

CORE PAPER-VII 18BBO52C

MORPHOLOGY, EMBRYOLOGY OF ANGIOSPERMS AND SEED TECHNOLOGY

18BBO52C-U1

Habitat of Angiosperms:

The natural abode or locality of plant, i.e., whether cultivated as an ornamental plant, a food crop or occurs in a wild state.

Habit of Angiosperms:

Herb:

Plant with no persistent parts above ground, as distinct from shrubs and trees, e.g., Ranunculus of Ranunculaceae.

Shrub:

Perennial woody plant, typically with several stems arising from or near the ground, e.g., Capparis of Capparidaceae.

Tree:

A perennial woody plant with a single trunk, e.g., Melia of Meliaceae.

Annual:

Plant that completes its life-cycle, from seed germination to seed production, followed by death within a single season, e.g., Brassica of Cruciferae.

Biennial:

Plant that continues its growth from year to year. In herbaceous perennials serial parts die away in autumn, replaced by new shoots in the following year from underground structures, e.g., Delphinium, in woody perennials, permanent woody stems above ground from starting point for each new year's growth, a characteristic that enables some of them to reach a large size, e.g., shrubs and trees.

Parasite:

Plant living in or on another plant (its host) from which it obtains food, e.g., Cuscuta of Convolvulaceae.

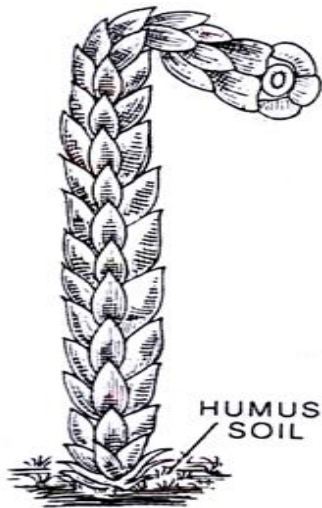


Fig. 12.1. Saprophyte. *Monotropa*. Epiphyte:

Plant attached to another plant, not growing parasitically upon it but merely using it for support, e.g., *Vanda* (an orchid) of Orchidaceae.

ADVERTISEMENTS:

Mesophyte:

Plant growing under average conditions of water supply.

Hydrophyte:

Plant whose habitat is water or very wet places, e.g., *Ranunculus aquatilis* of Ranunculaceae; *Neptunia oleracea* of Mimosoideae.

Xerophyte:

Plant of dry habitat able to endure conditions of prolonged drought, e.g., *Capparis decidua* of Capparidaceae.

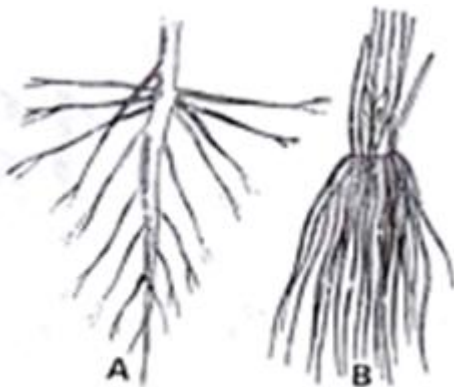


Fig. 12.2. Roots. A, tap and lateral roots of a dicotyledon; B, fibrous roots of a monocotyledon.

Saprophyte:

Plant which obtains organic matter in solution from dead and decaying tissues of plants (or animals), e.g., *Monotropa*.

Root of Angiosperms:

That part of vascular plants that usually grow downwards into the soil, anchoring plant and absorbing water and nutrient salts.

Tap:

Root system with a prominent main root, directed vertically downwards and bearing smaller lateral roots, e.g., most of dicots; *Cajanus* of Papilionatae.

Adventitious:

Root developing from part of plant other than roots, e.g., from stem or leaf cutting; of buds, developing from part of plant other than in axil of leaf, e.g., from root, most of monocots.

Branched:

Roots possessing branches.

Un-branched:

Roots without branches

Fibrous:

A fibrous root system consists of a tuft of adventitious roots of more or less equal diameter, arising from stem base or hypocotyl and bearing smaller lateral roots, e.g., wheat, strawberry.

Prop:

Hanging aerial roots of *Ficus*.

Stilt:

Such roots arise from the nodes of the stem above the soil, e.g., *Saccharum*.

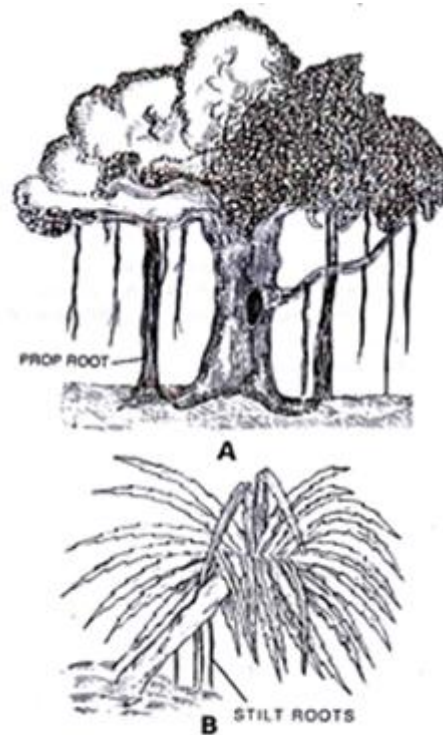
ADVERTISEMENTS:**Aerial:**

Fig. 12.3. Adventitious modified roots. A, prop roots of banyan; B, stilt roots of Keora.

Hanging aerial roots, e.g., Orchids.

Climbing:

The roots that help in climbing of plants, e.g., Tecoma, Piper, Pothos.

Respiratory:

Spongy roots, e.g., Jussiaea.

Pneumatophores:

Special root branch produced in large numbers by some vascular plants growing in water or in tidal swamps, e.g. Mangrove; grows erect, projecting into the air above and contains well developed intercellular system of air spaces in communication with atmosphere through pores on aerial portion.

Tuberous:

Irregularly swollen roots laden with starch, e.g., Ipomoea batatas of Convolvulaceae.

