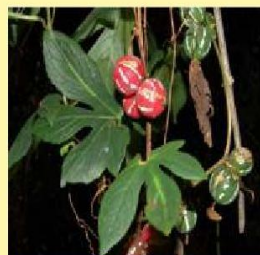


Technical Bulletin No. 13

# Major Creeper and Climber Weeds in India



V.C. Tyagi, R.P. Dubey, Subhash Chander and Anoop Kumar Rathore



भा.कृ.अनु.प.- खरपतवार अनुसंधान निदेशालय, जबलपुर  
ICAR - Directorate of Weed Research, Jabalpur

(ISO 9001 : 2015 Certified)



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#### Cover theme

(a)	(b)
(c)	

Photos of major creeper and climber weeds, viz. (a) *Convolvulus arvensis*,  
(b) *Diplocyclos palmatus*, (c) *Lathyrus aphaca*

## PREFACE

Weeds are plants which interfere in human activities and welfare. They are a problem not only in cropped lands but also in non-cropped areas, pastures, aquatic bodies, roadsides, parks etc. In agricultural crops, weeds may cause on an average 37% reduction in yields, whereas, in non-cropped areas they reduce the value of the land. Weeds can be of different types. The category of creeper or climber weeds has characteristics different than other weeds. These weeds are capable of creeping or climbing as they have special structures such as tendrils, hooks, twining stems and leaves etc. In agricultural crops they can climb up the crop plants, shade them and compete for resources reducing the yields. Some of them are parasitic in nature; they wrap themselves around the plants and through special structures like haustoria, draw water and nutrients from the vascular system of plants. There was a need to compile the information on various creeper/climbing weeds at one place. In this compilation, the authors have given description of 50 creepers/climbing weeds commonly found in India, including their photographs, identifying traits, useful traits and also the management aspects. It is hoped that this compilation will be useful in providing important information on identifying traits and management of creeper/climbing weeds to the students, farmers, researchers etc.

15 March, 2017

  
Director



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### Antigonon leptopus Hook. & Arn.

Common name	: Mexican creeper
Native	: Tropical America
Family	: Polygonaceae
Flowering & fruiting season	: April-December
Habit	: Perennial climber
Habitat	: Disturbed areas, roadsides
Identifying traits	: Leaves heart to arrowhead shaped, entire, acute; inflorescence axillary, flowers hermaphrodite, pink, attractive flowers; climbs using tendrils; propagation by seeds
Useful traits	: Plant extracts exhibits anti-thrombin, analgesic, anti-inflammatory, anti-diabetic properties
Management	: Mechanical removal before flowering, protected spraying of paraquat or glyphosate at early active growth stage.



Plant with flower



Fruit



Seed

### *Asystasia gangetica* (L.) T. Anderson

Common name	:	Chinese violet, creeping foxglove
Native	:	India and Africa
Family	:	Acanthaceae
Flowering & fruiting season	:	October - April
Habit	:	Perennial
Habitat	:	Disturbed areas, agricultural land, wetlands
Identifying traits	:	Hairy stem, develops root where the joints come into contact with moist soil; purple-white tubular flowers
Useful traits	:	Leaves are eaten as a vegetable; leaf extract has anti-inflammatory effect
Association	:	Rubber, oil palm, coffee
Management	:	Mechanical removal before flowering, protected spraying of paraquat or glyphosate at early active growth stage.



Flower



Fruit



Seed

## Boerhavia diffusa L.

Common name	: Hogweed, pigweed
Native	: Pan-tropical
Family	: Nyctaginaceae
Flowering & fruiting season	: August - December
Habit	: Annual/perennial
Habitat	: Waysides, wastelands, river banks, agricultural land
Identifying traits	: Spreading, loosely branched; leaves in unequal pairs, broadly ovate or sub-orbicular; stem pale pink, base woody, swollen at nodes; flowers small, purple color; reproduces by seed
Useful traits	: Anti-diabetic, diuretic; used for pain relief, anti-inflammation, and treating indigestion; has anti-oxidant properties
Association	: Groundnut, mustard, paddy, sugarcane, maize
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. groundnut (fluchloralin, oxyfluorfen), mustard (fluchloralin), rice (metsulfuron), sugarcane and maize (2,4-D, carfentrazone).



Flower



Fruit



Seed

### *Cajanus scarabaeoides* (L.) Thouars

Common name	: Showy pigeonpea
Native	: Indian subcontinent
Family	: Fabaceae
Flowering & fruiting season	: September - January
Habit	: Perennial
Habitat	: Cultivated fields and along roadsides
Identifying traits	: Prostrate or climbing; stem with reddish hairs; leave trifoliate, oblique; yellow flowers
Useful traits	: Wild relative of pigeonpea
Association	: Rat's tail grass, Spear grass
Management	: Mechanical removal before flowering, protected spraying of paraquat or glyphosate at early active growth stage.



Flower



Fruit



Seed

## Cardiospermum halicacabum L.

Common name	: Balloon vine
Native	: Tropical America
Family	: Sapindaceae
Flowering & fruiting season	: July - September
Habit	: Annual
Habitat	: Waste places and riverbanks; scrub jungles
Useful traits	: Anti-vatha, analgesic, diuretic, laxative, stomachic, anti-inflammatory; leaves and young shoots cooked
Identifying traits	: Forked tendrils borne at the base of inflorescences; leaves lanceolate in shape, large teeth and lobes found on leaflets of the compound leaves; inflated, papery, balloon-like fruits
Association	: Soybean, maize
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. soybean (imazethapyr, chlorimuron), maize (2,4-D).



Flower



Fruit



Seed

### *Cayratia trifolia* (L.) Domin

Common name	:	Fox grape, ramchana
Native	:	Australia
Family	:	Vitaceae
Flowering & fruiting season	:	September - March
Habit	:	Perennial
Habitat	:	Disturbed area/open ground, along rivers, hills, outcrops
Identifying traits	:	Tendrils climbers; trifoliolate leaves, leaflets ovate or elliptic, margin serrate; tendrils arise opposite from each leaf along the stem; flowers greenish-white; fruit berry, spherical, dark purple or black
Useful traits	:	Whole plant is used as diuretic, in tumors, neuralgia; bark extract shows the antiviral, antibacterial, antiprotozoal, hypoglycemic, anticancer and diuretic activity; paste of tuberous is used in treatment of snake bite
Management	:	Mechanical removal before flowering, protected spraying of glyphosate or paraquat at early active growth stage.



Plant



Flower



Fruit

### Centella asiatica (L.) Urb.

Common name	: Indian pennywort, brahmi
Native	: Pan-tropical
Family	: Apiaceae
Flowering & fruiting season	: Round the year
Habit	: Perennial
Habitat	: Wetland edges, roadside ditches and soggy lawns
Identifying traits	: A small creeping herb; shovel or spade-shaped leaves, toothed margins that are often dark-red; white flowers in clusters
Useful traits	: Used against leprosy, lupus, varicose ulcers, eczema, psoriasis, diarrhoea, fever, amenorrhea etc.
Association	: Paddy, plantation crops
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. rice (metsulfuron, 2,4-D), plantations (protected spray of glyphosate, 2,4-D).



