovate-lanceolate; seeds tuberculate and reticulate .............. **diffusa**

4. Leaves oblong-lanceolate; seeds smooth and muticus ....................... **hasskarlii**

**Commelina forskalii** Vahl, Enum. 2: 172, 1806; FBI. 6: 371; C. 3: 292; Rajasthan, 128; Maheshwari, 340.

A diffuse, branched herb, rooting at the lower nodes.
Leaves linear or narrowly oblong, often with undulate or crenulate margins; leaf-sheath finely striate, pubescent. Flowers light blue; spathe broadly ovate, hairy. Capsule 3-seeded; seeds smooth.

Noted on open waste places among grasses; not common.

Flowers and Fruits: August to November.

Padate 2527, 3775.

Gujarat, Maharashtra, Karnataka, W. Peninsula.

Tropical Africa.

Commelina benghalensis Linn. Sp. Pl. 41, 1753; FBI. 6: 370; C. 3: 291; Wt. Icon. t. 2065; Sant. 286; Chavan & Padate, in Ind. For. 86(4): 216, 1960; Maheshwari, 340; Pavagadh, 226.

A procumbent herb. Leaves ovate to oblong, leaf-sheath with ciliate margin. Flowers blue, enclosed in ovate-lanceolate spathes. Capsule usually 5-seeded; seeds closely pitted.

Commonly found everywhere during monsoon, but seen round the year in moist places.

Flowers and Fruits: August to January.

Padate 338, 2203, 3456.
Throughout India.
Ceylon, China, Tropical Asia and Africa.


Commelina obliqua Buch.-Ham. (non Vahl) var. mathewii C. B. Clarke; FBI. 6: 372; C. 3: 293.


Commelina paludosa Bl. var. mathewii (C. B. Clarke)

A glabrous, stout, diffuse herb. Leaves lanceolate or lanceolate-linear, acute-acuminate, mouth of the sheath bearded. Spathe solitary or crowded, in terminal heads. Flowers blue. Capsule 3-2-seeded; seeds smooth.

Not common; only observed at few places.

Flowers and Fruits: September to December.

Padate 437, 3798.

Throughout India.
Ceylon, Malay Islands.
Commelina diffusa Burm. f. Fl. Ind. 18, t. 7, f. 2, 1768; Santapau & Janardhanan, 49; Sant. 284.

Commelina nudiflora auct. plur. non Linn.; FBI. 6: 369; C. 3: 290; Rajasthan, 127.

A diffuse, glabrous herb with stems branching from the base and rooting at distant nodes. Leaves linear-lanceolate, acute, sheath prominent, with ciliate margin. Flowers blue, in boat-shaped bracts. Capsule broadly oblong, coriaceous, 3-celled, 5-seeded; seeds tuberculat® and reticulate.

Common throughout the area during monsoon; noted along roadsides, open waste places and also observed as weed in winter crops.

Flowers and Fruits: August to March.

Padate 469, 1706, 3712.

Throughout India.

Ceylon, Singapore, and many tropical and sub-tropical countries.


A much-branched, glabrous herb. Leaves narrowly lanceolate, sub-acute, Spathes axillary, ovate-lanceolate, cordate
at the base. Flowers small, blue. Capsule quadrate, sub-truncate, apiculate; seeds cylindric, truncate at one end and rounded at the other, smooth, muticous.

Noted among grasses and other moist localities during monsoon; not common.

**Flowers and Fruits:** August to November.

*Padate* 339, 3722.

Gujarat, Maharashtra, Karnataka, Andhra, W. Peninsula, Upper Gangetic Plain, Bengal, Assam, Madhya Pradesh.

**Murdannia Royle**


*Commelina nudiflora* Linn. *Mant.* 177, 1967 (non Linn. 1753); *pro parte.*

*Murdannia malabarica* (Linn.) Bruckn. in *Pfam.* (ed. 2) 159: 178, 1930; Sant. 286; Raizada, in *Ind. For.* 92(5): 317, 1966.


A slender, procumbent annual, often rooting at nodes;
roots fibrous. Leaves linear-oblong or lanceolate, acute to acuminate. Flowers blue-purple, in terminal panicles. Capsule trigonously subglobose, 3-celled, having two seeds in each cell.

Observed only at some places on wet banks of ponds and puddles.

Flowers and Fruits: Late July to November.

Padate 440, 1864, 3787.

Throughout India.

Ceylon, China, Malay Islands.

**Amischophacelus**


Raizada, in Ind. For. 94(6): 434, 1968.

*Tradescantia cucullata* Roth, Nov. Pl. Sp. 189, 1821.

*Cyanotis cucullata* (Roth) Kunth Enum. 4: 107, 1843;


A procumbent, much-branched, glabrous or sparsely
hairy annual. Leaves linear. Flowers clustered in the hollow axil of the leaf-sheath. Capsule depressed in the centre with 3 horns; seeds subquadrate, pitted.

Common, observed during monsoon in almost all localities.

Flowers and Fruits: August to October.

Padate 466, 1872, 3749.

Gujarat, Karnatak to Malabar.

*Cyanotis* D. Don (nom. cons.)

*Cyanotis cristata* (Linn.) Schult. F. Syst. 7: 1150, 1830;
FBI. 6: 385; C. 3: 304; D. & G. 256; Wt. Icon. t. 2082; Sant. 288; Pavagadh, 227; Padate, in JMSU. 17 & 18(3): 110, 1968 & 69.


*Tradescantia cristata* Jacq.; Gr. 223.

Creeping herbs with fibrous roots. Leaves ovate-oblong with villously ciliate margins. Cyme scorpioid, recurved; flowers blue, filaments bearded. Capsule trigonous, nearly glabrous; seeds also trigonous, striate and black.

Rare, noted at some places during rains only. Also noted as a weed in rice fields.

Flowers and Fruits: August to October.
Throughout Tropical India.
Ceylon, Malay Islands, Mauritius, Tropical Africa.

ARECACEAE (PALMAE)

Leaves simple, palmate or fan-like ............... Borassus

Leaves compound, pinnate:
   Lower leaflets spinescent .................. Phoenix

   Lower leaflets not spinescent:
      Stems whitish, more or less
         thickened at the middle ............... Roystonea

      Stems not as above ..................... Cocos

Borassus Linn.

Borassus flabellifer Linn. Sp. Pl. 1187, 1753; FBI. 6: 462;
   38-39; Sant. 289; Chavan & Padate, in Ind. For. 86

A tall tree with palmately divided leaves. Inflorescence
   a branched spadix, enclosed into numerous open spathes.
Flowers unisexual. Fruit a large, subglobose, brown drupe.
Generally cultivated as avenue tree and also observed growing wildly along the banks of rivers. Common throughout the area; usually strangled by *Ficus* *amolissima*.

**Local name:** Tad.

**Local uses:** Every part of the plant body is utilized. The plants are tapped for 'toddy'.

**Flowers and Fruits:** February to May.

**Padate** 760, 1074, 3391.

Throughout India.

A native of tropical Africa; Malayan Peninsula, Sumatra, Borneo, Celebes, Flores and the Molucca Isles.

**Phoenix** Linn.

*Phoenix* *sylvestris* (Linn.) Roxb. Hort. Beng. 73, 1814, nom. nud. & Fl. Ind. 3: 787, 1832; FBI. 6: 425; C. 3: 311;

*Elate sylvestris* Linn. Sp. Pl. 1189, 1753, pro parte.

A tall palm, sometimes with stunted growth. Trunk usually with persistent leaf bases. Leaves pinnate, long, lower leaflets modified into spines. Fruits edible, oblong-ellipsoid, orange-yellow.
Common along the banks of the rivers and nallahs and near human habitations.

Local name: Khajuri.

Local uses: Leaves are used for making mats, baskets, brooms etc. From leaf-fibres ropes are made, fruit is used as food; Tree is tapped for 'toddy'.

Flowers and Fruits: April to June.

Padate 117, 1073, 3387.

Common throughout India.

A native of Tropical Africa; Malayan Peninsula, Borneo, Celebes.

Roystonea O. F. Cook.


Cl. 531, 1901; Bailey, Man. Cult. Pl. 173; Maheshwari, 343.

Blatt. Palms 396, t. 73; Dalz. & Gibs. Suppl. 99;
C. 3: 321.

A majestic palm with bottle-like, whitish trunk, Leaves pinnate about 2 meters long.

Observed only at Savli, in Bhimnath Mahadev Garden.
Padate 3781.

Originally from Cuba now grown all over as an avenue tree.

*Cocos* Linn.

*Cocos nucifera* Linn. *Sp. Pl.* 1188, 1753; *FBI.* 6: 482;


A tall palm with pinnate leaves. The coconut palm as it is commonly called is observed at quite a few places in private gardens.

Almost all parts of the plants are economically important, because of this it is also known as 'Kalpawriksha'.

Padate 1163, 3620.

Supposed to be a native of Cocos Island and the North Andamans.

**TYPHACEAE**

*Typha* Linn.

*Typha angustata* Bory & Chaub. *Exp. Mor.* 3(2): 33, 1832;

*FBI.* 6: 489; *Graebn. in Pfreich.* 2: 14, f. 4f.;

*C.* 3: 326; *Sant.* 289; *Chavan & Padate, in Ind. For.* 86(4): 216, 1960; *Maheshwari,* 344.

*I. elephantina* Gr. 227, 1839 (non Roxb.)
An erect, stout, amphibious herb with semi-circular, long, linear and radical leaves. Spikes cylindric, dense, brown; the male and females separated by a considerable interval; the female spikes pale brown. Female flowers mixed with clavate-tipped pistillodes; bracteoles sub-spathulate, equaling the linear stigmas, both longer than the hairs.

Common in marshes; at some places gregarious.

Local name: Gha Bajariyun.

Flowers: September to June.

Padate 3474.

More or less throughout India.


ARACEAE

Root climbers

Erect rhizomatous herbs:

Leaves divided

Leaves entire, peltate

Scindapsus

Amorphophallus

Colocasia
**Scindapsus** Schott

**Scindapsus aureus** Engler, in Pfreich. (Arac.-Monster.)
80, 1908; Bailey, Man. Cult. Pl. 183.

**Pothos aureus** Bailey, Cycl. Hort. 2776, f. 3159.

A root climber with cordate variegated leaves.
Commonly known as 'money plant'. Cultivated in shady places
in gardens or even indoors for its beautiful leaves. Can
be grown in bottles filled with tap-water. Not seen in
flowers.

**Padate** 3408.

Native of Solomon Islands, widely cultivated in the
oriental tropics.

**Amorphophallus** Bl. ex Decne (nom. cons.)

**Amorphophallus campanulatus** (Roxb.) Bl. ex Decne. in Ann.
Mus. Par. 3: 366, 1834; FBI. 6: 513; C. 3: 336;
Maheshwari, 346.

A perennial, stemless herb with globose, depressed,
dark brown corm. Leaves large, radical, twice bifid.

Generally cultivated for its edible corms which are
used as vegetable. Noted in some places only.
Local name: Suran.

Date: 1824.

Cultivated throughout the plains of India and Ceylon.

Colocasia Schott

Colocasia esculenta (Linn.) Schott, in Schott & Endl.

Melet. 1: 18, 1832; Sant. 293; Maheshwari, 345.


Arum colocasia Linn. Sp. Pl. 965, 1753; Gr. 228.

A glabrous, erect, perennial herb with rhizomatous stem. Leaves ovate, large, peltate with a broad triangular basal sinus; petioles stout. Spathe long, acuminate, pale yellow. Spadix shorter than spathe.

Cultivated for its edible leaves and underground rhizomatous stem.

Local name: Alavi.

English name: Arum.

Flowers: September to November.

Date: 2374.

Cultivated in many parts of India.
LENNACEAE

Fronds with several roots .................Spirodela

Fronds with one root ......................Lemna

Spirodela Schleid.

**Spirodela polyrrhiza** (Linn.) Schleid. in Linnaea 13: 392, tt. 5, 6, 1839; McCann, in JBNHS. 43: 156, 1942;
Subramanyam, in Aquat. Angios. 77; Maheshwari, 346.

Lemna polyrrhiza Linn. Sp. Pl. 970, 1753; FBI. 6: 557;
C. 3: 343; Biswas & Calder (2nd ed.) 101; Chavan

A small, gregarious, free-floating, aquatic herb.
Fronds obovate to orbicular, opaque, dark green above and
purplish beneath. Each frond giving rise to tuft of roots.