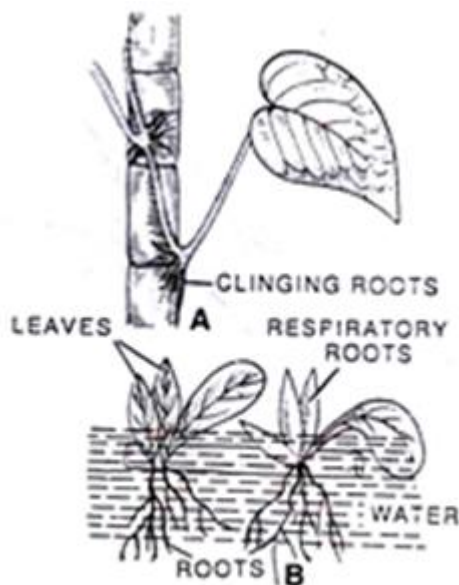


Fig. 12.4. Adventitious root modified roots. A, climbing roots of betel, B, respiratory roots of Jussiaea.

Parasitic:

The sucking roots of parasites, e.g., Cuscuta, Dendrophthoe, Viscum, Orobanche.

Epipliytic:

Hanging aerial roots of Orchids.

Assimilatory:

The aerial roots with chlorophyll, e.g., Tinospora.

Aquatic:

The roots found in water plant. They do not possess root caps and root hairs, e.g., Pistia.

Conical:

Cone like fleshy roots, e.g., carrot.

Fusiform:

Fusiform, e.g., fleshy root of radish (*Raphanus sativus* of Cruciferae).

Napiform:

Napiform. e.g., fleshy root of turnip.

Fasciculated:

Clusters of fleshy roots, e.g., Asparagus.

Nodulated:

The nodules of the roots contain bacteria, e.g., Leguminous roots; Cicer, Arachis, Trifolium.

Beaded or Moniliform:

The roots possessing beaded structures, e.g., Vitis.

Annulated:

When the root has a series of ring-like swellings on its body, e.g., ipecacuanha.

Nodulose:

When the slender root becomes suddenly swollen near the apex, e.g., Curcuma amada (Am-haldi).

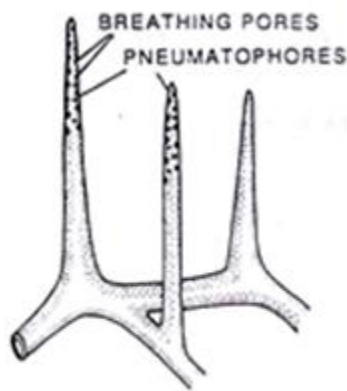


Fig. 12.5. Roots. Pneumatophores arising vertically upwards from an underground root.

Stem of Angiosperms:

Normally aerial part of axis of vascular plants, bearing leaves and buds at definite positions (nodes) and reproductive structures, e.g., flowers.

Erect:

Rigid, strong and upright stem.

Prostrate:

Trailing stem lying flat on the ground, e.g., Portulaca.

Twiner:

Long, slender and branched stem climbing by twining its body round the support, e.g., Cuscuta.

Climbers:

A weak stem attaching itself to any neighbouring support by means of special structures such as rootlets, hooks, leaf tendrils, stem tendrils, stipular tendrils, etc.

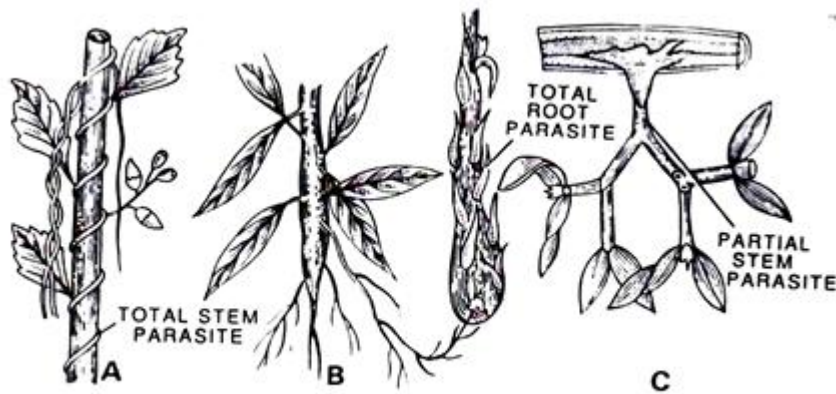


Fig. 12.6. Parasite. A, total stem parasite of *Cuscuta*; B, total root parasite of *Orobanchae*; C, partial stem parasite of *Viscum*.

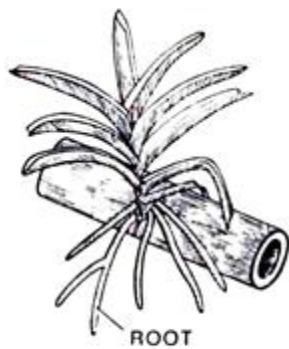


Fig. 12.7. Epiphytic roots of an orchid (*Vanda*).

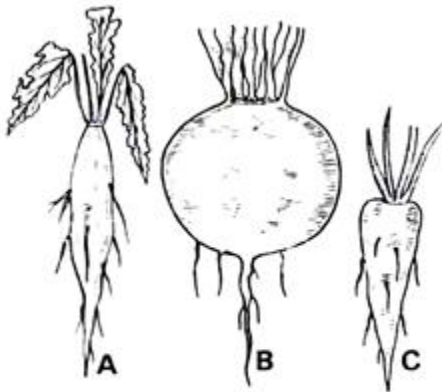


Fig. 12.8. Modified roots. A, fusiform roots of radish; B, Napiform root of turnip; C, conical root of carrot.

Rhizome:

Underground stem, bearing buds in axils of reduced scale-like leaves; saving as a means of perennation vegetative propagation, e.g., Zinger, *Mentha*.

Bulb:

Modified shoot consisting of very much shortened stem enclosed by fleshy, scale leaves, e.g., *Allium cepa*.

Corm:

Swollen stem base containing food material and bearing buds in the axils of scale like remains of leaves of previous season's growth, e.g. Colocasia, Amorphophallus, Gladiolus.

Tuber:

Swollen end of underground stem bearing buds in axils of scale-like rudimentary leaves (stem tuber), e.g., potato.