Plant



Flower



Fruit



## Centrosema pubescens Benth.

Common name	: Centro or butterfly pea
Native	: Central and South America
Family	: Fabaceae
Flowering & fruiting season	: April - December
Habit	: Perennial
Habitat	: Along roadsides, waste places, river banks
Identifying traits	: Perennial, trailing-climbing herb with tendency to root at nodes; leaves trifoliolate, leaflets ovate to orbicular, finely pubescent; bluish-violet flowers; seeds oblong to reniform, yellowish-greenish; reproduces by seed
Useful traits	: Potential soil cover, grown as a green manure, fairly palatable for cattles
Association	: Sugarcane, maize
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. sugarcane and maize (2,4-D, carfentrazone).



Plant



Flower



Fruit

### *Ceropegia bulbosa* Roxb.

Common name	: Hedulo, bulbous ceropegia
Native	: South America
Family	: Apocynaceae
Flowering & fruiting season	: June - September
Habit	: Perennial
Habitat	: Bushes, dry barren uncultivated ground and hedges
Identifying traits	: Twining fleshy herbs; leaves opposite, almost stalkless to stalked, round to ovate, flowers are pale gray, becoming greyish-purple towards the mouth
Useful traits	: Tubers and leaves are eaten; decoction made from the tubers is used, orally, to ease dropping out urinary bladder stones
Association	: Maize, soybean
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. soybean (imazethapyr, chlorimuron), maize (2,4-D).



Plant



Flower

### *Coccinia grandis* (L.) Voigt

Common name	: Ivy gourd, kunduru
Native	: East Africa
Family	: Cucurbitaceae
Flowering & fruiting season	: June - August
Habit	: Perennial
Habitat	: Agricultural areas, natural forests, planted forests, waste areas
Identifying traits	: Dioecious, perennial, herbaceous vine; stems glabrous, axillary tendrils; leaves broadly ovate, 5-lobed; flowers white, star-shaped with 5 petals; fruit smooth, bright red, ovoid to ellipsoid berry
Useful traits	: Fruits have been used to treat leprosy, fever, asthma, bronchitis, and jaundice; fruit and leaves are used as a vegetable
Management	: Mechanical removal before flowering, protected spraying of glyphosate or paraquat at active early growth stage.



Plant



Flower



Fruit

## *Commelina benghalensis* L.

Common name	: Kena, benghal dayflower, tropical spiderwort
Native	: Tropical Asia and Africa
Family	: Commelinaceae
Flowering & fruiting season	: June - November
Habit	: Annual/perennial
Habitat	: Arable lands, marshy, wayside
Identifying traits	: Leaves ovate or elliptical; leaf sheath covered in red and sometimes white hairs at the apex; flowers flattened funnel-shaped spathe with lilac blue petals; fruit pear-shaped with five seeds
Useful traits	: Astringent, demulcent, laxative mucilaginous, used as fodder
Association	: Rice, sugarcane, soybean, maize, peanuts
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. rice (metsulfuron), groundnut (flu-chloralin, oxyfluorfen), soybean (imazethapyr, chlorimuron) sugarcane and maize (2,4-D, carfentrazone).



Plant



Flower



Seed

## Commelina diffusa Burm. f.

Common name	: Keni, climbing day flower, creeping day flower
Native	: Tropical Asia
Family	: Commelinaceae
Flowering & fruiting season	: July - November
Habit	: Annual/Perennial
Habitat	: Cultivated land, field borders, wet lands, roadsides, waste places
Identifying traits	: Stem creeping, roots at the nodes; leaves green, oblong-lanceolate; flowers blue to purple; fruit three-celled capsule with five seeds
Useful traits	: To treat high blood pressure and bladder infection, leaves - cooked and used as a vegetable; juice of the petals can be used as a dye for painting
Association	: Maize, paddy, soybean
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. rice (metsulfuron), soybean (imazethapyr, chlorimuron), maize (2,4-D).



Plant



Flower



Fruit

## Convolvulus arvensis L.

Common name	: Charndvel, hirankhuri, field bindweed
Native	: Europe and Asia
Family	: Convolvulaceae
Flowering & fruiting season	: April - October
Habit	: Perennial
Habitat	: Roadsides, grasslands, orchards, vineyards
Identifying traits	: Stem trailing, twinning, herbaceous and glabrous to pubescent; leaves arrowhead-shaped, flowers funnel shaped white to pink with five slightly darker pink radial stripes; each fruit contains 2- seeds
Useful traits	: Whole plant produces a green dye, used as a feed supplement for livestock, roots act as a good purgative, anti-diabetic, anticancerous, flower tea used to reduce fever and heals wound
Association	: Potatoes, beans and cereals
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. groundnut (fluchloralin, oxyfluorfen), soybean (imazethapyr, chlorimuron) sugarcane and maize (2,4-D, carfentrazone).



Plant



Flower



Seed

## Convolvulus prostratus Forssk.

Common name	: Shankhapushpi, english speedwheel
Native	: Indian sub-continent
Family	: Convolvulaceae
Flowering & fruiting season	: October - December
Habit	: Perennial
Habitat	: Roadsides, sandy and rocky surfaces
Identifying traits	: Stems densely velvety; leaves linear to oblong, lance shaped or inverted-lance shaped; flowers white or pale pink; seeds dark brown
Useful traits	: Leaves are the major constituent of a herbal drug ' <i>Shankha Pushpi</i> ', antiepileptic, plant is eaten by cattle, used as a vegetable
Management	: Manual removal at active growth stage.



Plant



Flower



### *Cucumis melo ssp. agrestis*

Common name	: Kachari, smellmelon, weed melon
Native	: Western and central Asia
Family	: Cucurbitaceae
Flowering & fruiting season	: July - October
Habit	: Annual
Habitat	: Disturbed habitats, meadows and fields
Identifying traits	: Trailing pubescent vine; leaves simple, alternate; flower yellow, 5-merous; fruit ellipsoid, oval-round, sometimes obscurely trigonous, smooth and hairless, generally with dark green stripes, looks like a miniature watermelon
Useful traits	: Antioxidant, fruit of which is mainly consumed as a vegetable
Association	: Soybean, maize
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. soybean (imazethapyr, chlorimuron), maize (2,4-D).