Fairly common in ponds, puddles and ditches, often
completely covering the water surface and even in the
stagnant waters of the rice fields.

**Flowers**: Rarely observed.

Padate 832, 1929, 3462.

More or less throughout India.
Temperate and tropical regions throughout the globe.
**Lemna** Linn.


A small, floating, aquatic herb. Fronds sub-orbicular or obovate, entire, opaque, each with a single root. Flowers not observed.

Common; observed on water surface of rivers, ponds and puddles.

Flowers: Not observed.

**Padate** 1337, 1708, 3780. (*Wet preservation, Botany Museum*).

Cosmopolitan in distribution.

**ALISMATACEAE**

**Limnophyton** Miq.


A robust, amphibious herb, with radical, sagittate
leaves. Flowers white, polygamous, arranged in whorls in a racemose manner on an angular, stout scape.

Very common in pools, ponds and roadside ditches, throughout the area.

**Flowers and Fruits**: November to February.

**Padate**: 329, 1336, 2269.

Throughout India.


**BUTOMACEAE**

**Tenagocharis Hochst.**


Amphibious herb. Leaves lanceolate to oblanceolate with long petioles. Umbels simple, many-flowered on long stout scapes. Flowers white with long, thin pedicels. Follicles shortly beaked and reticulately veined.

Common at Savli, Javla along the banks of ponds and muddy soils of the rice fields.

Flowers and Fruits: Late August to December,

Padate 324, 877-A.

Throughout the plains of India,

Australia, Tropics of the Old World,

APONOGETONACEAE

Aponogeton Linn. f.

Aponogeton natans (Linn.,) Engl. & Krause, in Engl. Pfroich,
24: 11, 1906; Subramanyam, Aquat. Angios. 92, Pl.
5, f. 54; Maheshwari, 348.

Saururus natans Linn. Mant. 2: 227, 1767.

Aponogeton monostachyon Linn. f. Suppl. 214, 1781;
FBI. 6: 564; C. 3: 348; Chavan & Padate, in JWSU,
11(3): 63-78, 1962,

A stoloniferous, aquatic herb, generally submerged with
edible, tuberous, rootstocks. Leaves floating, oblong to lanceolate with petiole varying in length. Flowers white or pink in solitary, dense spikes.

Not very common, noted in tanks at Savli, Javla, Karachi etc.

Flowers and Fruits: August to January.

Padate 141, 1025.

Throughout India.

Ceylon, Trop. Asia and Australia.

POTAMOGETONACEAE

Potamogeton Linn.

All leaves submerged:

Leaves filiform ................................pectinatus

Leaves not filiform:

Leaves linear-oblong, crisped, translucent .........................crispus

Leaves ovate-lanceolate,
membranous, perfoliate .....................perfoliatus

Upper or all leaves floating ....................nodosus
Potamogeton pectinatus Linn. Sp. Pl. 127, 1753; FBI. 6:
567; C. 3: 350; Subramanyam, loc. cit. 95, f. 55, 1-3; Maheshwari, 349.

A submerged, hydrophytic herb with slender, filiform stems. Leaves alternate, narrowly linear or filiform. Flowers minute, in whorls on a slender peduncle.

Not common; though locally abundant at few places.

Flowers and Fruits: October to March.

Padate 1131.

Plains of India ascending to Himalayas.

Ceylon, almost cosmopolitan.

Potamogeton crispus Linn. Sp. Pl. 126, 1753; FBI. 6: 566;

A submerged, hydrophytic herb with slender filiform stems. Leaves linear-oblong, crisped, finely serrulate, 3-nerved. Flowers in few-flowered spikes. Fruits oblique ovoid.

Rare but abundant in Mahi river at Bhaderva and Kund at Timba.

Flowers and Fruits: January to April.
Padate 1132.

Plains of India and temperate Himalaya.

North and South temperate and sub-tropical regions.

**Potamogeton perfoliatus** Linn. *Sp. Pl. 126, 1753; FBI. 6: 566; C. 3: 349; Subramanyam, *loc. cit.* 95, f. 55, 4-5.


Rare in the area. Only noted at Shaderva and Tlmba.

PLATE No. 61.

Flowers and Fruits: November to May.

Padate 2938.

Throughout India, extending to the Himalayas.

W. Tibet, Asia, Africa, N. America, Australia.


**Potamogeton indicus** Roxb. *Fl. Ind.* 1: 452, 1832;

A submerged, rooted herb with upper or all leaves floating; submerged leaves very thin, long, lanceolate, base acute ending into a stout, short petiole; floating leaves rather thick and short, oblong, elliptic or elliptic-lanceolate; petiole quite long. Spike densely flowered. Fruit shortly beaked, 3-ribbed on the back.

Common in tanks, ponds and shallow ditches in certain areas only, rare at other places.

Flowers and Fruits: August to January.

Padate 1666.

Throughout the plains of India.

Pakistan, Ceylon, Malay Islands.

NAJADACEAE

Najas Linn.

Leaves very narrow, remotely toothed and not fleshy ........................................... minor

Leaves not very narrow, closely toothed and fleshy .................................................... marina var. muricata

A small, delicate, submerged, aquatic herb with dichotomously branching stem. Leaves very narrow and remotely toothed, not fleshy.

Abundant in ponds at Savli, Karachi, Gothada, Muwal; also noted in waters of Mahi and Kund rivers at Shaderva and Timba respectively.

Flowers and Fruits: Almost round the year.

Padate 2936.

Throughout India, North Andamans.

Ceylon and Old World generally.

Najas marina L. var. muricata (Del.) R. Br. ex K. Schum. in Fl. Bras. 3(3): 725, 1894, non Hartmann; Rendle, in Pfreich. 7: 8; Padate, in JMSU. 17 & 18(3): 110, 1968 & 69.

Najas muricata Del. Fl. Egypt. 281, t. 50, f. 1, 1812.

Najas major All. FBI. 6: 569.

A robust, submerged, aquatic with closely toothed and fleshy leaves; marginal teeth quite prominent and a little stout.
Only noted in running waters of river Mahi at Bhaderva and Kund at Timba.

Flowers: October to January.

**Padate** 1166, 2937.

Throughout India.

Ceylon, Trop. Africa, Australia, Algiers, Egypt.

Eriocaulaceae

**Eriocaulon** Linn.


Cyp. 2: 272, 1855; FBI. 6: 577; C. 3: 357.

A small, stemless, tufted plant about 12 cm. high.

Leaves narrowly linear, subulate. Flower peduncles numerous with small, white, globose heads. Petals of male flowers sub-equal, not produced beyond the bracts; petals absent in female flowers. Ovary 3-lobed, styles 3, filiform.

Observed on marshy grounds during monsoon.

Flowers and Fruits: September to November.

**Padate** 3519.

Gujarat, Maharashtra, Karnataka, W. Peninsula.
1. Glumes all distichously arranged; hypogynous bristle 0 ...................... Cyperus

1. Glumes spirally arranged; hypogynous bristles or scales sometimes present:

2. Style-base dilated and constricted or articulated above the achene:

3. Leaves usually well-developed; hypogynous bristle 0:

4. Style-base persistent, if falling, not leaving a tumour on the achene ..................... Fimbristylis

4. Style deciduous, leaving a tumour on the achene ..................... Bulbostylis

3. Leaves 0; hypogynous bristle present .................. Eleocharis

2. Style-base not dilated, continuous with the achene ...................... Scirpus

Cyperus Linn.

1. Stigmas usually 2:
2. Fruit a laterally compressed achene:

3. Spikelets in umbels; spikelets
   20-50-flowered ....................... *pumilus*

3. Spikelets in white, sessile heads .... *triceps*

2. Fruit a dorsally compressed achene:

4. Spikelets in usually compound umbels.... *alopecuroides*

4. Spikelets in heads or clusters;
   not in umbels:

5. Spikelets in terminal, sessile
   heads .................................................... *michelianus* asp.
   *pygmaeus*

5. Spikelets in lateral,
   sessile heads ...................................... *laevigatus*

1. Stigmas usually 3:

6. Spikelets in simple umbels:

7. Spikelets in globose heads on
   the rays of an umbel ......................... *difformis*

7. Spikelets spicate on the umbel rays:

8. Small or medium annuals:

9. Spikelets golden-yellow;
glumes with squarrosely recurved arista .............. squarrosus

9. Spikelets green, compressed but with a median ridge on each side; glumes not as above ......................... compressus

8. Perennials:

10. Stolons slender; bulbs covered with black lanceolate scales at the base ......................... bulbosus

10. Stolons slender; bulbs not as above:

11. Glumes closely imbricate ................... rotundus

11. Glumes plicate-striata; spikelets shorter and broader than those of above ......................... esculentus

6. Spikelets in compound umbels:

12. Rachilla not or scarcely winged:
13. Rachis flexuous, hispid on angles; glumes dorsally 7-nerved; achenes 1.5 mm. long... rectangularis

13. Rachis glabrous; glumes dorsally 3-5-nerved; achenes 1-1.25 mm. long ................. arial

12. Rachilla distinctly winged:

14. Leaves short, rarely half as long as the stem .............. pangorei

14. Leaves long, more than half as long as the stem or longer.. exaltatus


A dwarf, annual plant with tufted stems. Leaves narrowly linear, one-nerved. Spikelets straw-coloured, in 2-7-rayed, terminal umbels; spikelets many-flowered (20-50) and
parallel-sided. Achenes biconvex, brown, laterally compressed.

Observed on wet sandy soils of pond at Savli.

Flowers and Fruits: July to January.

Padate 3776.
Sabnis 282 (Savli).

Throughout India.

Ceylon, Malaya, China, Tropical Africa and Australia.


A small, tufted plant, 5-20 cm tall. Leaves linear, as long as or longer than the stems. Spikelets in white, sessile, angular heads in groups of 3; spikelets 1-flowered. Fruit an oblong or ellipsoid-oblong, laterally compressed achene.

Very common throughout the area. Common in moist places and on open grasslands during monsoon.
Flowers and Fruits: July to October.

Padate 593, 1811, 3711.

More or less throughout India.

Pakistan, Ceylon, Burma, Africa, China, Australia.

Cyperus alopecuroides Rottb. Descr. et Icon. 38, 1773; C. 3: 373; Kuekenth. loc. cit. 101: 11; Maheshwari, 352; Sabnis, loc. cit. 201.

Juncellus alopecuroides C. B. Clarke, in FBI. 6: 595.

An erect, stout, perennial herb. Leaves linear, acuminate. Stems trigonous, about a meter tall. Spikelets golden-yellow or brown, in compound umbels; bracts large, leaf-like.

Commonly observed on muddy banks of ponds and canals.

Cyperus michelianus (Linn.) Link. ssp. pygmaeus (Rottb.)

Aschers. et Graebner, Synops. 2: 273, 1903;
A small, prostrate or sub-erect herb. Spikelets in compact, terminal heads; heads greenish becoming brown or yellow on drying; glumes of the spikelets distichously arranged. Achenes ellipsoid, plano-convex with style-base persisting.

Very commonly observed on sandy river beds and on dried, muddy pond beds, forming dense tufted patches.

Flowers and Fruits: July to October or even late upto March.

Padate 1539, 1898, 3394.

More or less throughout India.

Ceylon, Tropical and North Africa, China, Malaya and Australia.

Cyperus laevigatus Linn. Mant. 179, 1771; C. 3: 374; Kuekenth. loc. cit. 101: 321; Chavan & Padate, in

An erect, glabrous, plant with creeping rhizomatous stem. Aerial stems arising in clusters, green or straw-coloured, terete, polished. Spikelets, in lateral heads, pale straw-coloured; glumes broad, ovate, acute. Achenes ellipsoid, smooth, plano-convex.

Observed in marshy places around the ponds and puddles.

Flowers and Fruits: July to January.

**Padate** 970, 1940.

Gujarat, Maharashtra, W. Peninsula, Kashmir, Punjab.

Europe, Africa, W. Asia, Australia, S. America.


A small herb with weak stems. Leaves linear, smooth, shorter than the stem. Spikelets green, in compact, globose heads, in umbels. Achenes trigonous, obovoid, brown, smooth.

Very common on muddy or sandy banks during monsoon and
post-monsoon periods.

Flowers and Fruits: September to March.

Padate 1726, 3508.