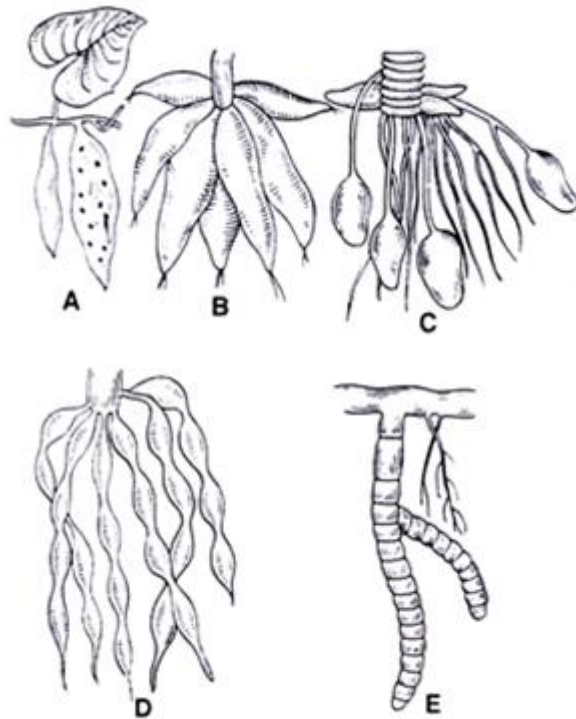


Fig. 12.9. Adventitious modified roots. A, tuberous roots of sweet potato; B, fasciculated tuberous roots of Dahlia; C, nodulated roots of mango ginger; D, moniliform roots of Momordica; E, annulated roots.

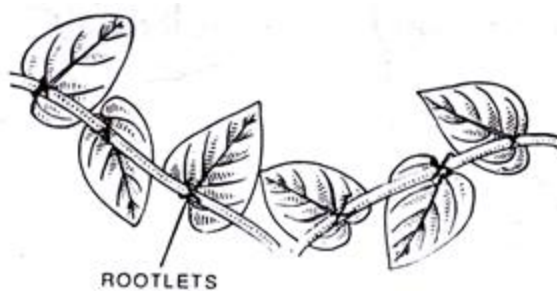


Fig. 12.10. Rootlet climbers of *Ficus pumila*.

Offset. A horizontal, short, more or less apex a tuft of leaves above and a cluster of thickened, prostrate branch producing at the small roots beneath, e.g., *Pistia*.

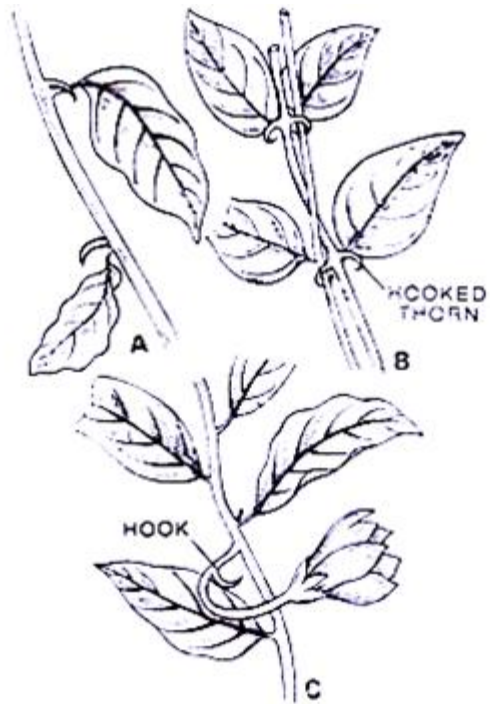


Fig. 12.11. Stem. A, thorn climber of *Bougainvillea*. B, hooked thorn climber of *Uncaria*. C, hook climber of *Artabotrys*.



Fig. 12.12. Stem. A, prickle climber of cane; B, prickle climber of rose.

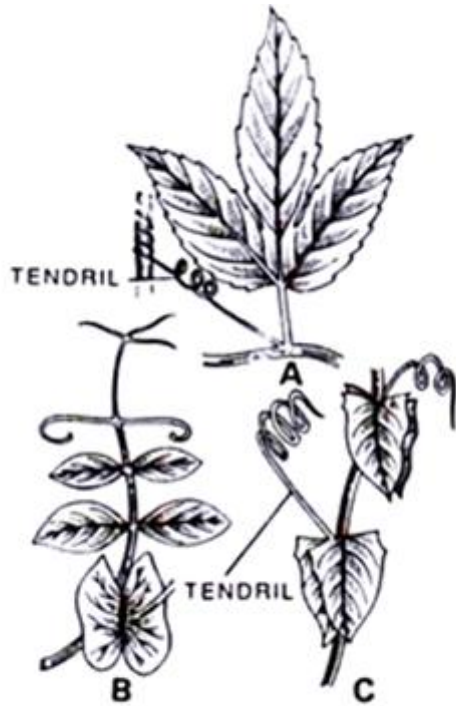


Fig. 12.13. Tendril climbers. A, stem tendril climber of passion flower; B, leaf tendril climber of pea; C, leaf tendril climber of *Lathyrus*.

Offset:

A horizontal, short, more or less apex a tuft of leaves above and a cluster of thickened, prostrate branch producing at the small roots beneath, e.g., *Pistia*.

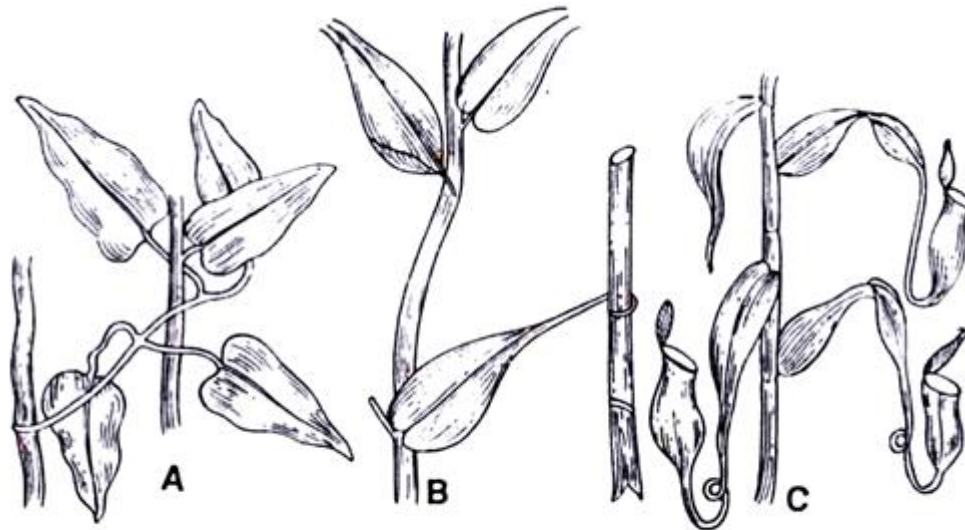


Fig. 12.14. Leaf climbers. A, leaf climber of *Clematis*; B, leaf climber of *Gloriosa*; C, leaf climber of pitcher plant.