Plant



Flower



Fruit



## *Cuscuta chinensis* Lam.

Common name	: China dodder
Native	: Mediterranean region
Family	: Convolvulaceae
Flowering & fruiting season	: August - December
Habit	: Perennial
Habitat	: Plant parasite
Identifying traits	: A leafless twining parasitic herb with filiform, much branched, glabrous, yellow to yellowish brown stems, often forming a tangled mass; flowers white, solitary or in shortly, stalked cymes; seeds 4, very minutely rugose
Useful traits	: Seed is aphrodisiac, demulcent, diaphoretic, hepatic problem
Association	: Vitex negundo, alfalfa, clover, flax and on other bushes
Management	: In crops, manual removal, crop rotation with non-host crops and application of herbicide pendimethalin.



Plant



Seed

*Cuscuta reflexa* Roxb.

Common name	: Amarbel, giant dodder
Native	: Indian sub-continent
Family	: Convolvulaceae
Flowering & fruiting season	: May - November
Habit	: Perennial
Habitat	: Plant parasite
Identifying traits	: A twining, leafless, parasitic herb; branches fleshy, forming dense, yellow masses on shrubs and trees; flowers pale white, solitary; seeds 2-4, black, glabrous
Useful traits	: Seeds are anthelmintic and carminative; whole plant is purgative, used to treat urinary tract and hepatic disorders, stem extraction has antiviral and anti cancerous activity
Association	: Citrus, mango, neem, coffee, litchi
Management	: In crops, manual removal, crop rotation with non-host crops and application of pendimethalin, manual removal in plantations.



Plant



Flower

*Cyanotis axillaris* (L.) D. Don ex Sweet

Common name	: Creeping cradle plant, bechka
Native	: South - East Asia and Australia
Family	: Commelinaceae
Flowering & fruiting season	: August - December
Habit	: Perennial
Habitat	: Agricultural field, shallow ditches and borders
Identifying traits	: Creeping or sub-erect perennial herb, rooting at the nodes, lanceolate, amplexicaul sheath around the stem; flowers hidden in the leaf-sheaths, pale blue or pink; seeds dark brown, shining; reproduces vegetatively and by seed
Useful traits	: Febrifuge, anti-inflammatory and antiparasitic; leaves cooked as vegetable for tympanitis; roots and tubers used for fever and worms
Association	: Rice, soybean, maize
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. rice (metsulfuron), soybean (imazethapyr, chlorimuron), maize (2,4-D).



Plant



Flower

### *Cyanotis cristata* (L.) D. Don

Common name	: Nabhali, crested cat ears
Native	: Tropical Asia and Africa
Family	: Commelinaceae
Flowering & fruiting season	: July - October
Habit	: Perennial
Habitat	: Wet rocky areas, moist soil and grasslands
Identifying traits	: Leaves ovate-oblong, base rounded or cordate; flower pale blue to purple; seeds black, trigonous with 2 large pits on either side
Useful traits	: Leaves and stems are used as a vegetable; also useful as forage
Association	: Maize, soybean, pigeonpea
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. soybean (imazethapyr, chlorimuron), maize (2,4-D).



Plant



Flower

### *Cynodon dactylon* (L.) Pers.

Common name	: Bermuda grass, doob ghas
Native	: Middle East
Family	: Poaceae
Flowering & fruiting season	: March - September
Habit	: Perennial
Habitat	: Gardens, roadsides, overgrazed, non-cultivated lands, agricultural lands
Identifying traits	: Stoloniferous and rhizomatous grass; densely roots at the nodes; stems, slightly tinged purple; leaves hairy or glabrous; inflorescence consists of a single whorl of 3-7 narrow racemes
Useful traits	: Antiseptic and anti-inflammatory; as lawn grass, soil binder; fodder value
Association	: Maize, cotton, sugarcane, rice, soybean, plantation crops, vineyards
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. soybean (fenoxaprop, imazethapyr), maize (tembotrione), cotton (pyrithiobac sodium), sugarcane (metribuzin), vineyards and plantations (protected spray of glyphosate).



Plant



Flower



Seed

### *Dendrophthoe falcata* (L.f.) Ettingsh.

Common name	: Honey suckle mistletoe, vanda
Native	: Indian subcontinent
Family	: Loranthaceae
Flowering & fruiting season	: January - March
Habit	: Perennial
Habitat	: Plant parasite
Identifying traits	: A branched and glabrous shrub; leaves, simple, leathery, entire, thick, persistent, sessile or semi sessile, petiolate, exstipulate, alternate or in whorls of three or opposite, and evergreen; flowers, large, tubular, bisexual and bright red colored, develop in clusters and are arranged in spike
Useful traits	: Wound healing, anti-microbial, anti-oxidant, antinociceptive properties
Association	: Cashew, mango, kusum tree, gauva, pomegranate, lebbeck, sissoo
Management	: Manual removal, spraying of etheral to desiccate the parasite plant.



Plant



Flower

## Desmodium triflorum (L.) DC.

Common name	: Three-flower beggarweed, kudaliya, tripadi
Native	: Tropical Asia
Family	: Leguminosae
Flowering & fruiting season	: July - December
Habit	: Annual or perennial
Habitat	: Lawns, pastures, waste places and along road sides
Identifying traits	: Creeping herb, rooting at the nodes; leaves, trifoliate, leaflets broadly obovate; flowers, pink or purplish
Useful traits	: Antipyretic, antiseptic, expectorant; as a green manure and cover crop to smother weeds and prevent soil erosion
Association	: Cotton, maize, paddy
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. maize (2,4-D), cotton (protected spray of glyphosate), rice (metsulfuron).



Plant



Flower



Pod



## Diplocyclos palmatus (L.) C. Jeffrey

Common name	: Shivalingi, bankakra, lollipop climber, marble vine
Native	: Australia, Papua New Guinea and Tropical Africa
Family	: Cucurbitaceae
Flowering & fruiting season	: August - November
Habit	: Perennial
Habitat	: Swamp, common on fences,
Identifying traits	: Perennial, much-branched climber, with stems up to 6 m long; leaves, simple 5-lobed, margins irregularly toothed, unpleasant odour when crushed; flowers white to yellowish, unisexual, male flowers in small fascicles and females flowers solitary; fruit green with white longitudinal stripes, which become brightly red to orange with maturity
Useful traits	: Poisonous plant; leaves are used medicinally in small quantities for the treatment of rheumatic pain, coughs, flatulence, and various skin disease
Association	: Maize, sugarcane
Management	: Manual removal, application of crop specific herbicides, viz. sugarcane and maize (2,4-D, carfentrazone).



Plant with fruit



Seed



### *Evolvulus nummularius* (L.) L.

Common name	: Nimulwel, roundleaf bindweed, vishnukrantha
Native	: North and South America
Family	: Convolvulaceae
Flowering & fruiting season	: Throughout the year
Habit	: Annual/ perennial
Habitat	: Roadsides, wastelands and grass turfs
Identifying traits	: Prostrate perennial herbs; leaves broadly ovate to orbicular; flowers, 1-2, in leaf-axils, white, 6-8 mm across; seeds brown to black
Useful traits	: For hysteria, to cure burns, cuts, wounds and scorpion stings; used in brain tonic
Management	: Cutting and mowing before flowering, roadsides (glyphosate), grass turfs (2, 4-D).