Sabnis 276, 284.

Throughout India and the old world.


*Cyperus aristatus* Rottb. Descri. et Icon. 23, t. 6, f. 1, 1773; FBI. 6: 606; C. 3: 380; Sabnis, loc. cit. 200.

A small, glabrous, tufted sedge. Stems stout or slender and trigonous. Spikelets golden-yellow or green or brown, arranged on the rays of an umbel; glumes with squarrosely recurved arista. Achenes apiculate, trigonous and reddish-brown.

Fairly common in moist places, frequently seen as a weed in cultivated fields and on loose gravelly soils.

Flowers and Fruits: July to January.

Padate 391, 1667, 3464.

Sabnis 287, 448.
Throughout India.

Ceylon, Tropical Africa, Australia, the whole of America.

Maheshwari, 356; Chavan & Padate, in *Ind. For.* 86(4):

A small, glabrous, tufted annual. Stems trigonous.
Umbels simple. Spikelets much compressed and green, later
turning to dark brown. Achenes broadly obovoid, triquetrous
and black.

A very common weed; usually found in moist places, among
grasses, along the banks of streams, rivers and along road-
sides ditches; also noted in cultivated fields.

Flowers and Fruits: August to March.

*Padate* 383, 1699, 3458.

*Sabnis* 446.

Throughout India.

Almost all tropical and sub-tropical countries.

*Cyperus bulbosus* Vahl, *Enum.* 2: 342, 1806; *FBI.* 6: 611;
Trimen, 5: 22; C. 3: 384; Rajasthan, 132; Sabnis,
*loc. cit.* 200; Pavagadh, 229.
A small, slender perennial. Underground bulb clothed with black, lanceolate scales. Leaves long, spreading and recurved. Spikelets reddish-brown, sessile, arranged in spikes forming an umbel.

Observed on sandy soils and in moist situations; not common.

Flowers and Fruits: July to March.

Padate 587, 3795.

Gujarat, Rajasthan.

Pakistan, Ceylon, Tropical Africa and Australia.

*Cyperus rotundus* Linn. Sp. Pl. 1: 45, 1753; FBI. 6: 614;


An erect, glabrous, perennial herb with triquetrous stems. Stolons long, slender; tubers hard, black, ovoid and fragrant. Leaves narrow, linear, flat, shorter or longer than the stems. Spikelets reddish-brown, in simple umbels. Achenes grey-black, obovoid, trigonous.

A common weed of cultivated fields and waste places before and after the monsoon.

Local name: Moth, Nagar Moth.
Flowers and Fruits: Almost throughout the year.

Padate 123, 1712, 3274.

Throughout India.

Ceylon and all warm countries.


A tall, erect, perennial, amphibious herb. Looks very much like C. rotundus. Stolons long and slender. Glumes of the spikelet plicate-striate. Spikelets are usually shorter and broader than those of C. rotundus.

Common throughout the area. Usually noted along the banks of streams, rivers and ponds. Noted as weed in rice fields.

Flowers and Fruits: July to January.

Padate 1732, 3782.

Sabnis 440.

Upper Gangetic Plain, from the ganges plain to Nilgiris and Anamalais.

In nearly all warm countries especially America, S.
Europe and Africa.

Cyperus rectangularis (Kuekenthal) Bennet, in Ind. For. 95: 692, 1969.

Cyperus iria var. rectangularis Kuekenth. loc. cit. 101: 152.


A small, tufted annual. Spikelets small, few-flowered, in decompound umbels. The plant resembles Cyperus iria Linn. from which it differs in having hispid rachis and glumes dorsally 7-nerved.

Commonly observed on muddy banks.

Flowers and Fruits: July to October.

Padate 1728, 2875, 3783.

Gujarat, Maharashtra.

Malaysia.

Cyperus iria Linn.

Spikes drawn out into almost linear raceme ....... var. parviflorus

Spikes not as above ......................... var. iria

Cyperus iria Linn. var. parviflorus (Nees) Miq. in Fl.

Cyperus iria Linn. var. paniciformis C. B. Clarke, in FBI. 6: 607; C. 3: 381; Chavan & Sabnis, in JMSU. 8(2): 16, 1959.

The variety differs from the species in the character of the inflorescence, in which the ultimate spikes are drawn out into almost linear racemes.

Noted in moist places; rare.

Flowers and Fruits: August to October.

Sabnis 415 (Bhaderva).

Gujarat, Kashmir, W. Peninsula, Andamans, China, Japan, Malaya, Polynesia.

Cyperus iria Linn. var. iria Linn. Sp. Pl. 1: 45, 1753;

FBI. 6: 606; C. 3: 380; Sant. 299; Chavan & Padate, in Ind. For. 86(4): 216, 1960; Sabnis, loc. cit. 201.

An erect, glabrous herb with tufted, triquetrous stems. Umbels decompound; spikelets linear, oblong, compressed, greenish-brown to yellow and few-flowered; glumes loosely imbricate. Achenes obovoid, black, trigonous.
Abundant in moist places. Very common throughout the area.

Flowers and Fruits: July to February.

Padate 833, 1695, 3518.

Throughout India.

Ceylon, China, Japan, Malaya, Australia, Persia, Afghanistan, Tropical Africa.

Kern, loc. cit. has shown that Cyperus iria as understood by many Indian botanists can be separated into two species Cyperus iria Linn. and Cyperus alulatus Kern (Cyperus rectangularis (Kuekenth.) Bennet). He has also provided the key to distinguish the two. Both these species are found in Gujarat often intermixed which can be sorted out in the laboratory only.


Cyperus corymbosus Rottb. Descri. et Icon. 42, 1773; Clarke, in JLS. 21: 158 & FBI. 6: 612; Trimen, 5: 29; C. 3: 383; Sabnis, loc. cit. 201.

A robust perennial, stoloniferous sedge. Stems 1-2 meters high, more or less septate or articulate when dry. Spikelets reddish, in compound umbels; glumes close to the
rachilla. Achenes trigonous, obovoid.

Noted in marshy places; rare.

**Flowers and Fruits**: July to January.

*Sabnis* 281 (Savli).

Throughout India.

Ceylon, China, Japan, Tropical Asia, Africa, America and Madagascar.

*Cyperus exaltatus* Retz. Obs. 5: 11, 1789; Clarke, in JLS.


A large, glabrous, perennial sedge with trigonous stems.
Leaves few, linear acuminate, with scaberulous margins.
Spikelets in compound umbels; each spikelet 8-20-flowered, chestnut brown; glumes closely imbricate. Achenes ellipsoid, tapering to both ends, trigonous, brown or yellow.

Common in moist places in and around ponds and along the banks of streams and rivers.

**Flowers and Fruits**: August to March.

*Padate* 1340, 2047, 3457.

Throughout India.
Ceylon, Tropical Africa, Indo-China, Australia.

**Fimbristylis Vahl (nom. cons.)**

1. Style bifid, ovary and fruit compressed, biconvex:
   2. Small tufted annuals ......................bisumbellata

2. Tall plants:
   3. Achenes smooth, not ribbed, nor trabeculate ......................ferruginea

   3. Achenes pale, ribbed and trabeculate........dichotoma

1. Style trifid, ovary and fruit trigonous:
   4. Spikelet solitary ......................ovata

   4. Spikelets in a sessile head or cluster:
      5. Leaf margin scaberulous; spikelets ellipsoid; glumes mucronate ..............miliacea
      5. Leaf margin smooth; spikelets globose; glumes obtuse ...................littoralis

**Fimbristylis bisumbellata** (Forsk.) Bub. Dodec. 30, 1850;
   Kern, in Reinwardtia, 6(2): 47, 1961; Sant, 301;
   Santapau & Janardhanan, 51,

**Scirpus bisumbellatus** Forsk. Fl. Aeg.-Arab. 15, 1775.

**Fimbristylis dichotoma** (non Vahl) sensu Clarke, in

Noted on river beds and muddy banks of ponds; not common.

**Flowers and Fruits**: June to December.

**Padate**: 1736, 2888.

Throughout India.

Ceylon and all warmer regions.

*Fimbristyliis ferruginea* (Linn.) Vahl, Enum. 2: 291, 1806;

FBI. 6: 638; C. 3: 396; Sabnis, loc. cit. 200;

Rajasthan, 133; Maheshwari, 359.

*Scirpus ferrugineus* Linn. Sp. Pl. 50, 1753.

A densely tufted perennial. Spikelets pale-brown in simple umbels; glumes broadly ovate, hoary, pubescent in the upper half. Achenes pale-brown, biconvex, smooth.

Observed on sandy or muddy banks of rivers and ponds; not common.

**Flowers and Fruits**: July to October.

**Padate**: 1724, 3723.

Throughout India.
Ceylon, China, Japan, Malay, Australia, Polynesia.

**Fimbristyliis dichotoma** (Linn.) Vahl, Enum. 2: 287, 1806;
FBI. 6: 635; Kern, loc. cit. 147; Sabnis, loc. cit. 201.

**Scirpus dichotomus** Linn. Sp. Pl. 50, 1753.

**Fimbristyliis diphylla** sensu Clarke, in FBI. 6: 636;
C. 3: 396.

**Fimbristyliis dichotoma** (Linn.) Vahl var. **diphylla** (Retz.)


Not common; noted on river beds and banks of ponds.

Flowers and Fruits: July to December.

**Padate** 790, 1820, 3741.

Throughout India.

Ceylon and warm regions of the old world.

**Fimbristyliis ovata** (Burm. f.) Kern, Blumea, 15: 126, 1967;

**Carex ovata** Burm. f. Fl. Ind. 194, 1768.

Cyperus monostachyus Linn. Mant. 2: 180, 1771; Sabnis, loc. cit. 200.

A slender, densely tufted erect herb. Leaves crowded on the swollen base of the stem. Spikelets solitary, rarely 2; compressed, ovate, straw-coloured; slender rachilla with persistent wings. Achenes stalked, trigonous and tuberculate.

Fairly common in open grassy slopes of ponds and puddles during monsoon.

Flowers and Fruits: August to January.

Padate 806, 1839, 3136.

Throughout the warmer part of India.

In all hot countries.


Fimbristylis quinquangularis Kunth, Enum. 2: 229, 1837; FBI. 6: 644; C. 3: 397; Sabnis, loc. cit. 201.

An erect, glabrous, tufted herb. Umbels decompound, spikelets not globose but acute. Achenes tuberculate, white or pale-yellow. This plant is very closely similar to F. littoralis.
Generally noted in marshy habitats.

Flowers and Fruits: August to November.

Padate 411, 1727, 2878.

Throughout India.

Ceylon, Malay Peninsula, China, Australia.


Fimbristylis miliiacea sensu Clarke, in FBI. 6: 644, 1893, non Scirpus miliiacea Linn.

An erect, glabrous sedge. Spikelets brown, globose, in decompound umbels. Achenes white or yellow, tuberculate. This plant resembles Fimbristylis miliiacea (Linn.) Vahl in habit and other characters of inflorescence.

Very common around ponds and puddles.

Flowers and Fruits: July to March.

Padate 791, 2901.

Throughout India, upto about 2000 meters.

All warm regions.

Bulbostylis Kunth

Bulbostylis barbata (Rottb.) C. B. Clarke, in FBI. 6: 651;
**Scirpus barbatus** Rottb. *Descri. et Icon.* 52, t. 17, f. 4, 1773.

**Stenophyllus barbatus** (Rottb.) Cooke, 3: 401; Rajasthan, 133.

A small, tufted annual with filiform stems and wiry leaves. Spikelets small, brown, crowded, in terminal clusters or heads. Achenes trigonous, dull white; style leaving a tumour on the achene.

Common, found on loose, sandy soils.

Flowers and Fruits: July to January.

**Padate** 789, 3135.

Throughout India.

Ceylon and other warmer regions.

**Eleocharis** R. Br.

Plants robust, stems terete, septate when dry, bristles yellow .................. **dulcis**

Plants small, slender, bristles white ........... **atropurpurea**

**Eleocharis dulcis** (Burm. f.) Trin. ex Henschel, Vita Rumph.

Andropogon dulce Burm. f. Fl. Ind. 219, 1768.

Scirpus plantagineus Retz. Obs. 5: 14, 1789.

Eleocharis plantaginea (Retz.) R. et S. Syst. 2: 1150, 1817; FBI. 6: 625; C. 3: 402; Sabnis, loc. cit. 200.