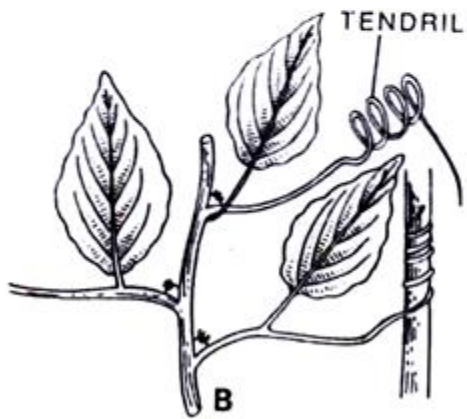
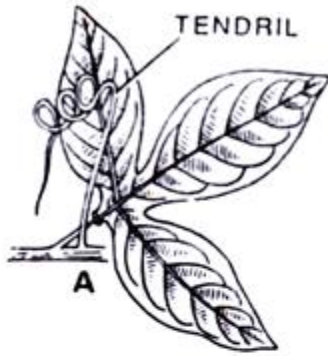


Fig. 12.15. Stem tendrils. A, *Passiflora*;
B, *Gouania*.

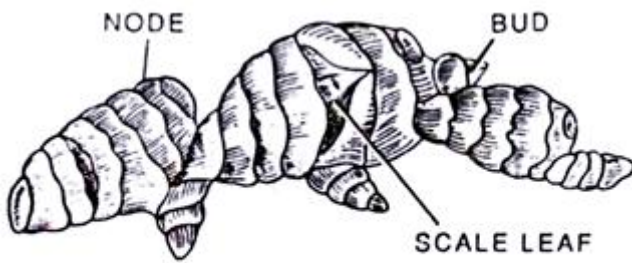


Fig. 12.16. Underground modified stem rhizome of ginger.

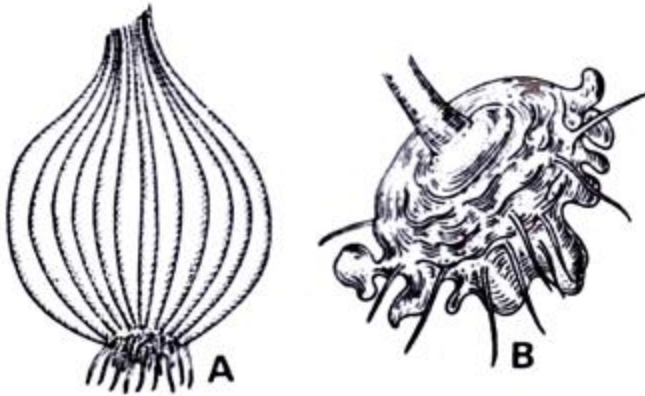


Fig. 12.17. Underground modified stem. A, bulb of onion; B, corm of *Amorphophallus*.

Stolon:

Horizontally growing stem that roots at nodes, e.g., strawberry runner, Colocasic.

Runner:

Stolon that roots at tip forming new plant that eventually is freed from connection with parent by decay of runner, e.g., Oxalis.

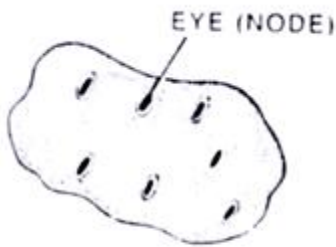


Fig. 12.18. Underground modified stem; tuber of potato

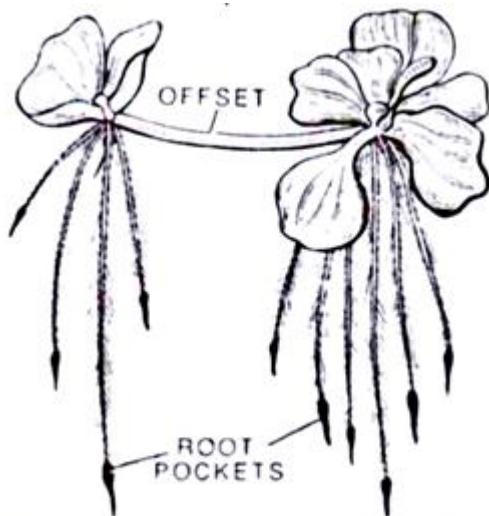


Fig. 12.19. Sub-aerial modification of stem. Offset of *Pistia*.

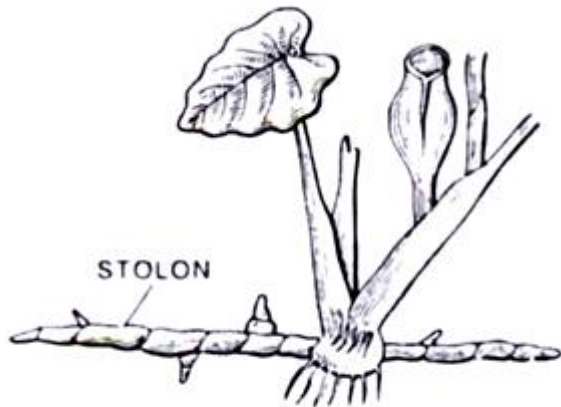


Fig. 12.20. Sub-aerial modification of stem. Stolon of *Colocasia*.

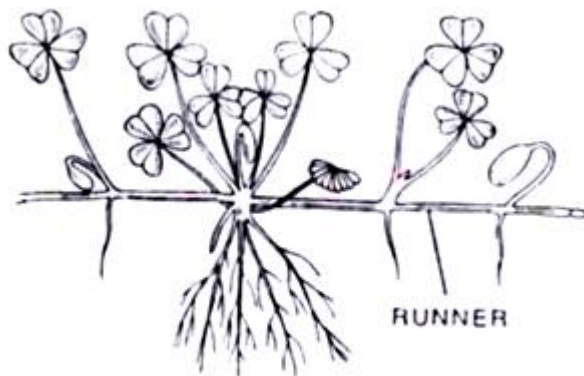


Fig. 12.21. Sub-aerial modification of stem. Runner of *Oxalis*.

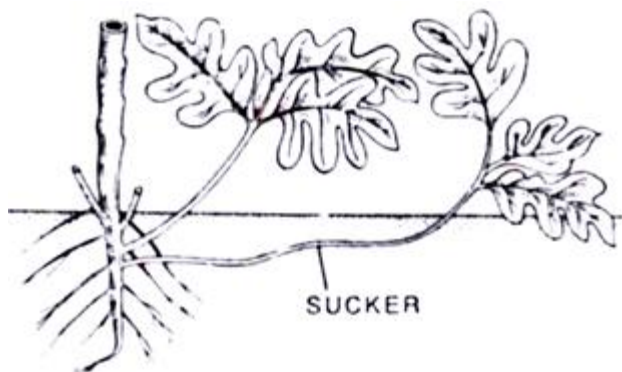


Fig. 12.22. Sub-aerial modification of stem. Suckers of *Chrysanthemum*.