Plant



Flower

*Grangea maderaspatana* (L.) Poir.

Common name	: Mustaru, madras carpet
Native	: Indian sub continent, China, Malaysia
Family	: Asteraceae
Flowering & fruiting season	: March - July
Habit	: Annual / perennial
Habitat	: Marshy areas, bunds of fields and sandy river beds
Identifying traits	: Prostrate herbs, densely hispid; leaves alternate, oblanceolate, irregularly pinnate-lobed, base auricled, sessile; inflorescence, heads 8 mm across, globose, axillary, solitary yellow; inner flowers bisexual; corolla 2 mm long, campanulate, 5-lobed; achenes obovate
Useful traits	: Plant is stomachic and uterine stimulant; antipyretic; leaves are used as sedative, analgesic, carminative, stomachic
Association	: Paddy, soybean
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. rice (metsulfuron), soybean (imazethapyr, chlorimuron).



Plant



Flower

*Ipomoea aquatica* Forssk.

Common name	: Water spinach, kalmi sag
Native	: Tropical Asia
Family	: Convolvulaceae
Flowering & fruiting season	: Round the year
Habit	: Annual/perennial
Habitat	: Ponds and lakes
Identifying traits	: Sprawling vine, creeping on mud or floating on water; stems hollow and succulent when floating; leaves triangular, ovate, lanceolate, or linear, entire to dentate, bases truncate, cordate, hastate, or sagittate; inflorescences axillary cymes, with one to a few flowers; funnel shaped, glabrous, pink, white or cream; fruit a capsule, globose to ovoid; 4 or fewer seeds, brown or black
Useful traits	: Leaves used as vegetable; use as an animal feed; ability to remove heavy metals
Association	: Rice
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. rice (2,4-D, metsulfuron).



Plant



Seed

### *Ipomoea carnea* Jacq.

Common name	: Besharam, bush morning glory
Native	: Tropical America
Family	: Convolvulaceae
Flowering & fruiting season	: Throughout the year
Habit	: Perennial
Identifying traits	: Large erect shrubs, branchlets hallow; leaves, broadly ovate, base cordate to truncate, margin entire, apex acuminate; flowers rose or pink, funnel shaped axillary and terminal cymes; fruit globose or ovoid, seeds hairy
Useful traits	: Sedative and anticonvulsant, aphrodisiac, purgative and cathartic; as a raw material for paper making
Habitat	: Wetland, roadsides, waste places and cultivated areas
Management	: Mechanical removal before flowering, roadsides (glyphosate, 2, 4-D).



Plant



Flower

## *Ipomoea eriocarpa* R. Br.

Common name	: Buta, tiny morning glory
Native	: Tropical Africa, Madagascar
Family	: Convolvulaceae
Flowering & fruiting season	: July - December
Habit	: Perennial
Habitat	: Common weed of cultivated fields and degraded forests
Identifying traits	: Twiners; leaves ovate lanceolate, or ovate triangular, glabrescent above, pubescent below, acute to acuminate, base cordate, entire; flowers, pink, sessile in dense axillary; fruit, globose, entirely or partly hairy
Useful traits	: Eaten as a vegetable; oil extract of the plant is used for external application in the treatment of headache, rheumatism, leprosy, epilepsy, ulcers and fevers; effective soil-binder and smoother of weeds
Association	: Maize, rice
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. maize (2,4-D), rice (2,4-D, metsulfuron).



Plant



Fruit

## *Ipomoea nil* (L.) Roth

Common name	: Japanese morning glory, kaladana, neelkalmi
Native	: Tropical America
Family	: Convolvulaceae
Flowering & fruiting season	: March - December
Habit	: Annual/perennial
Habitat	: Desert, upland
Identifying traits	: Twining herb, leaf blade broadly ovate or nearly circular, base cordate, margin entire or 3- 5 lobed, apex acuminate; inflorescences, axillary, 1 to few flowered pale to bright blue with whitish tube, fruit, straw colored, ovoid to globose; seeds, black, ovoid-trigonous
Useful traits	: Seed is anthelmintic, anticholinergic, antifungal, antispasmodic, antitumour, diuretic and laxative
Association	: Maize, paddy
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. maize (2,4-D), rice (2,4-D, metsulfuron).



Plant



Fruit &amp; Seed

## *Ipomoea obscura* (L.) Ker Gawl.

Common name	: Pan bel, obscure morning glory
Native	: Tropical Africa
Family	: Convolvulaceae
Flowering & fruiting season	: March - August
Habit	: Annual/perennial
Habitat	: Cultivated crops, grasslands, roadsides and waste places
Identifying traits	: A slender twining or trailing herbs; leaves, cordate, margin entire, apex acuminate, often with reddish scars; flowers pale yellow with purple base, axillary, solitary or in sub umbellate cymes; fruit, globose, apically beaked; seeds, dark brown
Useful traits	: Used as fodder; leaves eaten as a cooked vegetable
Association	: Sugarcane, maize
Management	: Manual removal, application of crop specific herbicides, viz. sugarcane and maize (2,4-D, carfentrazone).



Plant



Fruit & Seed

*Ipomoea pes-tigridis* L.

Common name	: Panchpatia, tiger foot morning glory
Native	: Tropical East Africa
Family	: Convolvulaceae
Flowering & fruiting season	: July - February
Habit	: Annual/perennial
Habitat	: Waste places, crop fields, forests and also in the plains
Identifying traits	: Spreading or twining hispid herbs up to 2.5 m; leaves, palmately 5-7 lobed, lobes base obtuse, margin entire, apex acuminate; flowers, pale pink in axillary, long peduncle; fruit, globose, enclosed in calyx; seed, pubescent
Useful traits	: Root is considered purgative; plant is used for wound healing
Association	: Maize, sugarcane
Management	: Manual removal, application of crop specific herbicides, viz. sugarcane and maize (2, 4-D).



Leaf



Flower



## *Ipomoea purpurea* (L.) Roth

Common name	: Common morning glory, morning glory,
Native	: South America
Family	: Convolvulaceae
Flowering & fruiting season	: February - October
Habit	: Annual/perennial
Habitat	: Waste and cultivated land
Identifying traits	: Twines with its apex; leaves, alternate, stalked; widely cordate, sometimes 3-lobed, with entire margin, base deeply lobed; blue or purple flowers with white within the funnel form corolla - 6, valvate; subglobose to ovoid capsules containing 3-6 seeds each
Useful traits	: The flowers, seeds, roots and stems used as a laxative, hallucinogen, purgative and for treatment of syphilis
Association	: Maize, sugarcane
Management	: Manual removal, application of crop specific herbicides, viz. sugarcane and maize (2, 4-D).