A dark green, stoloniferous sedge. Stems terete, densely tufted, transversely septate. Spikelets solitary, terminal, straw-coloured, narrower than the stem; glumes closely imbricate; bristles retrorsely scabrid, yellow, longer than the achene.

Common, almost monopolizing the shallow banks of the ponds and rivers. The plants stand erect in water but as soon as the water level goes down, they start drooping, forming a complete cover on the ground during the dry months.

Flowers and Fruits: August to December.

Padate 972, 1723, 3901.

N. W. India, Assam, Gujarat, Maharashtra, Karnataka, Andhra, Madras, Kerala.

Pakistan, Ceylon, Malay Peninsula, Tropics of the old world.
Eleocharis atropurpurea (Retz.) Kunth, Enum. 2: 151, 1837

FBI. 6: 627; C. 3: 403; NG. 308; Rajasthan, 133;
Sabnis, loc. cit. 200.

Scirpus atropurpureus Retz. Obs. 5: 14, 1789.

A small, slender, tufted annual, 5-20 cm. tall. Leaves absent. Spikelets ovoid, obtuse or sub-acute, dark brown, solitary and terminal; glumes broadly ovate-oblong; bristles white. Achenes minute, black, biconvex.

Observed on sandy river beds and in rice fields.

Flowers and Fruits: July to December, in moist places even up to April.

Padate 805, 1955, 3260.

W. Himalaya, Assam, Rajasthan, Gujarat, Maharashtra, Karnataka.

Ceylon, Tropics generally.

Scirpus Linn.

1. Tall and tough plants; inflorescence terminal or lateral:

2. Inflorescence umbellate:

3. Inflorescence terminal; bristles retrorsely scabrid ................. maritimus
3. Inflorescence lateral; 
   bristles plumose ..................littoralis var. subulatus

2. Inflorescence a head:

4. Inflorescence a compact, terminal 
   head of sessile, whitish 
   spikelets .......................strobilinus

4. Inflorescence a lateral head of 
   sessile spikelets:

5. Heads above the middle of 
   the stem ......................lateriflorus

5. Heads near the base of 
   the stem ......................articulatus

1. Very slender, almost filiform 
   annuals; inflorescence a sublateral 
   head of few small spikelets with 
   squarrosely aristate glumes ..........squarrosus

Scurpus maritimus Linn. Sp. Pl. 51, 1753; FBI. 6: 658; 
   C. 3: 407; Rajasthan, 134; Chavan & Padate, in 
   Ind. For. 86(4): 216, 1960 & in JMSU. 11(3): 63-78, 
   1962; Sabnis, loc. cit. 200.

A tall, tough, amphibious plant, with creeping rhizome.
Leaves grass-like, keeled, as long as the stem. Spikelets pale brown or reddish brown, in umbellate inflorescence; rays of the umbel unequal with 3-8 spikelets on a ray; glumes strongly keeled; hypogynous bristles retrorsely scabrid. Achenes pale yellow, trigonous, smooth.

Very common along the canals and on the banks of ponds; also noted along river banks.

Flowers and Fruits: July to January.

Padate 412, 930.

Sabnis 286.

Gujarat, Maharashtra, Karnataka, Nellore, Kashgar, Moradabad, Rajasthan, Kashmir.

Old world species with varieties in Australia and America.


**Scirpus subulatus** Vahl, Enum. 2: 268, 1806.

**Scirpus littoralis** sensu Clarke, in FBI. 6: 659 (non Schrad.); C. 3: 408; Chavan & Padate, in JMSU. 11(3): 63-78, 1962; Sabnis, loc. cit. 201.

A sturdy, amphibious hydrophyte with creeping rhizome. Stems 1-2 meters tall, terete below, slightly trigonous.
above. Spikelets reddish brown in lax, drooping, sub-
corymbose or paniculate umbels, borne laterally near the 
apex; glumes membranous, notched at the apex with a mucro; 
hypogynous bristles plumose with moniliform hairs. Achenes 
apiculate, dark brown, smooth.

Commonly observed on river banks and margins of ponds.

Flowers and Fruits: Almost throughout the year.

Padate 122, 1819, 3473.

Gujarat, Maharashtra, Karnataka, Central India, Punjab, 
Madras, Travancore upto 600 meters.

Persia, Ceylon, Central Asia, Africa, Mediterranean 
region, Australia, Malaysia.

**Scirpus strobilinus** Roxb. Hort. Beng. 6, 1814 & Fl. Ind. 1: 
222, 1820; Koyama, in Acta Phytotax. Geobot. 17(2): 
50, 1957.

**Scirpus maritimus** Linn. var. *affinis* C. B. Clarke, in 

An erect, sedge with smooth, creeping rhizome. Stems 
sharply trigonous. Spikelets 3-1, straw-coloured, sessile, 
crowded in terminal heads; glumes sparingly hairy. Achenes 
lenticular, dark brown, ovate, apiculate.

Common on sandy or muddy river banks.
Flowers and Fruits: April to November.

Padate 807, 1165.

Throughout N. India, in the plains from Punjab and Bombay to Assam.

N. Asia, Turkestan, N. China.


Scirpus supinus Roxb. (non Linn.) Fl. Ind. 1: 219, 1820;
FBI. 6: 655; C. 3: 406; Padate, in JMSU. 17 & 18(3):
111, 1968 & 69.

Scirpus supinus var. uninodis C. B. Clarke, in FBI. 6:
656; C. 3: 406.

A densely tufted, glabrous annual. Stems slender, obtusely trigonous, striate. Spikelets pale green or straw-coloured, in lateral inflorescence. Inflorescence is either a compact head or is broken up into clustered spikelets on the rays of an umbel. Achenes obovoid or orbicular, trigonous, black.

Very common on marshy banks of ponds and ditches, also noted on dry, muddy beds of rivers.

Flowers and Fruits: August to April.

Padate 1713, 3396.

Sabnis 285.

More or less throughout India.
Old world in general and also in America.


An amphibious sedge with erect, hollow, cylindrical culms and fibrous roots. Spikelets pale-brown, in lateral head, often near the base; hypogynous bristles absent. Achenes obovoid, triquetrous, black, apiculate.

Common in marshes and by the margins of ponds.

Flowers and Fruits: September to April.

**Padate** 920, 1910, 3266.

Throughout India.

China, Africa, Indochina, Malaysia and northern Australia.


A slender, tufted, glabrous annual with filiform, terete, striate stems. Leaves shorter than the stem, filiform, acuminate. Spikelets green, solitary or 2-3 together forming sublateral heads; glumes with recurved muro; hypogynous bristles absent. Achenes obovoid, trigonous.
Wor common, noted in rice fields and also on loose soils of the fallow fields.

Flowers and Fruits: August to November.

Padate 787, 3827.

Sabnis 445.

More or less throughout India.

Ceylon, Java, China, Trop. Africa.

POACEAE (GRAMINEAE)

(Keys to the groups, genera and species have been adapted and prepared following Bor - The Grasses of Burma, Ceylon, India and Pakistan, 1960).

Key to the groups of Poaceae

1. Spikelets 2-flowered, falling entire at maturity, usually with the upper floret hermaphrodite and the lower male or barren and if the latter, often reduced to the lemma or rarely the lemma entirely absent, all alike or more often differing in size, shape and structure, frequently dorsally compressed ............ Panicoidae
1. Spikelets 1-many-flowered, breaking up at maturity above the more or less persistent glumes, or if falling entire, then not 2-flowered with the lower florets male or barren and the upper hermaphrodite, usually more or less laterally compressed or terete or if 2-flowered and falling entire, the glumes and lemmas all membranous and with a globose wrinkled seed which splits the palea when mature ................................Pooideae

Key to the genera of Panicoideae

1. Male and female spikelets in separate inflorescences or in different parts of the same inflorescence :

2. Female spikelets enclosed in a osseous or ivory bead-like structure ........Coix

2. Female spikelets not enclosed as above but are crowded in vertical rows on a very thick axis .................................Zea

1. Spikelets all hermaphrodite, or with male or barren and hermaphrodite spikelets mixed in the same inflorescence :
3. Spikelets often paired, with one sessile and the other stalked, those of each pair similar or more often dissimilar, rarely solitary and all alike; upper lemma usually awned.

4. Spikelet of each pair similar, the sessile and the pedicelled hermaphrodite; joints of the panicle thin, linear or somewhat expanded at the top ................Saccharum

4. Spikelets in each pair dissimilar, the sessile hermaphrodite, the pedicelled male or sterile, or completely absent or if more or less similar then the joints of the raceme and the pedicel thick and swollen;

5. Joints of the rachis and pedicel of the stalked spikelet swollen, 3-angled, rounded or flattened;

6. Sessile spikelets with a male and a hermaphrodite floret; upper lemma awned;
7. Racemes many-noded, not contained in a spathe-like sheath .............. Ischaemum

7. Racemes 1-noded, enclosed in a boat-shaped spathe ............... Apluda

6. Sessile spikelet with a hermaphrodite floret only or occasionally with a male floret below; upper lemma unawned:

8. Sessile spikelet spherical; lower glume pitted all over; pedicelled spikelet reduced ............... Hackelochloa

8. Sessile spikelets not spherical in shape:

9. Spikelets paired, one sessile the other pedicelled ............. Rottboellia

9. Spikelets solitary, sessile, the pedicelled suppressed or rudimentary; pedicels fused to internode ......................... Ophiuros

5. Joints of the rachis and the pedicel narrow, seldom thickened upwards, occasionally with a translucent longi-
10. Spikelets in racemes which are not interrupted by spathes or solitary at the ends of branches:

11. Spikelets dorsally compressed, in panicles of many pairs or in threes of which one is hermaphrodite .......... *Sorghum*

11. Spikelets compressed from the sides:

12. Spikelets in groups, each consisting of a sessile and two more or less reduced stalked spikelets or a raceme of several pairs; lower glume smooth ............... *Chrysopogon*

12. Spikelets with many pairs of spikelets arranged in whorled racemes; lower glume tuberculate ..................*Vetiveria*

10. Panicles of racemes which are interrupted by spathes, or the espatheate racemes digitate or in pairs or solitary and terminal:

13. Margins of the lower glume of the sessile spikelets sharply unfolded,
2-keeled, awn glabrous:

14. Upper lemma of the sessile spikelet not cleft, often stipitate and passing into the awn:

15. Pedicels with a median translucent furrow ............... Capillipedium

15. Pedicels without a median translucent furrow ............... Dichanthium

14. Upper lemma of the sessile spikelet 2-lobed or 2-cleft, awned in the sinus:

16. Aromatic grasses; racemes in pairs supported by spathes .. Cymbopogon

16. Grasses not aromatic; racemes in pairs not supported by spathes ................. Andropogon

13. Margins of the lower glumes inturned rounded at the sides, at the most, keeled upwards; awns usually hairy:

17. Racemes surrounded at the base by an involucre of homogamous spikelets ..................... Themeda
17. Racemes not surrounded by
an involucre ..........Heteropogon

3. Spikelets solitary or paired, more or
less similar; upper lemma usually awnless:

18. Spikelets falling singly, not subtended
by bristles, or if so then the bristles
persisting after the spikelets have
fallen:

19. Spikelets arranged in more or less
open panicles, or with the panicles
contracted and spike-like:

20. Spikelets not subtended by
bristle-like branches ..........Panicum

20. Spikelets subtended or replaced
by one to many bristle-like
branchlets which are persistent..Setaria

19. Spikelets arranged in one-sided
spikes or spike-like racemes;
spikes or racemes digitate or
scattered, rarely solitary:

21. Lemma of the upper floret
crustaceous or coriaceous,
usually with narrow in rolled
margins, exposing much of the palea:

22. Spikelets abaxial:

23. Lower glume developed, although sometimes small:

24. Glumes acuminate or awned, rarely only acute; upper lemma not mucronate:

25. Leaf-blades linear; racemes dense ............Echinochloa

25. Leaf-blades lanceolate to ovate; racemes loose to moderately dense ....Oplismenus

24. Glumes awnless, if acuminate then with upper lemma mucronate .................Paspalidium

23. Lower glume usually absent, spikelets plano-convex ........Paspalum

22. Spikelets adaxial ..................Brachiaria

21. Lemma of the upper floret thinly cartilaginous, usually with flat, hyaline margins .................Digitaria
18. Spikelets with an involucre of bristles or subtended by a solitary bristle and falling with or without bristle at maturity:

26. Upper lemma smooth; bristles caducous:

27. Involucre of free, naked or plumose bristles .................. Pennisetum

27. Involucre of spines or rigid bristles united at the base into a hard cup .................. Cenchrus

26. Upper lemma transversely rugose; bristles persistent .................. Setaria

Coix Linn.