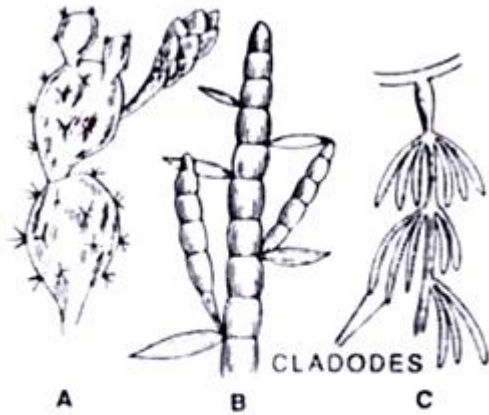


Fig. 12.23. Aerial modification of stem. A, phylloclade of *Opuntia*; B, phylloclade of *Cocoloba*; C, cladodes of *Asparagus*.

Sucker:

A creeping stem but growing obliquely upwards directly giving rise to a leafy shoot, e.g., *Chrysanthemum*.

Phylloclade:

Modified stem having appearance and function of a leaf e.g. *Ruscus Cocoloba*.

Cladode:

A phylloclade of single internode, e.g., *Asparagus*.

Branched:

Stem possessing branches, e.g., *Neem tree*.

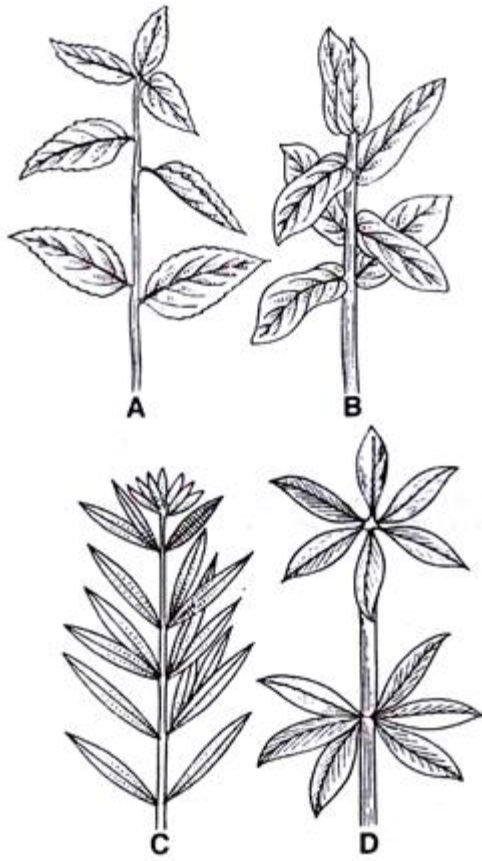


Fig. 12.25. Phyllotaxy of leaves. A, alternate; B, opposite decussate; C, whorled leaves of *Nerium*; D, whorled leaves of *Alstonia*.

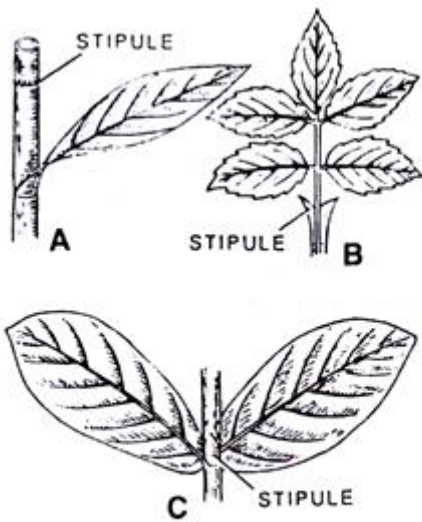


Fig. 12.26. Stipules. A, ochreate stipule of *Polygonum*; B, interpetiolar stipule of *Ixora*; C, adnate stipule of rose.

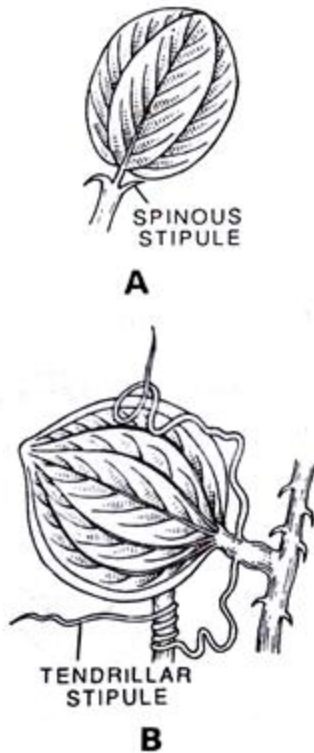


Fig. 12.27. Stipules, A, spinous stipules of *Zizyphus*; B, tendrillar stipules of *Smilax*.

Un-branched:

Stem having no branches, e.g., Palm.

If branched whether racemose or cymose type of branching, If cymose whether uniparous, biparous or multiparous.

Herbaceous:

Having the characters of a herb, e.g., Ranunculus.

Woody:

Having the characters of a shrub and tree, e.g., Capparis, Melia.

Solid:

Interior portion of the stem is filled up with matter.

Fistular:

A stem having hollow interior, e.g., wheat, bamboo.

Cylindrical (terete):

Circular stem as seen in T.S.

Angutar:

A stem shows many angles in T.S., e.g., Cucurbita.

Flattened:

Flat stem in T.S.

Hairy:

Stem possessing hairs on its surface.

Glabrous:

Smooth stem.

Waxy:

Stem having wax coating, e.g., *Calotropis*.

Spiny:

Stem having spines.

Colour:

Whether green, grey, etc.

Leaf of Angiosperms:

Radical:

Proceeding from or near the root, e.g., Onion.