Flower



Seed

## *Ipomoea triloba* L.

Common name	: Three-lobed morning glory
Native	: Tropical America
Family	: Convolvulaceae
Flowering & fruiting season	: September - December
Habit	: Annual / perennial
Habitat	: Cultivated land, grassland and on roadsides and wasteland
Identifying traits	: Twining vine with milky sap; leaves, simple petiolate broadly ovate to orbicular, deeply 3-5 lobed, pink to pale-purple funnel-shaped flowers; fruit a subglobose, bristly pubescent
Useful traits	: Leaves cooked and eaten as a vegetable
Association	: Maize, peanuts, upland rice, sugarcane
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. rice (metsulfuron), groundnut (fluchloralin, oxyfluorfen), sugarcane and maize (2,4-D, carfentrazone).



Plant



Flower

## Lathyrus aphaca L.

Common name	: Jangli mattar, yellow pea, yellow vetchling
Native	: Europe
Family	: Fabaceae
Flowering & fruiting season	: June - September
Habit	: Annual
Habitat	: Fields, roadsides, waste areas, gravel and chalk
Identifying traits	: Trailing or scrambling annual plant; stipules leaf-like, leaf reduced to tendril; flowers, bright to pale yellow; pod, glabrous, 4-6-seeded
Useful traits	: Seed cooked; only use when immature, the fully ripe seed can be narcotic in large quantities; Seeds are harmless and nutritious when eaten in small quantities
Association	: <i>Rabi</i> crops
Management	: Manual/mechanical removal at early growth stage; application of crop specific herbicides, viz. wheat (metsulfuron, meso+iodosulfuron), <i>rabi</i> pulses (pendimethalin).



Plant



Pod

## Lathyrus sativus L.

Common name	: White vetchling, grass pea, chickling pea, white pea
Native	: Central Asia
Family	: Leguminosae
Flowering & fruiting season	: November - February
Habit	: Annual
Habitat	: Cultivated land
Identifying traits	: Much-branched annual herb up to 170 cm tall; each leaf is composed of 1-4 leaflets and ends in a simple or branched tendril; flower blue, reddish-purple, red, pink or white; pod oblong, laterally flattened pod, contains up to 7 seeds; seeds, wedge-shaped, grey or brown
Useful traits	: Used as food, fodder, hay, green manure and medicinal purpose
Association	: <i>Rabi</i> crops
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. wheat (metsulfuron, meso+iodosulfuron), <i>rabi</i> pulses (pendimethalin).



Plant



Flower

### *Mecardonia procumbens* (Mill.) Small

Common name	: Makardana, baby jump up
Native	: Subtropical America
Family	: Plantaginaceae
Flowering & fruiting season	: June - September
Habit	: Annual
Habitat	: Lawns, nurseries, forests, waste places and cultivated fields
Identifying traits	: Usually a small sprawling plant with opposite toothed leaves; bright lemon yellow small flowers
Association	: Paddy, maize, soybean, pigeon pea
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. rice (2,4-D, metsulfuron), soybean (imazethapyr, chlorimuron), maize (2,4-D, carfentrazone), redgram (imazethapyr).



Plant



Flower

## *Merremia aegyptia* (L.) Urb.

Common name	: Hairy morning glory, hairy woodrose
Native	: Tropical America
Family	: Convolvulaceae
Flowering & fruiting season	: October - March
Habit	: Annual / Perennial
Habitat	: Along the roadsides, open forest and cultivated land
Identifying traits	: Twinning, herbs; leaves, alternate, digitately 5-foliate; leaflets broadly lanceolate, acuminate, both surfaces appressed hairy; flowers, white, 5-merous; funnel-shaped, glabrous; fruit, globose capsule, dehiscent by 4 valves, up to 4-seeded; seeds trigonous brown, glabrous
Useful trait	: Dried leaves are used as a dressing for burns
Management	: Mechanical removal before flowering, protected spraying of paraquat or glyphosate at early active growth stage.



Plant



Fruit

## Merremia emarginata (Burm. f.) Hallier f.

Common name	: Kupit-kupit, musakan
Native	: India
Family	: Convolvulaceae
Flowering & fruiting season	: October - February
Habit	: Perennial
Habitat	: In dry, open grasslands and waste places
Identifying traits	: Herb, stems prostrate, rooting at the nodes; leaves, alternate, reniform to broadly ovate, cordate basally; inflorescences, axillary, solitary or 2-3 flowered, corolla yellow, campanulate; fruits, capsular, subglobose; seeds grayish-brown, glabrous, dotted
Useful traits	: Considered deobstruent, diuretic, alterative, antioxidant, antipyretic, antibacterial, anti-inflammatory, anticancer and antidiabetic properties
Association	: Sugarcane, maize, rice
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. rice (2,4-D, metsulfuron), sugarcane and maize (2,4-D, carfentrazone).



Plant



Flower

### *Mikania micrantha* Kunth

Common name	: Chinese creeper, mile-a-minute, bitter vine
Native	: Tropical America
Family	: Asteraceae
Flowering & fruiting season	: Round the year
Habit	: Perennial
Habitat	: Damp, open areas, roadsides, forest plantations
Identifying traits	: A branched perennial vine; leaves, heart-shaped or triangular with dentate margins, acute tip and a broad base; flowers, greenish-white; seeds black
Useful traits	: Treatment for stomach aches; leaves are antidote, cholagogue, diuretic and febrifuge; used as a ground cover
Association	: Plantation trees such as species of citrus, cocoa, coffee, teak, bananas
Management	: Mechanical removal before flowering, protected spraying of paraquat or glyphosate at early active growth stage.



Plant



Flowers



### *Momordica dioica* Roxb. ex Willd.

Common name	: Spine gourd, kakrol,
Native	: South East Asia
Family	: Cucurbitaceae
Flowering & fruiting season	: June - December
Habit	: Perennial
Habitat	: Agriculture field, bunds, fences, forest
Identifying traits	: Climber with tuberous roots; tendril simple; leaves, broadly ovate, 3 to 5-angled, cordate; flowers yellow, solitary; fruit ovoid or ellipsoid, pale yellow
Useful traits	: Sweet fruits are eaten as a vegetable; roots used in bleeding piles, bowel affections and urinary complaints; juice of root is antiseptic
Management	: Mechanical removal before flowering, protected spraying of paraquat or glyphosate at early active growth stage.



Plant



Fruit

### *Mukia maderaspatana* (L.) M. Roem.

Common name	: Agumaki, madras pea pumpkin
Native	: Indian subcontinent
Family	: Cucurbitaceae
Flowering & fruiting season	: July - October
Habit	: Perennial
Habitat	: Near rivers, deciduous forests, on the hedges or on low herbs or shrubs
Identifying traits	: Climbing or trailing herb; stem, much branched coarsely scabrous; leaves, simple, alternate ovate, cordate at base, entire or shallowly 5-lobed, spines serrate, densely scabrous; flowers yellow
Useful traits	: Hepatoprotective, anti-inflammatory, antiarthritic, immunomodulatory properties
Association	: Cotton, rice
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. cotton (pyrithiobac sodium), rice (2,4-D, metsulfuron).