A tall, annual or perennial grass. Inflorescence a drooping raceme with unisexual florets. Male florets are terminal, drooping and each subtended by a bract. Female florets at the base, enveloped by hard, polished bluish-grey bracts.

Common along the banks of ponds, puddles, lakes, roadside
ditches throughout the area, but abundant in the southern regions at Savli, Javla, Muval, Karachia etc. Generally found in association with *Typha angustata*.

**Flowers and Fruits**: September to January even up to April.

*Padate* 130, 841, 1826.

A native of Tropical Africa, now widely distributed in the tropics. Cultivated in Africa and America.

*Zea Linn.*


A stout, tall annual. Male spikelets are produced terminally and female ones axillary lower down on the stem.

Cultivated in the area.

Local name: Makai.

**Flowers and Fruits**: July to October.

*Padate* 1740, 3628.

Almost throughout India.

A native of America, cultivated in all warmer countries.
Saccharum Linn.

Stems glabrous below the panicle ............... officinarum
Stems silky below the panicle ................. spontaneum

Saccharum officinarum Linn. Sp. Pl. 54, 1753; FBI. 7: 118;
C. 3: 566; Bor, 212, Maheshwari, 371; Patel, loc. cit. 318.

An erect, tall, many-noded grass, commonly cultivated for juicy culms. Inflorescence pyramidal panicles with spreading branches.

Cultivated on small scale.

Padate 1216, 3790.

Cultivated in many parts of India.
Cultivated in many parts of the tropics.

Saccharum spontaneum Linn. Mant. Ait. 183, 1771; FBI. 7: 118;
C. 3: 465; D. & G. 304; Blatt. & McC. 45; Bor, 214;

An erect, perennial grass, about 4-5 meters tall. Leaves linear, acuminate, coriaceous and about 50 mm. to 85 mm. long. Panicles silvery white with slender rachis, giving elegant
appearance to the plant.

Very common along irrigation canals, around ponds and other wet places throughout the area; more abundant in the southern parts.

Flowers and Fruits: August to January.

Padate 897, 1951.

Throughout India.

Ceylon, S. Europe and warmer regions of the old world.

**Ischaemum Linn.**

*Ischaemum indicum* (Houtt.) Merrill, in J. Arn. Arbor. 19, 320, 1938; Raizada, 480; Bor, 180; Patel, loc. cit. 316;


*Ischaemum aristatum* Linn. Sp. Pl. 1049, 1753; FBI. 7: 126;
C. 3: 476; Blatt. & McC. 11, t. 6.

*Ischaemum ciliare* Retz. Obs. 6: 36, 1791.

A perennial grass covered with thin, white, spreading hairs. Racemes 1 or 2, 2.5 to 10 cm. long; spikelets closely pressed together; awns conspicuous.
A common grass in open waste places and as a weed in cultivated fields.

Flowers and Fruits: August to April.

Padate 124, 1739.

Gujarat, Maharashtra, Karnataka, Madras, Peninsular India.

Ceylon, China, Malaya, S. E. Asia.

Apluda Linn.

Apluda mutica Linn. So. Pl. 82, 1753; Bor, 93; Patel, loc. cit. 311; Padate, in JMSU. 17 & 18(3): 112, 1968 & 69.

Apluda aristata Linn. Amoen. Acad. 4, 303, 1756; Bor, Fl. As. 5: 431; D. & G. 303; Sant. 303; Maheshwari, 369.

Apluda varia Hack. in DC. Monogr. Phan. 6: 196, 1889; FBI. 7: 150; C. 3: 474; Blatt. & McC. 29, t. 20.

An erect, slender, leafy, annual herb with branches spreading among the hedges and bushes. Inflorescence a panicle, each one enclosed in a spathe. Spikelets sessile and pedicellate.

Often seen growing on dry rocky places along Kund river at Timba and also common in hedges and bushes and in open waste places; also noted on old walls.

PLATE No. 62.
Flowers and Fruits: September to December.

Padate 803, 2612.

Throughout India.

Ceylon, S. E. Tropical Asia and as far as Australia.

**Hackelochloa O. Kuntze**

**Hackelochloa granularis** (Linn.) O. Kuntze, Rev. Gen. Pl. 776, 1891; Bor, 159; Patel, loc. cit. 315.

**Cenchrus granularis** Linn. Mant. 2: 575, 1771.


An erect, leafy annual. Inflorescence consisting of a solitary, axillary raceme resembling a string of minute beads. Spikelets sessile and pedicellate.

Not common; on rocky or stony grounds, preferably under shade.

Flowers and Fruits: September to January.

Padate 3356.

Throughout the tropics.

**Rottboellia Linn.**

An erect, leafy grass, culms solid 1-2 meters tall, branching from the base. Leaves linear-lanceolate, setaceous-acuminate, scabrid or hispid and green above, smooth, glaucous beneath.

Noted on the banks of rivers, in ravines and sometimes in cultivated fields; not common.

Flowers and Fruits: September to December.

Padate 2702.

Gujarat, Maharashtra, Karnataka, Plains and lower hills of India.

Ceylon, China, Malaya, Australia, Africa.

Ophiuros Gaertn. f.

Ophiuros exaltatus (Linn.) O. Kuntze, Rev. Gen. Pl. 2: 780, 1891; Bor, 199; Patel, loc. cit. 318.

Ophiuros corymbosus Hook. f. FBI. 7: 160, pro parte; C. 3: 468.

Perennial grass. Leaves linear, lanceolate, hairy above, glabrous beneath, margins spinulose. Spikes slender, long,
often in dense, corymbose fascicles.

Along the roadsides and banks of temporary pools; rare.

Flowers and Fruits: September to December.

Padate 1905, 3851.

Gujarat, Maharashtra, Karnataka, Andhra, Madras, Khasia Hills, N. Bengal, W. Peninsula.

Tonkin, Australia.

Sorghum Moench (nom. cons.)


Holcus halepensis Linn. Sp. Pl. (ed. 1) 1047, 1753.


A perennial plant, about 3 meters tall. Leaves linear-lanceolate, margins scabridly serrulate. Inflorescence a decom­

pound panicle, brown and purplish in colour; spikelets ovoid-
lanceolate, dorsally compressed.

Not common; noted in waste places and in hedges.

Flowers and Fruits: September to January.
Throughout India.

Pakistan, Ceylon, in most warm countries.

Chrysopogon Trin.

Chrysopogon fulvus (Spreng.) Chiov. Fl. Somalia 1: 327, 1929;
Bor, 116; Maheshwari, 401.

Pollinia fulva Spreng. Pugill. 2: 10, 1815.

Andropogon monticola Roem. & Schult. Syst. Veg. 2: 665,
1827; FBI. 7: 192; Trimen 5: 236; C. 3: 505.

A tall, densely tufted perennial. Leaves linear acute,
flat, rigid, glaucous, smooth or scaberulous. Panicles open;
rachis slender, branches capillary, whorled.

Noted on dry or water-logged soils along Javla - Muval
Road and at Pilol; rare.

Flowers and Fruits: August to October.

Padate 1741, 3624.

Tropics of Asia and East Africa.

Vetiveria Lem.-Lisanc.

Vetiveria zizanioides (Linn.) Nash, in Small Fl. South-east

Andropogon squarrosus Hk. f. in FBI. 7: 186, 1896 (non Linn. f.).

A tall, perennial grass. Inflorescence a panicle of racemes appressed to the main axis; spikelets sessile, linear-lanceolate.

Noted on the margins of ponds or temporary pools; not cultivated.

Local name: Khus.

Local uses: The sweet scented roots are used for making curtains.

Flowers and Fruits: August to January.

Padate 1744, 3333.

Throughout India.

Burma, Ceylon, S. E. Asia to Tropical Africa.

Capillipedium Stapf

Capillipedium filiculme (Hook. f.) Stapf, in Hook. Ic. Pl.
Andropogon filiculmis Hook. f. FBI. 7: 181; C. 3: 982.

A weak, trailing grass, climbs over other vegetation and sends down long roots from the nodes. Leaves linear-lanceolate, finely acuminate with a filiform tip.

Noted only on Sharda dungri as an undergrowth and at Savli; rare.

Flowers and Fruits: August to January.

Padate 1968.

Gujarat, Maharashtra, Karnataka, Madras, Kashmir; apparently endemic in W. Peninsula.

Dichanthium Willemet

Pedicels $\frac{1}{2}$ as long as the sessile spikelets; nodes of stem glabrous; ligule a shortly ciliate, small membrane ......................caricosum

Pedicels $\frac{1}{2}$ as long as the sessile spikelets; nodes of stem bearded; ligule large, oblong, obtuse, membranous .........................annulatum


A small, tufted, delicate grass. Leaves linear, finely acuminate, flat, glabrous, sometimes ciliate at the base, margins scaberulous. Raceme solitary, 2-nate or subdigitately paniculate.

Noted in moist places and also in hedges.

Flowers and Fruits: August to November.

Padate 956, 3849.

Gujarat, Maharashtra, Karnataka, Andhra, Madras, Bengal, Madhya Pradesh, W. Peninsula.

Pakistan, Burma, Ceylon, Mauritius, China.


One of the commonest grasses of this area, growing to a height of 80 to 100 cm. An excellent fodder grass in green as well as dry state.

Noted in cultivated fields and in open waste places.

Local name: Dabho.

Flowers and Fruits: August to April.

Local name: Dabho.

Cymbopogon Spreng.

Sessile spikelets without an awn or the awn reduced to a bristle not visible outside the spikelets ......................... citratus

Sessile spikelets awned:

Panicles narrow, of short dense fascicles of raceme-pairs; joints and pedicels villous all over; hairs long, more or less concealing the sessile spikelets ........... jwarancusa

Panicles often very large, decompound or
compound, sometimes narrow but then with hairs not covering the joints and pedicels, but confined to the edges of the joints and pedicels and increasing in length from below upwards and not concealing the sessile spikelets.

*Cymbopogon citratus* (DC.) Stapf, in Kew Bull. 357, 1906; Blatt. & McC. 103; Bor, 126; Patel, loc. cit. 313.

*Andropogon citratus* DC. Cat. Hort. Monsp. 78, 1813.

A tall, perennial, aromatic, leafy grass. Racemes in pairs supported by spathes, often collected into huge panicles; sessile spikelets without an awn, linear or linear-lanceolate in outline. Lower glume usually shallowly concave in the lower half; intracarnial nerve absent.

Noted only in cultivation.

Local name: Lili chaha.

Local uses: Leaves are used to flavour tea and curries. Famous lemon-oil is obtained by distillation of leaves.

Flowers: September to October (not seen).

Padate 1907, 3806.

Cultivated throughout India on small scale.

Cultivated on vast scale in parts of South America, in
Africa, Burma and in Indo-China.

*Cymbopogon jwarancusa* (Jones) Schult. *Syst. Veg.* 2, Mant. 458, 1824; Blatt. & McC. 102; Bor, 128; Patel, loc. cit. 313.


A pale, often glaucous green, tall perennial. Panicle very variable; branches distant or crowded, simple or branched; proper spathes longer than the peduncles of the racemes.

Common along the railway line between Samalaya - Karachi and Wasanpura - Timba section in association with *Cymbopogon martinii*.

Flowers and Fruits: August to January.

Padate 814, 1938.

Gujarat, common all over India, except in Madhya Pradesh, Madras.

Pakistan.

*Cymbopogon martinii* (Roxb.) Wats, in Atkins. *Gaz. N. W. Prov.*
Andropogon martinii Roxb. Fl. Ind. 1: 280, 1820.

Andropogon schoenanthus var. martinii Hk. f. FBI. 7: 204.

A tall, erect, perennial, aromatic grass, frequently occupying large areas. Spikelets first greenish and when old turn reddish-brown.

Very common along railway line from Samalaya to Savli and Wasanpura to Timba, occupying large open areas often to the exclusion of everything else. A poor fodder grass. Cymbopogon jwarancusa is usually found in its association.

Local name: Rosha.

PLATE No.

Flowers and Fruits: August to December.