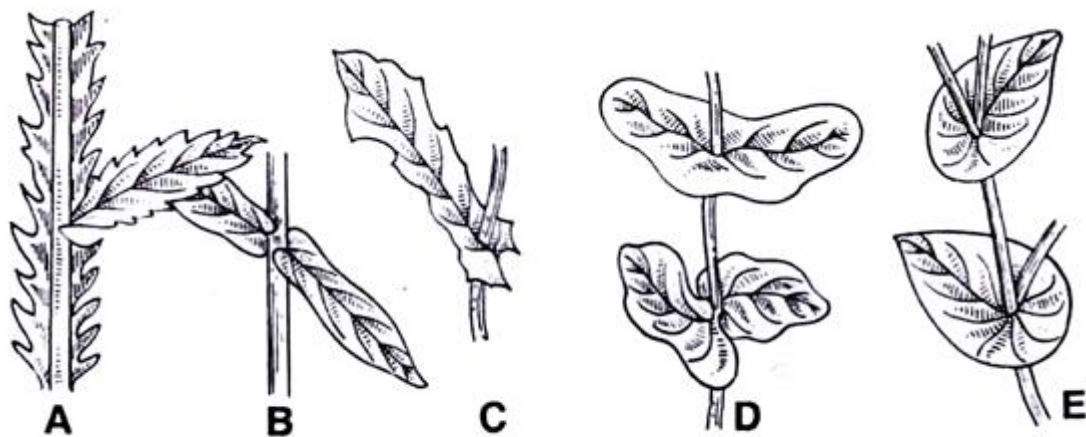


Fig. 12.28. Leaf base of sessile leaves. A, decurrent leaf of *Laggera*; B, auriculate leaf of *Calotropis*; C, amplexicaul leaf of *Emilia*; D, connate leaf of *Lonicera*; E, perfoliate leaves.

Cauline:

Pertaining to the stem, e.g., Palms.

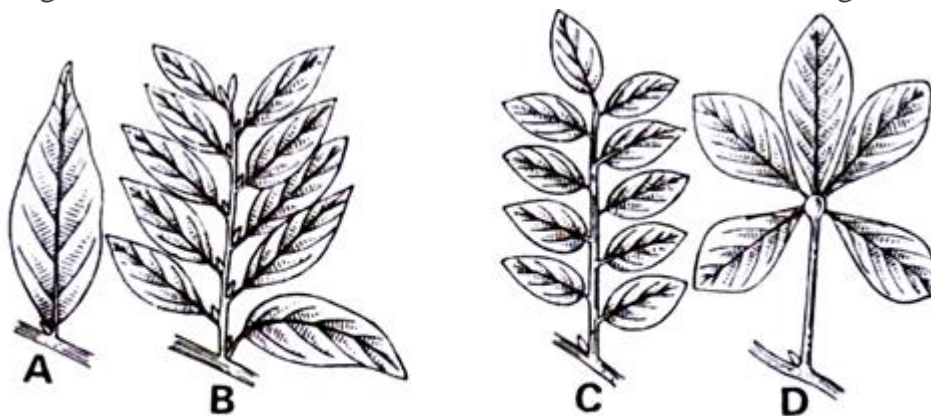


Fig. 12.29. Simple and compound leaves. A, simple leaf; B, a branch; C, pinnately compound leaf; D, palmately compound leaf.

Cauline and ramal:

Pertaining to the main stem as well as its branches, e.g., Mango.

Alternate:

A single leaf arising at each node, e.g., *Hibiscus rosa-sinensis*.

Opposite:

On different sides of the axis with the bases at the same level.

Opposite decussate:

In pairs at right angles to one another, e.g., Caloiropis.

Opposite superposed:

A pair of leaves that stands directly over the lower pair in the same plant, e.g., Guava.

Whorled:

More than two leaves arranged in a circle round an axis, e.g., Spargula.

Petiolate:

The leaf blade is situated on the petiole.

Sessile:

Without a petiole or stalk.

Sub-sessile:

Having short petiole.

Stipulate:

With stipules, e.g., rose.

Extipulate:

Having no stipules, e.g., Ipomoea.

Stipules:

An appendage of the leaf normally two stipules are developed at base of a leaf petiole, they may be leafy (foliaceous), e.g., Lathyrus', free lateral, e.g., China rose; adnate, e.g., rose; interpetiolar, e.g., Ixora; Spargula, spiny, e.g., Acacia, tendrilar, e.g., smilax.

Leaf Base:**Connate:**

Two sessile opposite leaves meeting each other across the stem and fusing together, e.g., Lomicera flava.

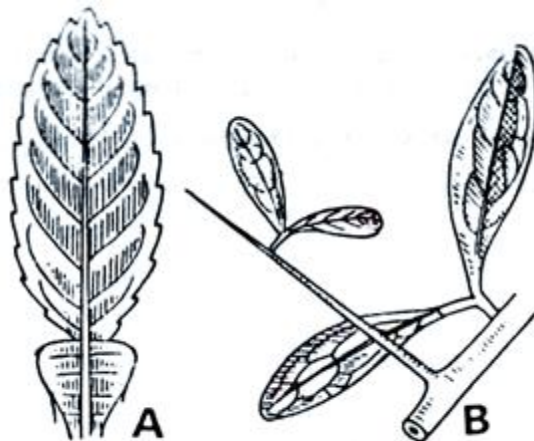


Fig. 12.30. Compound leaf. A, unifoliate leaf (*Citrus*); B, bifoliate leaf (*Prinsepia*).

Amplexicaul:

Clasping or surrounding the stem, as base of leaf, e.g., Sonchus.

Auriculate:

Leaf with expanded bases surrounding stem, e.g., Calotropis.

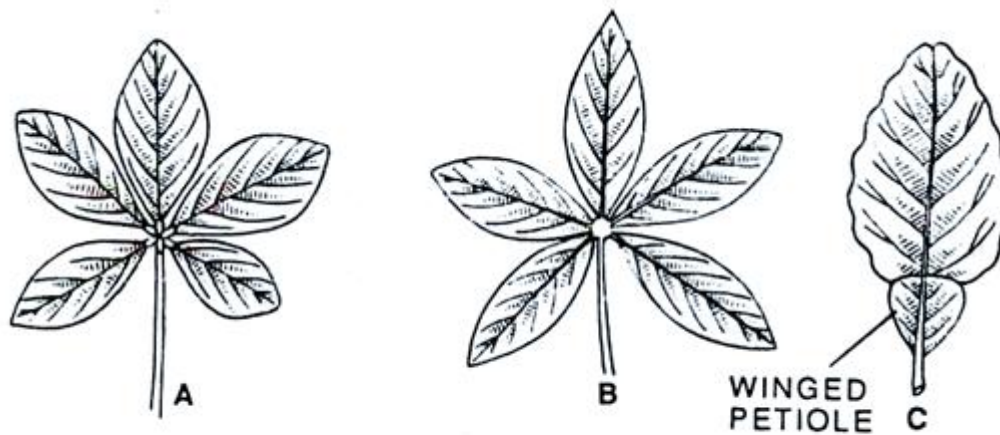


Fig. 12.31. Palmate compound leaves. A, digitate leaf of *Gynandropsis*; B, digitate leaf of *Bombax*; C, unifoliate compound leaf of *Citrus* with winged petiole..