Plant



Fruits

### *Oxalis corniculata* L.

Common name	: Amrul, creeping wood sorrel
Native	: South America
Family	: Oxalidaceae
Flowering & fruiting season	: July-September
Habit	: Annual/perennial
Habitat	: Gardens, orchards, arable land and waste places
Identifying traits	: Perennial creeping herb; forms roots where nodes contact the soil; leaves, 3 heart-shaped leaflets; flower, yellow 5 petals; oval flat black seeds; propagation from seed
Useful traits	: Anthelmintic, astringent, antiscorbutic, diuretic, stomachic, febrifuge and styptic; a good source of vitamin C; the boiled whole plant yields a yellow dye
Association	: Tea, paddy, citrus, groundnut, potato, sugarcane
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. tea (oxyfluorfen), rice (2,4-D, metsulfuron), groundnut (oxyfluorfen), potato (metribuzin), sugarcane (2,4-D, carfentrazone), citrus ((protected spraying of glyphosate).



Plant



Fruit



Seed

### *Passiflora foetida* L.

Common name	: Stinking passion flower, wild water lemon
Native	: Tropical America
Family	: Passifloraceae
Flowering & fruiting season	: May - October
Habit	: Perennial
Habitat	: Waste ground, along roadsides, agricultural fields
Identifying traits	: Climbing or scrambling vine; leaves, 3-5 lobed, crushed leaves and stem gives off foul odor, stem produces tendrils; flower, creamy-white petals with pink or purple centre; seeds, black
Useful traits	: Whole plant used as a children's anthelmintic; root is antispasmodic; used as a ground cover and as a hedge
Association	: Sugarcane, pineapple, coconut, rice, maize, banana
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. tea (oxyfluorfen), rice (2,4-D, metsulfuron), groundnut (oxyfluorfen), potato (metribuzin), sugarcane (2,4-D, carfentrazone), maize (2,4-D), pineapple, coconut, banana (protected spraying of glyphosate).



Plant



Flower

### *Scurrula parasitica* L.

Common name	: Pulluruvi
Native	: South East Asia
Family	: Loranthaceae
Flowering & fruiting season	: November - February
Habit	: Perennial
Habitat	: Plant parasite
Identifying traits	: Parasitic shrubs, branched; leaves, simple, opposite, ovate, rounded at base and apex; flowers, axillary, greenish-yellow, slender, densely tomentose; fruit, obovoid, densely hairy
Useful traits	: Plant has anticancer, immunomodulatory, antidiabetic, antioxidant, antihepatotoxic and cytotoxic activity
Association	: White teak
Management	: Manual/mechanical removal at early growth stage, spraying of ethereal.



Plant



Flower

## *Tinospora sinensis* (Lour.) Merr.

Common name	: Indian tinospora, giloy, heart leaved mooseed
Native	: Indian subcontinent
Family	: Menispermaceae
Flowering & fruiting season	: April - December
Habit	: Perennial
Habitat	: Dry forests, growing over hedges and small trees
Identifying traits	: Climbing shrub; leaves, simple, alternate, broadly ovate or ovate cordate, 7 nerved and deeply cordate at base; flowers, greenish yellow, male flowers are clustered and female are solitary
Useful traits	: For the treatment of jaundice, diabetes, and rheumatoid arthritis, and is also used as an immunostimulant
Association	: Sugarcane, maize
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. sugarcane (2,4-D, carfentrazone), maize (2,4-D).



Plant



Flower

### *Trianthema portulacastrum* L.

Common name	: Black pig weed, santhi, bishkhapra, patharchata
Native	: Eastern and Tropical Africa
Family	: Aizoaceae
Flowering & fruiting season	: June-October
Habit	: Annual/perennial
Habitat	: Paddy fields and other moist localities
Identifying traits	: Stem, cylindrical, often tinged purple, finely pubescent; leaves elliptic or spade-shaped, tip blunt; pink solitary flowers
Useful traits	: Used as analgesic, stomachic, laxative, treatment of blood disease, anemia, inflammation and night blindness
Association	: Cotton, mustard, maize, paddy, pigeon pea, sugarcane, soybean, potato, onion
Management	: Manual weeding and crop specific broad-leaved weed killer herbicides.



Plant



Flower



Fruit

*Tribulus terrestris* L.

Common name	: Gokharu, puncture vine, yellow vine
Native	: Tropical America
Family	: Zygophyllaceae
Flowering & fruiting season	: June - October
Habit	: Annual
Habitat	: Cultivated field, open dry places
Identifying traits	: Leaves, compound, opposite, leaflets, opposite; flower, yellow; seeds have strong spines
Useful traits	: Control soil erosion by wind and water and loss of soil moisture; used to improve soil texture and water holding capacity in wastelands; used in folk medicine as a tonic and diuretic
Association	: Citrus, coffee, onion, chickpea, tomato, potato
Management	: In plantation crops, protected spray of 2,4-D, glyphosate; in field crops manual weeding and crop specific herbicides like onion (oxyfluorfen), chickpea (pendimethalin) tomato/potato (metribuzin).



Plant



Fruit



## *Vicia hirsuta* (L.) Gray

Common name	: Hairy vetch, tiny vetch
Native	: Europe
Family	: Fabaceae
Flowering & fruiting season	: March - September
Habit	: Annual
Habitat	: Open sites, moist places, road sides
Identifying traits	: Trailing or climbing plant; leaves, compound, 12-16 leaflets, ending in an often forked tendril; flowers, hermaphrodite bluish white; pod, pubescent, bears 2-seeds, each seed with a persistent funiculus, seed orbicular, redish brown
Useful traits	: The seeds, leaves and stem can be cooked and consumed; used as a cover crop to add nitrogen to the soil
Association	: <i>Rabi</i> cereals and pulses
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. wheat (metsulfuron, meso+iodosulfuron), <i>rabi</i> pulses (pendimethalin).



Plant



Flower



Seed

### Vicia sativa L.

Common name	: Common vetch, tare, spring vetch
Native	: Europe and Asia
Family	: Fabaceae
Flowering & fruiting season	: April-August
Habit	: Annual
Habitat	: Wasteland, along roadsides and in cultivated fields
Identifying traits	: Stem four-angled; leaves compound 3-8 pairs of opposite leaflet; flowers, solitary or paired, corolla ranges in colour from white to blue, red to pink-purple
Useful traits	: Valuable green manure crop; cover crop; animal fodder
Association	: <i>Rabi</i> cereals and pulses
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. wheat (metsulfuron, meso+iodosulfuron), <i>rabi</i> pulses (pendimethalin).