Padate 815, 3730.

Gujarat, Maharashtra, Karnataka, Madras, Uttar Pradesh and various other parts of India.

Very common in South-East Asia.

Andropogon Linn.

Andropogon pumilus Roxb. Fl. Ind. 1: 277, 1820; FBI. 7: 170;
A small, sub-gregarious annual grass. Leaves linear, finely acuminate, glabrous; sheaths compressed, keeled, quite glabrous; ligule short, truncate, membranous. Racemes in nearly equal pairs on a very slender peduncle which arises from a narrow flattened glabrous spathe.

Rare; noted on the slopes of ravines.

Flowers and Fruits: August to February.

Padate 1867, 2382.

Gujarat, Maharashtra, Karnataka, Madhya Pradesh, Rajasthan, Western Peninsula, Nepal.

Themeda Foessk.

Annuals .................................................. quadrivalvis

var. quadrivalvis

Perennials .................................................. triandra

 Themeda quadrivalvis (Linn.) O. Kuntz. Rev. Gen. Pl. 2: 794, 1891 var. quadrivalvis; Blatt. & McG. 118; Bor, 252; Patel, loc. cit. 320.
Andropogon quadrivalvis Linn. in Murr. Syst. Veg. ed. 13, 758, 1774.

Anthistiria ciliata Linn. f. Suppl. 113, 1781; FBI. 7: 213.

Themeda ciliata (Linn. f.) Hack. in DC. Monogr. Phan. 6: 664, 1889; C. 3: 514.

A stout annual. Stems suberect, terete, glabrous. Panicles suberect, bearing at equal distances, shortly pedunculate clusters of racemes; spikelets brown-red.

Common along railway line in association with Cymbopogon martinii and C. jwarancusa; also noted elsewhere.

Flowers and Fruits: August to January.

Padate 825, 3472.

Throughout India.

South Africa.

Themeda triandra Forssk. Fl. Aegypt.-Arab. 123 et 178, 1775; Blatt. & McC. 115; Bor, 254; Patel, loc. cit. 320;


Themeda imberbis (Retz.) Cooke, Fl. Bomb. 3, 513.

A tall perennial. Panicles branched, branches bearing capituliform, dense, distant fascicles of racemes; spathe
lanceolate, bearded at the base, greenish or with red tinge.

Commonly found in disturbed grass lands.

Flowers and Fruits: September to April.

Padate 126, 2059, 3550.

All warm and tropical regions of the Old World.

Heteropogon Pers.

Heteropogon contortus (Linn.) Beauv. ex Roem. et Schult. Syst.
2: 836, 1817; Blatt. & McC. 109, t. 71; Bor, 163, f. 6;
Sant. 355; Raizada, 488; Patel, loc. cit. 315; Padate,

Andropogon contortus Linn. Sp. Pl. 1045, 1753; FBI. 7:
199; C. 3: 510.

A densely tufted, erect, perennial grass. Raceme with
short internodes. Spikelets closely appressed, the lower 2-6
or more sessile, awnless, male or neuter, the upper sessile
spikelets narrow, long-awned, female.

Forms tussocks on slightly sandy soil. Not very common.
Considerably drought resistant.

Flowers and Fruits: August to January.

Padate 1847, 3256.
Gujarat, Maharashtra, Karnataka, Madras, Madhya Pradesh, Himalaya.

Burma, and in the tropics.

**Panicum Linn.**

Perennial; spikelets laxly clustered on the branches ................................**antidotale**

Annual; spikelets solitary or in pairs ...........**sumatrense**

**Panicum antidotale** Retz. Obs. Bot. 4, 17, 1786; FBI. 7: 52;
C. 3: 453; Blatt, & McC. 163; Bor, 322; Petel, *loc. cit.*
324; Padate, in JMSU. 17 & 18(3): 111, 1968 & 69.

A tall, glabrous, perennial grass, with creeping, stoloniferous root stock. Leaves long, linear. Panicles compound, pyramidal; branches filiform; spikelets laxly crowded on the branches.

Rare; noted as a weed in cultivated fields.

**Flowers and Fruits**: January to April.

**Padate** 3270, 3619.

Gujarat, Maharashtra, Karnataka, Madras, Punjab, Upper Gangetic Plain, W. Peninsula.
Ceylon, Pakistan, Afghanistan, Trop. Africa and Australia.

Panicum sumatrense Roth ex Roem. et Schult. Syst. Veg. 2: 434, 1817; Bor, 701.


An annual grass. Leaves linear, flat. Panicles compound, contracted or thyrsiform, erect; spikelets solitary or in pairs, ellipsoid or ovate-acute.

Usually cultivated but also observed in wild state.

Flowers and Fruits: January to May.

Padate 2796, 3557.

Cultivated in some parts of India, S. E. Asia, Malaysia.

Setaria Beauv. (nom. cons.)

Bristles retrorsely barbed .......................verticillata

Bristles antrorsely barbed:

Spikelets 3 mm. long; upper lemma coarsely rugose, boat-shaped and slightly keeled
Setaria verticillata (Linn.) Beauv. Agrost. 51, 1812; FBI. 7: 80; C. 3: 436; Blatt. & McC. 174; Bor, 365; Patel, loc. cit. 327.

A much tufted, annual grass. Culms erect, ascending, branching from the base, with conspicuous channel on one side. Leaves linear-lanceolate, tapering to a point. Panicles spike-like, cylindric or oblong; spikelets ellipsoid; bristles of the involucre retrorsely barbed.

Not common; noted in hedges and along foot-tracts.

Flowers and Fruits: September to April.

Padate 128, 3137.

Gujarat, Maharashtra, Rajasthan, Madras, throughout India. Widely distributed in the tropics and temperate regions of the Old World, introduced into America.

Setaria glauca (Linn.) Beauv. Agrost. 51, 1812; FBI. 7: 78; C. 3: 435; Blatt. & McC. 172; Bor, 360; Patel, loc. cit. 327; Padate, in JMSU. 17 & 18(3): 112, 1968 & 69.

Panicum glaucum Linn. Sp. Pl. 56, 1753.
A tall, tufted grass with erect or ascending, glabrous culms. Leaves linear, scabrid at the margins. Inflorescence a panicle of cylindric, spike-like racemes; spikelets closely set on rachis.

Fairly common on open waste places during monsoon.

Flowers and Fruits: August to December.

Padate 1750, 3726.

Gujarat, Maharashtra, Karnataka, more or less throughout India.

Native of warm temperate zone of the Old World, introduced into America, Australia and other countries.

Setaria pallide-fusca (Schumach.) Stapf & C. E. Hubb. in Kew Bull. 259, 1930; Bor, 363; Patel, loc. cit. 327.


A tall, tufted annual. Spike erect, dense; branches reduced to involucral bristles, supporting a solitary, perfect spikelet.

Noted around ponds and ditches etc. Often confused with S. glauca.

Flowers and Fruits: August to October.

Padate 1751, 3735.
Gujarat, Maharashtra, Madras, North-west India.

Tropics of the Old World.

_Echinochloa_ P. Beauv.

Ligule a fringe of stiff hairs, at least in the lower leaves ...................... *pyramidalis*

Ligule entirely absent ....................... *colonum*

_Echinochloa pyramidalis* (Lamk.) Hitchc. et Chase, in Contrib. U. S. Nat. Herb. 16, 345, 1917; Bor, 311.


A tufted annual or perennial grass. Leaf linear, acuminate; ligule a fringe of stiff hairs, at least in the lower leaves. Spikelets acute or shortly cuspidate, 3-4 mm. long, unawned.

Not common; noted among grasses along the railway line between Muval to Vejpur section. Wild. It is probably a new record for Gujarat.

Flowers and Fruits: September to April.

_Padate_ 1915, 3597.

Introduced in many parts of India.

Tropical Africa and America.
Echinochloa colonum (Linn.) Link. Hort. Berol. 2: 209, 1833;
Blatt. & McC. 148, t. 94; Bor, 308; Maheshwari, 393;

Panicum colonum Linn. Syst. (ed. 10) 870, 1759; FBI. 7: 32; C. 3: 447.


Very common in all moist places, along the banks of ponds, roadside ditches and in fields.

Local name: Samo.

Flowers and Fruits: Generally throughout the year but commonly from September to February.

Padate 118, 3627.

Gujarat, Maharashtra, Karnataka, Madras, Assam.

Trop. Asia and Africa, Pakistan (Sind).

Oplismenus Beauv.

Oplismenus burmannii (Retz.) Beauv. Agrost. 54, 1812; FBI. 7: 68; C. 3: 443; Blatt. & McC. 154; Bor, 317; Patel, loc. cit. 324; Padate, in JMSU. 17 & 18(3): 111, 1968 & 69.

A prostrate or procumbent, slender, annual grass. Leaves ovate or ovate-lanceolate, acuminate with scattered hairs on both surfaces. Spikes second, close in short panicles; spikelets 1-2 nate, shortly pedicellate; involucre and lower floral glumes awned.

Very common and abundant, forming a close group in shaded localities along roadsides.

Flowers and Fruits: August to January.

*Padate* 468, 3742.

More or less throughout India.

Ceylon, Malay Islands, China, Japan, Tropical Africa.

*Paspalidium* Stapf

*Paspalidium flavidum* (Retz.) A. Camus, in Lecomte, Fl. Gen. de l'Indo-chine 7: 419, 1922; Blatt. & McC. 141;

*Bor.* 333; *Padate,* in JMSU. 17 & 18(3): 111, 1968 & 69.

*Panicum flavidum* Retz. Obs. Bot. 4: 15, 1786; FBI. 7: 28;


A tall, tufted annual grass. Culms geniculately ascending or erect, branched. Leaves narrowly linear, acuminate, thinly coriaceous; sheath compressed. Panicle of a few distant spikes,
spikes shorter than internodes; spikelets ovate or elliptic.

Common on moist, muddy banks of canals, ponds puddles and on the river bank.

Flowers and Fruits: August to April.

Padate 191, 1845, 3925.

Throughout plains of India
Ceylon, Trop. Asia and Africa.

Paspalum Linn.

Paspalum scrobiculatum Linn. Mant. Pl. 1: 29, 1767; FBI. 7: 10; C. 3: 460; Blatt. & McC. 136; Bor, 340; Patel, loc. cit. 326; Padate, in JMSU. 17 & 18(3): 112, 1968 & 69.

An erect, glabrous, tufted annual. Leaves glabrous or softly hairy, lanceolate, acuminate. Spikelets in spike, sessile, broadly elliptic or sub-orbicular.

Occasionally cultivated on poorer soils for the grain; usually grown as fodder grass.

Local name: Kodra.

Flowers and Fruits: September to March.

Padate 596, 3463.
Cultivated in the plains of India.

Tropics of the Old World.

Brachiaria Griseb.

Brachiaria ramosa (Linn.) Stapf in Prain, Fl. Trop. Africa 9: 542, 1919; Blatt & McC. 134, t. 86; Bor, 284;
Maheshwari, 397; Patel, loc. cit. 322.

Panicum ramosum Linn. Mant. PI. 29, 1767; FBI. 7: 36,
pro parte; C. 3: 449.

An annual herb, branching from the base. Leaves linear-
lanceolate with scaberulous margins and acuminate apex,
spikelets alternate or in pairs, ovoid, glabrous or pubescent,
loosely arranged on spikes.

Noted in moist places and on open grass lands.

Flowers and Fruits: July to October.

Padate 802, 3731.

Gujarat, Maharashtra, Karnataka, Madras, throughout India.
Ceylon, Afghanistan, Tropics of the Old World.

Digitaria Heist. ex Fabr.

Digitaria adscendens (H.B.K.) Henrard, in Blumea 1: 92, 1934;
Bor, 298; Chavan & Padate, in Ind. For. 86(4): 216,

A tall, erect, annual grass. Spikes 2 or more; spikelets oblong, acute, appressed to the rachis; glumes bearded with spreading hairs which turn brown when mature.

Common grass, found in most of the habitats.

Flowers and Fruits: August to January.

Panicum typhoides (Burra.) Stapf & Hubbard, in Kew Bull. 271, 1933; Bor, 350; Patel, loc. cit. 327; Padate, in JMSU. 17 & 18(3): 112, 1968 & 69.

Alopoeurus typhoides Burm. Fl. Ind. 27, 1768.


Commonly cultivated on large scale throughout the area.