Decurrent:

Having leaf base prolonged down stem as a winged expansion or rib, e.g., *Laggera pterodonta*.

Perfoliate:

A leaf with basal lobes so united as to appear as if stem ran through it, e.g., *Aloe perfoliata*.

Simple:

A leaf which may be entire or incised to any depth, but not down to the midrib or petiole.

Compound:

A leaf made up of two or more leaflets, e.g., pea and several other members of *Leguminosae*.

Unifoliate:

Having one leaflet only, e.g., *Citrus*.

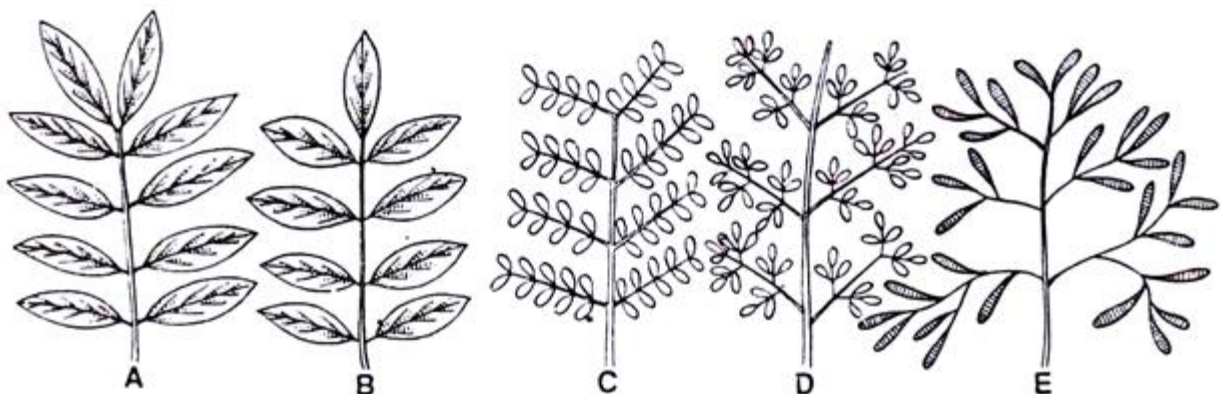


Fig. 12.32. Pinnately compound leaves. A, unipinnate (paripinnate); B, unipinnate (imparipinnate); C, bipinnate; D, tripinnate; E, decompound leaf of coriander.

Bifoliate:

Palmate compound leaf with two leaflets, e.g., *Prinsepia*, *Balanites*.

Trifoliate palmate:

Compound leaf having three leaflets growing from same point, e.g., Oxalis.

Quadrifoliolate:

Compound palmate leaf, with four leaflets arising at a common point, e.g., Mars-ilea.

Multifoliolate:

Compound palmate leaf with five or more leaflets arising at a common point, e.g., Gynandropsis pentaphylla.

Pinnate:

A compound leaf having leaflets on each side on an axis or mid-rib.

Unipinnate:

Having leaflets on each side of an axis, e.g., Cassia.

Bipinnate:

The central axis produces secondary axis which bears the leaflets, e.g., Acacia.

The secondary axes produce the tertiary axes which bears the leaflets, e.g., Acacia.

The secondary axes produce the tertiary axes which bear the leaflets, e.g., Moringa.

Decompound:

More than thrice pinnate, e.g., old leaves of coriander.

Paripinnate:

Pinnately compound without a terminal leaflet, e.g., Cassia.

Imparipinnate:

Pinnately compound leaf with an odd terminal leaflet, e.g., Pea.

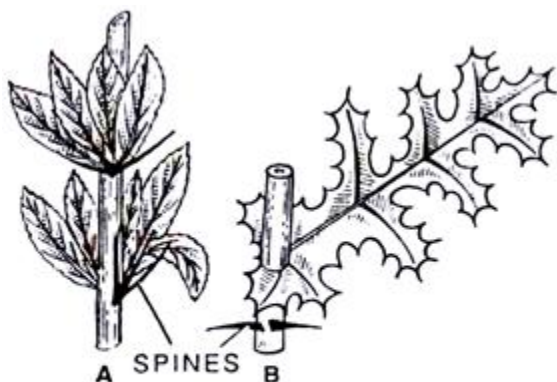


Fig. 12.33. Modified leaves. A, leaves modified into spines; B, leaf of *Argemone* with spines.

Incision of Lamina:

Pinnatifid:

Leaves lobed half-way to midrib.

Pinnatisect:

With leaves lobed almost to base or midrib.

Palmatifid:

Leaves divided into lobes to about the middle, at acute angles to each other, e.g., Castor.

Palmatisect:

Palmate with division nearly to base.

Margin of Lamina:**Entire:**

With continuous margin, e.g., *Psidium*.

Dentate:

With large saw-like teeth on the margin.

Serrate-dentate:

With serrate edges themselves toothed.

Undulate:

Wavy, e.g., *Polyalthia*.

Convolute:

Rolled together.

Crenate:

With scalloped margin, e.g., *Bryophyllum*.

Lacerate:

Having margin or apex deeply cut into irregular lobes, e.g., many members of *Ranunculaceae*.

Laciniate:

Irregularly incised; fringed.

Laciniolate:

Minutely incised or fringed.

Ciliate:

Bearing fine hairs on the margin.

Crispate:

Curled or extremely undulate margin.

Spinous:

Bearing many spines, e.g., *Argemone*.

Pectinate:

Comb-like.

Lobed:

Leaf margin divided into many lobes, e.g., *Ranunculus*.