Plant



Pod

## *Vigna trilobata* (L.) Verdc.

Common name	: Mukni, Jangli-moth
Native	: Indian sub continent
Family	: Fabaceae
Flowering & fruiting season	: June - December
Habit	: Annual or perennial
Habitat	: Wasteland and crop fields
Identifying traits	: Trailing annual herb; leaves, trifoliate, ovate-oblong, leaflet palmately trilobed; yellow flowers; pod slightly curved; seeds black
Useful traits	: As pasture and green manure crop; cooked and eaten as a vegetable
Association	: Chickpea, rice, wheat
Management	: Manual/mechanical removal at early growth stage, application of crop specific herbicides, viz. rice (2,4-D, metsulfuron), chickpea (pendimethalin), wheat (metsulfuron, meso+iodosulfuron).



Plant

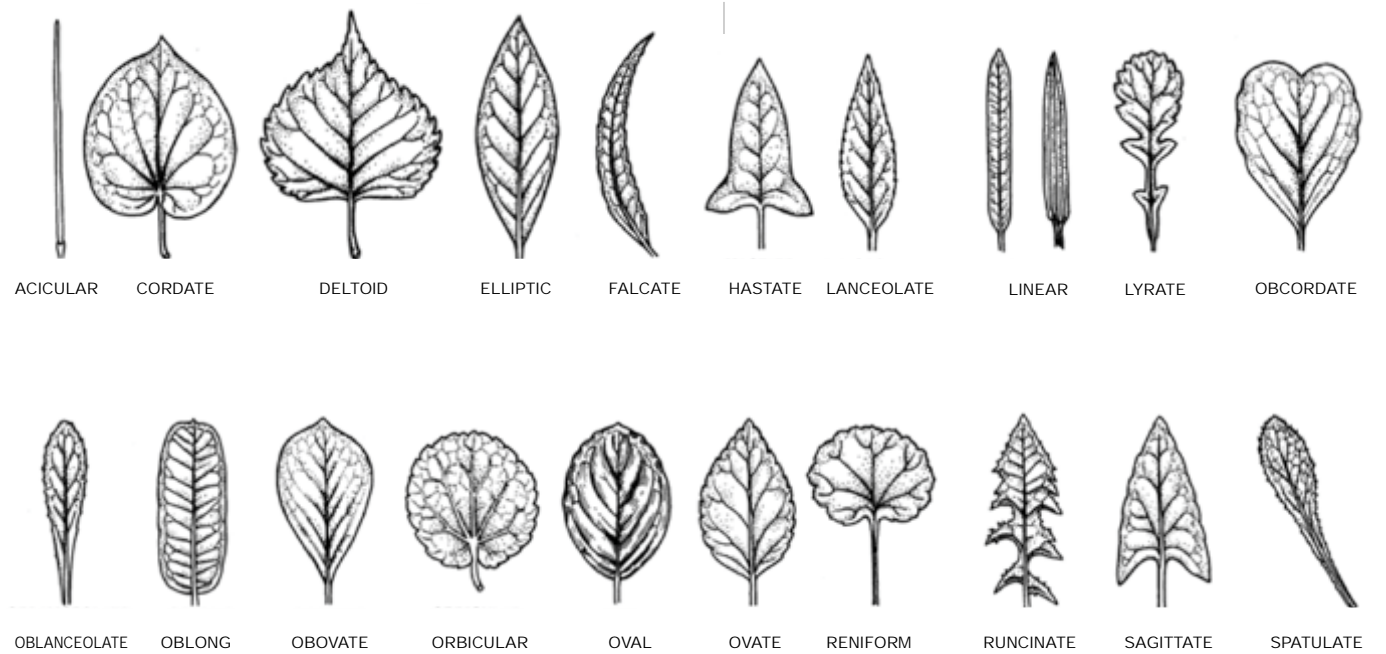


Flower

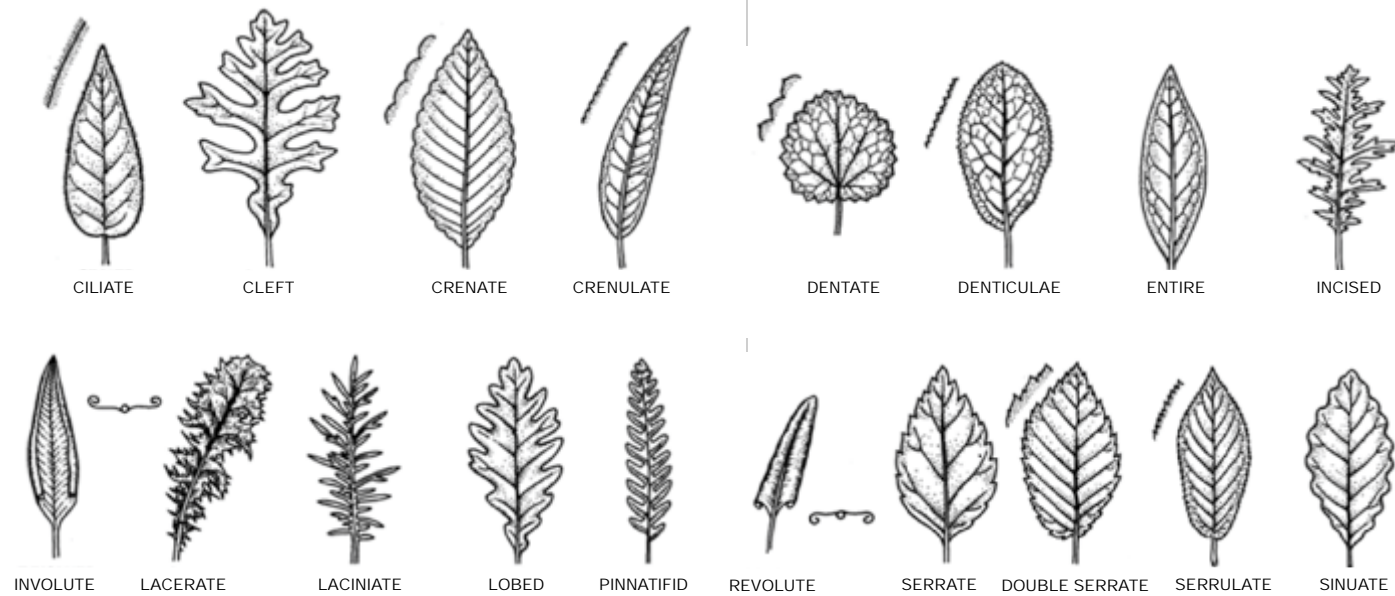
# APPENDIX



## Leaf Shapes

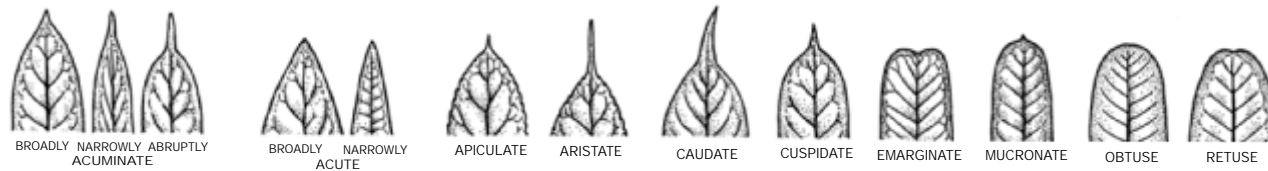


## Leaf Margins

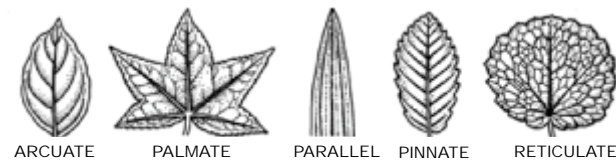


## Leaf Apics, Venation and Bases

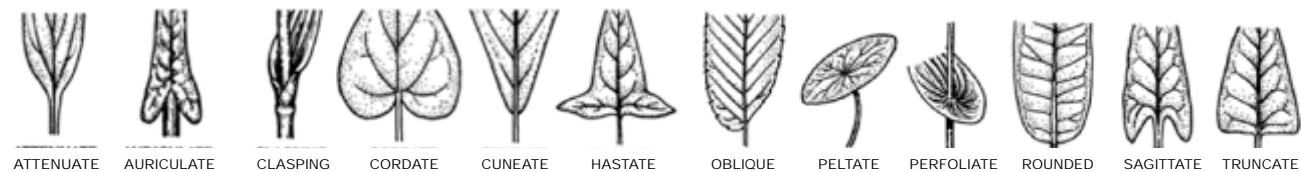
### Apics



### Venation



### Bases





**Achene:** a small, dry one-seeded fruit that does not open to release the seed

**Acuminate:** Tapering gradually to a protracted point

**Acute:** Sharp or pointed

**Annual:** Life cycle that lasts only one year

**Auricle:** An ear shaped appendage at the base of a leaf, leaflet or corolla lobe; or an ear-like outgrowth at the base of the sheath of some grasses and other monocots

**Axil:** The angle between one part of a plant and another part, e.g. a branch and a leaf

**Berry:** A fleshy or pulpy indehiscent fruit with the seed (S) embedded in the fleshy tissue of the pericarp

**Bisexual:** Each flower of each individual has both male and female structures

**Calyx :** The outermost floral whorl usually consisting of sepals or a calyx tube and calyx lobes

**Campanulate:** Bell-shaped, like a campanula

**Capsule:** A dry fruit form two or more united carpels and dehiscing at maturity to release the seeds

**Climber:** Growing more or less erect by leaning or twining around another structure

**Compound leaves:** A leaf consisting of several or many distinct parts (leaflets) joined to a single stem

**Cordate:** A 2-dimensional shape; heart shaped in outline, i.e. having the base broad and distinctly notched

**Corolla:** The petals of a flower, typically forming a whorl within the sepals and enclosing the reproductive organs

**Creeper:** Any plant that grows along the ground

**Cymes:** An inflorescence in which each flower, in turn, is formed at the tip of a growing axis, further flowers being formed on branches arising below

**Dehiscent:** Breaking open at maturity to release the contents

**Dentate:** With sharp, spreading, rather coarse teeth standing out from the margin

**Dioecious:** Having male and female unisexual flowers on different plants

**Elliptic:** A 2-dimensional shape; oval in outline and with a length; breadth ratio between 3:2 and 2:1

**Entire:** Without any incisions or teeth

**Ex-stipulate:** Having no stipules

**Glabrescent:** Becoming glabrous

**Glabrous:** Without hairs

**Hastate:** With a pair of basal lobes which flare outwards; refers to a flat organ, most commonly a