Local name: Bajari.
Local uses: Grain is used as cereals.

Flowers and Fruits: July to October, also from February to May.

Padate 598, 3750.

Cultivated in many parts of India and in Trop. Africa.

Cenchrus Linn.

Bristles of involucel retrorsely scabrid, short and hooked ......................... biflorus

Bristles of involucel antrorsely scabrid:

Bristles connate at the base only,
filiform ........................................... ciliaris

Bristles connate into a cup, 1-3 mm. long,
not filiform ........................................... pennisetiformis

Cenchrus biflorus Roxb. Fl. Ind. 1: 238, 1820; FBI. 7: 89;
C. 3: 433; Achariyar, S. Ind. Gr. 121; Blatt. & McC.
185, t. 118; Bor, 287; Maheshwari, 377; Patel, loc. cit. 322.

Cenchrus catharticus Delile, Cat. Hort. Monsp. 1838, 4, 1839 & in Linnaea 13: Litt. 103, 1839; FBI. 7: 90;
C. 3: 433.

An erect or ascending grass. Stems tufted, geniculate,
branching from the base. Spike cylindric, solitary; bristles retrorsely scabrid or spiny.

Common in the ravines and in open waste places.

Flowers and Fruits: September to April.

Padate 816, 2687.

Gujarat, W. Peninsula, Upper Gangetic Plains.
Arabia, Tropical Africa.

Glum. 1: 109, 1854; Bor, 289; Padate, in JMSJ. 17 & 18(3): 111, 1968 & 69.

Pennisetum cenchroides var. echinoides Hook. f. in FBI. 7: 88.

A tufted, perennial grass. Leaves linear, tapering to a point. Spike cylindric, dense; rachis scaberulous. Bristles connate at the base into a cup, tapering to a setiform tip.

Common on sandy river beds, in fallow fields and open waste places.

Flowers and Fruits: July to January.

Padate 817, 3725.

Gujarat, hotter and drier parts of India.
Ceylon, Burma, N.E. Africa, Mediterranean region.
**Cenchrus ciliaris** Linn. Mant. Alt. 302, 1771; Raizada, in Ind. For. 20: 40, 1954; Bor, 287, f. 33; Maheshwari, 377; Patel, loc. cit. 322; Padate, in JMSU. 17 & 18 (3): 111, 1968 & 69.


An annual, tufted grass. Spikes cylindric, pale purplish; spikelets shortly pedicellate.

Common throughout the area in cultivated fields, pasture lands and open waste places.

Flowers and Fruits : August to April.

**Padate** 119, 2966, 3757.

Hotter and drier parts of India.

Mediterranean region, Trop. and S. Africa; introduced into Australia and America.

**Key to the genera of Pooeideae**

1. Shrubs or trees with tall, woody stems; leaves usually with a petiole-like base, articulated with the sheaths .......**Pendrocalanus**

1. Herbs or shrubs; leaves usually sessile, not articulated with the sheaths :
2. Spikelets borne in open or contracted or spike-like panicles, less often in racemes or spikes:

3. Spikelets usually with two or more fertile florets, or if with one fertile floret then with sterile reduced florets above it:

4. Inflorescence of panicles; if racemes or spikes the spikelets not secund:

5. Glumes aristate or aristate-acuminate; spikelets sessile on the flattened branches of a narrow panicle ............... Dinebra

5. Glumes obtuse, acute or acuminate, not aristate:

6. Spikelets in open, contracted or spike-like panicles, rarely in solitary secund spikes:

7. Spikelets awnless ........... Eragrostis

7. Spikelets awned, in
dense globose clusters .......... *Elytrophorus*

6. Spikelets sessile or shortly pedicelled, loosely to densely imbricate in digitate or racemously arranged spikes or spike-like racemes, very rarely in solitary spikes:

8. Axis and branches of the inflorescence ending in a spikelet:

9. Spikelets falling entire at maturity from the axis of straight spikes; spikes numerous .......... *Desmostachya*

9. Spikelets breaking up at maturity; spikes few to several ................. *Eleusine*

8. Axis of spikes terminating in a sharp point ............... *Dactyloctenium*

4. Inflorescence of racemes or panicles of racemes, the spikelets secund:

10. Inflorescence terminal, spicate
of spaced clusters of awned spikelets
on a simple rachis ................... Melanocenchris

10. Inflorescence of digitate spikes or
spikes racemose:

11. Spikelets with one or more fertile
florets and one or more imperfect
florets above them:

12. Spikes 1-3; fertile florets
2 or more .................. Tetrakogon

12. Spikes 4 or more; fertile
floret 1 only ............... Chloris

11. Spikelets with one fertile floret
and no imperfect florets;
spikelets awnless .............. Cynodon

3. Spikelets with one fertile floret, with
or without one or two male or barren
florets below it, the latter often much
reduced:

13. Glumes minute or suppressed; fertile
lemma and palea very similar .......... Oryza

13. Glumes well-developed; fertile lemma
and palea not similar:

14. Spikelets with 2 florets; the lower, male or barren, the upper hermaphrodite .................. *Arundinella*

14. Spikelets with one fertile floret:

15. Spikelets very rarely falling entire and then firmly membranous to coriaceous,awned or 5-nerved lemmas:

16. Lemmas hyaline or membranous at maturity, rarely indurated and then laterally compressed ........... *Sporobolus*

16. Lemmas indurated or rigid at maturity, terete or dorsally compressed ...... *Aristida*

15. Spikelets falling entire at maturity; lemma delicate, 1-3 nerved; spikelets in spike-like purplish-violet raceme.... *Perotis*

2. Spikelets borne in spikes; spikes long, more or less loose, somewhat dorsally
compressed .................................................Triticum

Dendrocalamus Nees


A tall, deciduous, densely tufted bamboo with strong erect stem. Inflorescence a large branching panicle of dense globular heads.

Cultivated in many places.

Local name : Vans.

Local uses : Used in construction of huts, various types of baskets and many other articles; young shoots are used in pickles.

Flowers and Fruits : July to February.

Flowering rare, see Blatt. loc. cit. Noted small clumps in flowers.

Padate 2622, 3393.

Throughout India.

Java.
Dinebra Jacq.

Dinebra retroflexa (Vahl) Panz. in Denkschr. Acad. Munch. 270, 1814; Blatt. & McC. 264; Bor, 491; Patel, loc. cit. 332; Padate, in JMSU. 17 & 18(3): 111, 1968 & 69.


An annual, tufted, slender grass with ascending stems.
Leaves linear, finely acuminate, contracted at the insertion.
Inflorescence a panicle of spikes; spikes 3-5 cm. long, sessile, racemosely arranged on the axis; spikelets sessile, alternately arranged on flattened branches; involucral glumes lanceolate, hyaline, keeled, with recurved, scaberulous awns.

Observed as a weed in cultivated fields; also noted on open, marshy places.

Flowers and Fruits: July to October.

Padate 405, 2889.

Western India westward to E. Africa.

Eragrostis P. Beauv.

1. Spikelets breaking up from above downwards:
2. Keels of the palea more or less ciliate:

3. Panicles spiciform, or compact and dense ...........................................ciliaris

3. Panicles effuse:

4. Culms and leaves more or less viscous ...........................................viscosa

4. Culms and leaves not viscous ................................tenella

2. Keels of the palea scabrid or smooth, not ciliate:

5. Stem tall, stout, branched; panicle very long, made up of branches which are solitary or 2-3 in a whorl; branches elongate 5-12 cm. long, usually simple, often bare at the base, bearing small spikelets ..........diplachnoides

5. Stem slender; branches not more than 5 cm. long:

6. Branches of the panicle more or less whorled, spikelets loose ..........japonica

6. Branches of the panicle mostly solitary; spikelets densely
clustered .................. diarrhena

1. Spikelets breaking up from below upwards:

7. Annuals:

8. Spikelets ovate or ovate-oblong;
   grain obovoid or ellipsoid
   compressed .................. unioloides

8. Spikelets linear or linear-
   oblong, grains sub-globose ...... tremula

7. Perennials .................. nutans

Eragrostis ciliaris (Linn.) R. Br. in Tuckey, Narr. Exp.
   Congo, App. 478, 1818; FBI. 7: 314; Blatt. & McC.
   in JBNHS. 33: 480, 1929; Bor. 506; Patel, loc. cit.

Poa ciliaris Linn. Syst. Nat. ed. 10, 2: 875, 1759.

Eragrostis ciliaris var. ciliaris (Linn.) Stapf, in
   Hook. f. FBI. 7: 314, 1896.

A slender, erect annual grass with cylindrical panicles
having spikelets crowded in a spike-like manner.

Common in hedges and on sandy or clayey soils near
moist places.
Flowers and Fruits: August to April.

Padate 125, 590, 3103.

More or less throughout India.

Tropics and sub-tropics of the Old and New Worlds.

_Eragrostis viscosa_ (Retz.) Trin. in Mem. Acad. Sc. Petersb. (ser. 6) 1: 397, 1831; Blatt. & McC. 233; Bor, 515; Chavan & Padate, in Ind. For. 86(4): 216, 1960; Patel, loc. cit. 334.

_Poa viscosa_ Retz. Obs. 4: 20, 1786.

_Eragrostis tenella var. viscosa_ (Retz.) Stapf, in FBI. 7: 315; C. 3: 546.

A tufted, viscid, erect annual. Stems and rachis more or less viscid. Inflorescence a compound panicle with slender, filiform, spreading branches; spikelets 7-10-flowered. Grains pale-brown, ovoid, polished.

Commonly observed along roadsides and as a weed in cultivated fields and on the elevated banks of rivers.

Flowers and Fruits: October to April.

Padate 3069, 3608.

Throughout India.

Trop. and S. Africa.
Eragrostis tenella (Linn.) Beauv. ex Roem. & Schult. Syst. Veg. 2: 576, 1817; Raizada, 485; Bor, 513; Maheshwari, 386; Patel, loc. cit. 335; Pavagadh, 257; Padate, in JMSU. 17 & 18(3): 111, 1968 & 69.

Poa tenella Linn. Sp. Pl. 69, 1753.

Poa amabilis Linn. Sp. Pl. 68, 1753.


Eragrostis tenella var. plumosa (Retz.) Stapf, in Hk. f. FBI. 7: 315, 1896; C. 3: 545.

An erect or ascending, loosely tufted grass. Panicles dense or loose but contracted, purple, green or purplish brown. Common and abundant along roadsides, on old ruins and in open places in the northern part of the area. In the southern area not very common.

Flowers and Fruits: August to January.

Padate 464, 3740.

Widespread in Old World tropics; introduced into America.


Eragrostis leprieurii Steud. loc. cit. 269.

Eragrostis interrupta var. diplachnoides (Steud.) Stapf,
in Hook. f. FBI. 7: 316; Prain, 921.

A tall, perennial grass. Panicle - branches not divaricate; spikelets 6-10-flowered or more; pseudo-whorls open; stamens 2. Grain obovoid.

Noted along the railway line between Muval and Mevli along with other grasses; rare.

Flowers and Fruits: September to January.

Padate 3882.

Gujarat (recorded for the first time), Karnataka, Madhya Pradesh, Bengal.

Ceylon, Tropical and Sub-tropical Asia and Africa.

Eragrostis japonica (Thunb.) Trin. in Mem. Acad. Sc. Petersb. (ser. 6) 1: 405, 1831; Bor, 509; Chavan & Padate, in Ind. For. 86(4): 216, 1960; Patel, loc. cit. 324.


Eragrostis interrupta var. tenuissima Stapf, in FBI. 7: 316; NG. 319.

A tufted grass, very variable in size. Panicles long, linear; branches usually whorled; spikelets small. Grains sub-globose.
Common in cultivated fields, ditches and river banks.

**Flowers and Fruits:** September to January.

**Pedate:** 950, 3845.

Gujarat, Maharashtra, Madras, Uttar Pradesh, Naga Hills.

Tropical Asia.


**Poa diarhena** Schult. Syst. Veg. 2, Mant. 616, 1827.


A tall, glabrous annual or perennial grass. Panicle erect, 15-45 cm. long, contracted; spikelets small; usually 6-14-flowered, smooth; rachilla articulate between the flowering glumes. Stamens 2, anthers small.

Noted in marshy places; not common.

**Flowers and Fruits:** September to January.

**Pedate:** 3076, 3821.

Gujarat, Maharashtra, Madras, Bengal, throughout India.

South-east Asia.


**Eragrostis amabilis** of FBI. 7: 317, 1896; C. 3: 546.

A small, glabrous annual, leafy at the base. Panicles not much branched; spikelets compressed, pedicellate, faintly purplish; glumes distichous, keeled.

Along roadside and in cultivated fields; rare.

Flowers and Fruits: September to January.

**Padate** 3262.

Throughout India.

Ceylon, Burma, South-east Asia generally.


An erect, weak annual. Spikelets delicate, long, narrowly flattened and many-flowered.

Not very common in the area, noted in sandy soils and in rocky places along the banks of rivers.

Flowers and Fruits: September to April.

**Padate** 2638, 3858.
Gujarat, Maharashtra, Karnataka, Madras, Bengal.

Burma to Tropical Africa.


A densely, tufted grass. Panicles much-branched; branches slender; spikelets small, ovate-lanceolate.

Noted in grasslands along the railway tract between Savli and Mevli stations; also noted at Pilol; rare.

Flowers and Fruits: September to January.

*Padate* 3880.

Indigenous to Bihar and Madras.

*Elytrophorus* Beauv.


An erect annual with densely fibrous roots. Inflorescence paniculate often longer than the rest of the plants. Spikes globose or oblong.

A common weed in rice fields and in other moist situations.

Local name: Jangli rala.

Flowers and Fruits: September to January.

Padate 410, 2673, 3879.

Gujarat, Maharashtra, Karnataka, more or less throughout India.

Persia, Arabia, N. Africa to Trop. Africa and Australia.

Desmostachya Stapf

Desmostachya bipinnata (Linn.) Stapf, in Dyer, Fl. Cap. 7: 632, 1900; Blatt. & McC. 244, t. 162; Bor, 491; Patel, loc. cit. 332; Padate, in JMSU. 17 & 18(3): 111, 1968 & 69.

Briza bipinnata Linn. Syst. 875, 1759.

A perennial, tall, deep-rooted, tufted grass. Panicles erect, narrowly pyramidal or cylindrical, purplish or brownish at maturity; spikes many and crowded.

Fairly common on drier parts; on open lawns, along dry banks of rivers.

Flowers and Fruits: August to April.

Pedate 404, 2672, 3928.

Throughout India.

Persia, Arabia, N. Africa to Trop. Africa.

Eleusine Gaertn.

Eleusine indica (Linn.) Gaertn. Fruct. 1: 8, 1789; Blatt. & McC. 259; FBI. 7: 293; C. 3: 560; Bor. 493; Patel, loc. cit. 333.

Cynosurus indicus Linn. Sp. Pl. 72, 1753.

An erect annual. Leaves flat, glabrous. Spikes 2-7, elongate, digitate; spikelets in 2 series, 3-6-flowered, pointing forward at an acute angle.

Common in moist places and along roadsides.
Flowers and Fruits: October to April.

*Radate* 214, 3633.

Tropics and sub-tropics.

**Dactyloctenium Willd.***


An erect annual with stoloniferous branches. Spikes 2-6, digitately radiating; spikelets 3-5-flowered, spreading at right angles to the rachis.

A common weed found at all places. Usually noted on unkept lawns, fields, roadside ditches and in hedges.

Flowers and Fruits: August to April.

*Radate* 120, 2368, 3876.
Gujarat, Maharashtra, Karnataka, Madras.

Tropics of the Old World; introduced into America.

**Melanocenchris** Nees

**Melanocenchis jacquemontii** Jaub. et Spach, Ill. Pl. Or. 4: 36, 1851; Bor, 473; Patel, loc. cit. 331; Padate, in JMSJ. 17 & 18(3): 111, 1968 & 69.

**Gracilena royleana** Hk. f. FBI. 7: 284; C. 3: 553; Blatt. & McC. 248.

A small, slender, tufted annual. Leaves very narrow, linear. Inflorescence consisting of clusters of cottony spikelets on a flexuous, zigzag rachis.

Noted on dry, sandy or stony places; rare.

**Flowers and Fruits:** August to October.

**Padate** 465, 3859.

Gujarat, Maharashtra, Karnataka, Madras, Bengal, N. W. India.

Pakistan (Sind).

**Tetrapogon** Desf.,

**Tetrapogon tenellus** (Roxb.) Chiov. in Ann. Ist. Bot. Roma 8:

A very tiny, slender annual. Stems weak, branching from the base. Leaves linear, ligulate. Spike solitary, terminal; spikelets distichously arranged; lemmas glabrous.

Noted on moist grounds along with other grasses; rare.

Flowers and Fruits: August to January.

Padate 829, 3072.

North-west and South India, westwards to Arabia and East Tropical Africa.

Chloris Sw.

Empty lemmas above the fertile florets solitary, well developed or rudimentary .................virgata

Empty lemmas above the lowest two to four:

Spikelets 3 mm. long or more; awns three,
2-3 mm, long ....................gayana
Spikelets 2.5 mm. long; awns three, four or five, up to 8 mm. long ...................barbata

*Chloris virgata* Sw. *Fl. Ind. Occ.* 1: 203, 1797; *FBI.* 7: 291; *Achariyar,* 260, f. 198; *Blatt.* & *McC.* 225, t. 170; *Bor,* 468; *Chavan & Padate,* in *Ind. For.* 86(4): 216, 1960; *Maheshwari,* 388; *Patel,* loc. cit. 331.

A tufted, leafy, annual grass; branches creeping and rooting at the nodes. Spikes 6-15, erect, digitate; spikelets 2-rowed. Fruit trigonous, polished.

Noted on the slopes of ravines and also in open waste places and as an undergrowth in the forest.

*Flowers and Fruits*: July to April.

*Padate* 121, 3583.

Widely distributed throughout the tropics of both hemispheres.


An introduced grass, very much valued for fodder; noted
at Manjusar and along railway line at Savli.

Flowers and Fruits: September to November.

Padate 3909.

From Senegal eastwards to Sudan and southwards to S. Africa; introduced into India.


A perennial, tufted grass, 75-100 cm. tall. Leaves narrowly linear, flat, finely acuminate. Spikes 5-20, digitately arranged in terminal fascicles; spikelets green or purple; involucral glumes hyaline, lanceolate.

Very commonly observed on clayey soils in shaded localities and in cultivated fields.

Flowers and Fruits: August to April.

Padate 1022, 3637.

Throughout the plains of India.

A native of Trop. America (?), now wild in the tropics.
A perennial, creeping grass, with erect or ascending flowering branches.

Common throughout the area in all habitats.

Local name: Daro.

Local uses: Used as fodder.

Flowers and Fruits: July to February.

Padate 403, 2324, 3927.

Throughout India.

This is a grass with an extremely wide distribution, being found in all warm countries and even persisting in cold climates.

Oryza Linn.

Spikelets persistent ................................. sativa
Spikelets caducous .................... rufipogon


The rice plant is cultivated in many parts of the area in monsoon. Leaves striate, scaberulous. Spikelets persistent, in drooping panicle.

Local name: Danger, Chokha.

Flowers and Fruits: September to November.

Padate 594, 3929.

Throughout India.

Ceylon, Burma, Sikkim, Malaya, China, Japan.

Oryza rufipogon Griff. Notul. 3: 5, 1851; Bor, 605.


Oryza sativa vars. rufipogon, coerctata, bengalensis and abuensis Watt, in Dic. Econ. Prod. India 5: 504-5, 1851.

The plant closely resembles the cultivated rice. It is
abundantly found encircling small pools along with other hydrophytes; also noted as a weed in rice fields and on the banks of ponds; not common.

Flowers and Fruits: August to January.

Local uses: The grain is eaten by the poorer section of local inhabitants.

Padate 3747, 3831.

Common in East India and Madras.

Arundinella Raddi

Arundinella pumila (Hochst.) Steud. Syn. Pl. Glum. 1: 114; 1854; Sant. 304; Raizada, 476; Bor, 423; Patel, loc. cit. 330; Padate, in JMSU. 17 & 18(3): 111, 1968 & 69.


An erect, glabrous annual grass. Panicle 5-25 cm. long, effuse, copiously branched; rachis slender, erect.

Seen growing near moist, rocky places; rare.
Flowers and Fruits: July to January.

**Sporobolus** R. Br.

Upper glume distinctly shorter than the lemma; lowest branches not truly whorled .............. *diander*

Upper glume as long, nearly as long as or longer than the lemma; lowest branches whorled or not ........... *marginatus*

**Sporobolus diander** (Retz.) Beauv. *Agrost. 26*, 1812; FBI. 7: 247; C. 3: 539; Blatt. & McC. 221; Bor, 629; Patel, loc. cit. 337; Padate, in JMSU. 17 & 18(3): 112, 1968 & 66.


An erect, slender annual. Panicles narrow, pyramidal; spikelets small, very shortly pedicelled.

Noted in ravines and in the shade of hedges along roadsides.
Flowers and Fruits: July to December.

Padate 467, 3075.

Throughout India.

Ceylon, Burma, extending to Australia.


2: 397, 1851; Bor, 632; Patel, loc. cit. 338.

*Sporobolus pallidus* Boiss. Fl. Orient. 5: 512, 1884;


*Sporobolus arabicus* Boiss. Diagn. (ser. 1) 13: 47,

1853; FBI. 7: 252; C. 3: 541.

A tufted, perennial grass with stoloniferous base.

Panicle pyramidal; slender branches bearing small spikelets at the tips.

Observed growing in plenty in and around saline soils round the ponds and puddles at Savli, Javla etc. Very common after monsoon in open waste, shady places.

Flowers and Fruits: September to January.

Padate 822, 2614.

Western Peninsula, Gangetic Plain, Madhya Pradesh, Punjab.

Pakistan, Arabia, Tropical E, Africa.
Aristida Linn.

Articulation between lemma and the awns whether it be at the tip or centre of the lemma or at the top of a prolongation .......... funiculata

No articulation between the lemma and the awns either at its tip or at the top of a prolongation .................. adscensionis


A very slender, annual grass. Leaves convolute or flat, ciliate at the base; sheaths glabrous; ligule a small, ciliate membranous, Panicle lax, narrow; rachis angular, erect capillary, Spikelets variable in length.

Noted on sandy soils and dry areas; rare.

Flowers and Fruits : September to May.

Pedate 2330, 3678.

Gujarat, Maharashtra, Karnataka, Madras, Punjab, Rajasthan, W. Peninsula, Pakistan, Arabia, Tropical Africa.

Aristida adscensionis Linn, Sp. Pl, 82, 1753; FBI. 7: 224;
A slender, erect or ascending grass. Panicles with filiform, hair-like branches; involucral glumes awned; spikelets purplish-violet.

Observed growing on dry, sandy soils and in old walls; fairly common.

Flowers and Fruits: July to January or even up to May.

Perotis Ait.

*Perotis indica* (Linn,) Kuntze, Rev. Gen. 2: 787, 1891; Blatt. & McC. 220, t. 147; Bor, 611; Maheshwari, 373; Patel, loc. cit. 337; Padate, in JMSU. 17 & 18(3): 112, 1968 & 69.


A slender, tufted annual. Leaves linear-lanceolate. Racemes slender, dense, spike-like, purplish-violet; spikelets narrow, involucral glume long-awned.

A common grass in fallow fields, open waste places and on dry sandy banks of rivers.

Flowers and Fruits: September to January.

Padate 597, 3908.

Gujarat, Maharashtra, Madras, Bengal, more or less throughout India.

Burma, Ceylon, Malaya and S. E. Asia.

_Triticum_ Linn.

_Triticum aestivum_ Linn., Sp. Pl. 85, 1753; Blatt, & McC. 279; Bor, 679; Patel, _loc. cit._ 338.

_Triticum sativum_ Lamk. Fl. Franc. 3: 625, 1778; C, 3:574.


An annual tall, tufted grass. Commonly cultivated. Cereal of the area grown as a rabi crop.

Local name: Gahun.

Flowers and Fruits: January to April.
Padate 3160, 3628.

Gujarat, part of Maharashtra and Karnataka, Madhya Pradesh and N. India.

Widely cultivated in all parts of the world.

**PTERIDOPHYTES**

*Equisetum debile* Roxb.

*Ceratopteris thalictroides* (Linn.) Brongn.

*Marsilea quadrifolia* Linn.

*Marsilea minuta* Linn.

*Azolla pinnata* R. Br.