leaf

**Herb:** A plant which is non-woody or woody at the base only, the above ground stems usually being ephemeral

**Hermaphrodite plant:** Plant having both male and female reproductive organs

**Hispid:** Without stout, rigid or bristly, erect hairs

**Inflorescence:** The arrangement of the flowers on a plant

**Lanceolate:** Lance shaped, much longer than wide, the widest point below the middle

**Leaflets:** One of the ultimate segments of a compound leaf

**Margin:** The edge of the leaf blade

**Node:** The part of a plant stem from which one or more leaves emerge, often forming a slight swelling

**Oblanceolate:** Lanceolate, with the more pointed end at the base

**Oblique:** Neither parallel nor at right angles to a specified or implied line; slanting

**Oblong:** A 2-dimensional shape; rectangular with a length; breadth ratio between 3:2 and 2:1

**Obovate:** Ovate with the narrower end at the base

**Opposite:** Describing leaves or other organs which are borne at the same level but on opposite sides of the stem; of floral parts, on the same radius

**Orbicular:** Of circular outline

**Ovate:** A 2-dimensional shape; resembling a section through the long axis of an egg, attached near the broader end and with a length:beadth ratio between 3:2 and 2:1

**Palmate:** Describing a leaf which is divided into several leaflets which arise from the same point

**Parasitic:** A plant that derives some or all of its nutritional requirements from another living plant

**Peduncle:** The stalk of an inflorescence

**Pentamerous:** Having parts arranged in groups of five

**Perennial:** With a life span extending over more than two growing seasons

**Persistent:** Continuing to exist or occur over a prolonged period

**Petiole:** The stalk of a leaf.

**Pinnate:** Having leaflets arranged on either side of the stem, typically in pairs opposite each other

**Pod:** An elongated seed vessel of a leguminous plant such as the pea, splitting open on both sides when ripe

**Prostrate:** Lying flat on the ground

**Pubescent:** Covered with short, soft hairs

Reniform: A 2-dimensional shape; kidney shaped in outline

Sagittate: Shaped like an arrowhead

Seed: The unit of reproduction of a flowering plant, capable of developing into another such plant

Sessile: Attached directly by its base without a stalk or peduncle

Simple: Not divided, e.g. applied to a leaf not divided into leaflets

Solitary: Usually used to describe flowers which are borne singly, and not grouped into an inflorescence

Stipule: A small leaf-like appendage to a leaf, typically borne in pairs at the base of the leaf stalk

Succulent: Having thick fleshy leaves or stems adapted to storing water

Tendrils: A slender organ formed from a modified stem, leaf or leaflet which, by coiling around objects, supports a climbing plant

Tomentose hairs: Tomentose hairs are hairs that are flattened and matted

Trifoliate: Having three leaves

Truncate: With an abruptly transverse end as if cut off

Tubular: Long, round, and hollow like a tube

Unisexual: Having either stamens or pistils but not both

Whorls: Spiral or move in a twisted and convoluted fashion

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