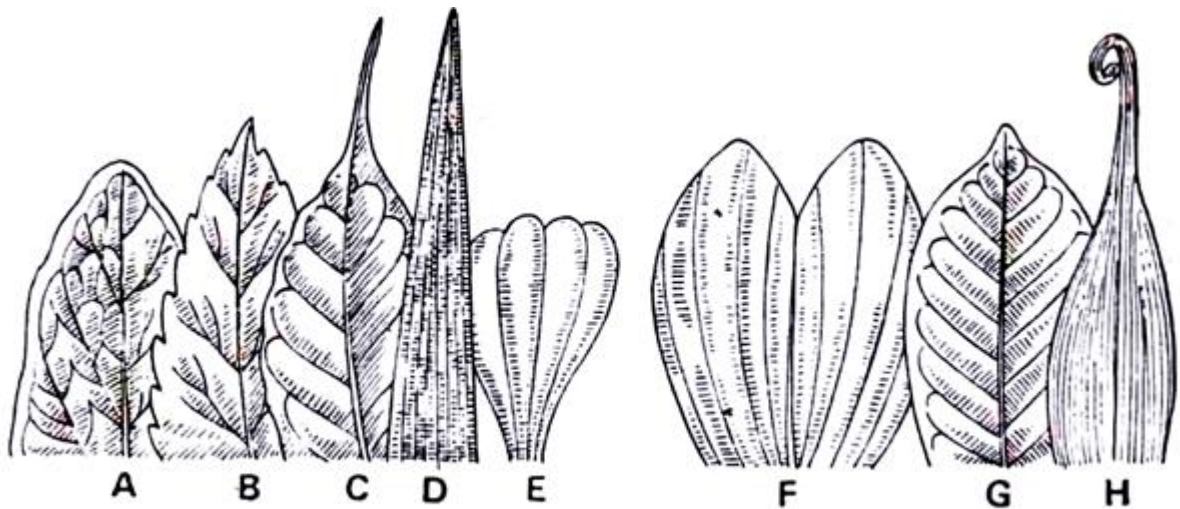


Fig. 12.34. Leaf apex. A, obtuse; B, acute; C, acuminate; D, cuspidate; E, retuse; F, emarginate; G, mucronate; H, cirrhose.

Leaf Apex:

Acute:

Ending in a sharp point forming an acute angle, e.g., mango.

Acuminate:

Drawn out into long point; tapering; pointed, e.g., *Ficus religiosa*.

Obtuse:

With blunt or rounded end, e.g., Banyan.

Emarginate:

Having a notch at apex, e.g., *Bauhinia*.

Truncate:

Terminating abruptly, as if tapering end were cut off, e.g., *Caryota urens*.

Mucronate:

Abruptly terminated by a sharp spine, e.g., apex of leaflet of *Cassia obtusifolia*.

Cuspidate:

Terminating in a point.

Aristate:

Provided with awns, or with a well developed bristle.

Retuse:

Obtuse with a broad shallow notch in middle, e.g., *Oxalis*.

Cirrhose:

Leaf with prolongation of midrib forming a tendril, e.g., *Gloriosa*.

Apiculate:

Forming abruptly to a small tip, e.g., *Dalbergia*.

Leaf Surface:

Hairy:

Leaf surface covered with fine hairs.

The hairs are of various types.

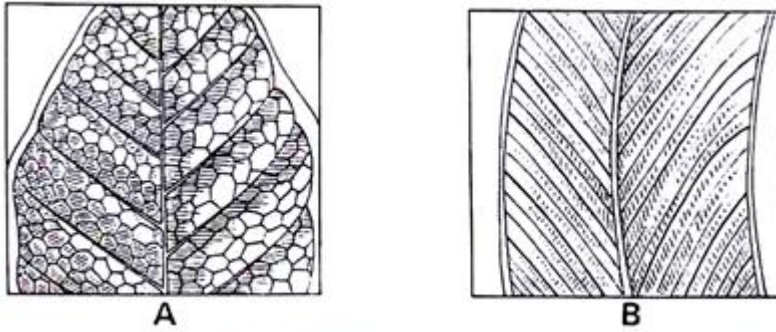


Fig. 12.35. Leaf venation. A, reticulate in a dicot leaf; b, parallel in a monocot leaf.

Glabrous:

With a smooth even surface, without hairs, e.g., China rose.

Glaucous:

Shiny green, e.g., Citrus.

Spiny:

Covered with spines, e.g., Argemone.

Venation:

System or disposition of veins.

Reticulate (net veined):

Like net work, e.g., most of dicots.

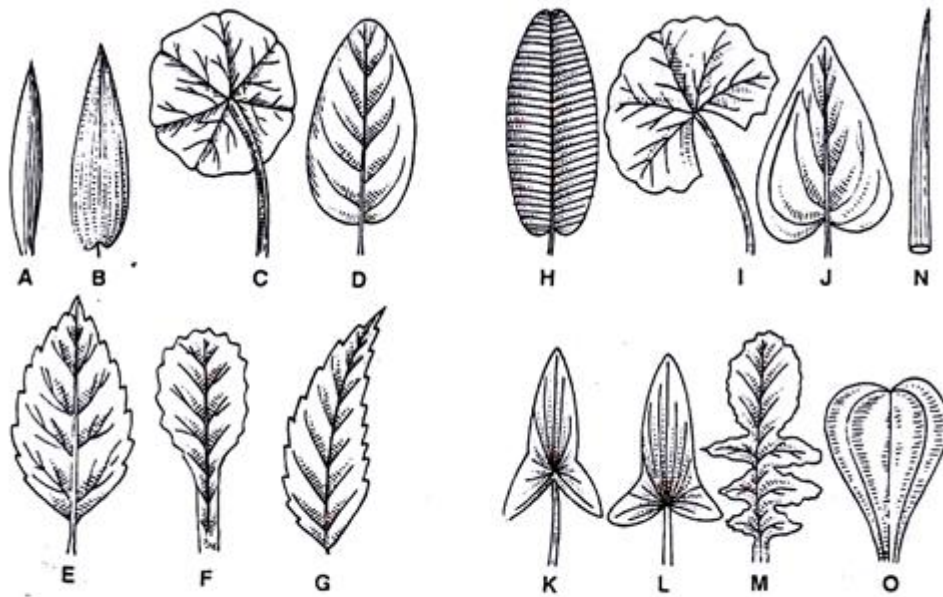


Fig. 12.36. Shape of leaf. A, linear, B, lanceolate; C, rotund; D, oval or elliptical; E, ovate; F, spatulate; G, oblique; H, oblong; I reniform; J, cordate; K, sagittate; L, hastate; M, lyrate; N, acicular; O, cuneate.

Parallel:

Parallel veined, e.g., most of monocots.

Unicostale:

Having only one principal vein.

Multicostate:

Having many principal veins.

Leaf Texture:

Coriaceous:

Leathery, e.g., Calotropis.

Fleshy:

Soft and thick, e.g., Spargula.

Succulent:

Full of juice or sap, e.g., Aloe.

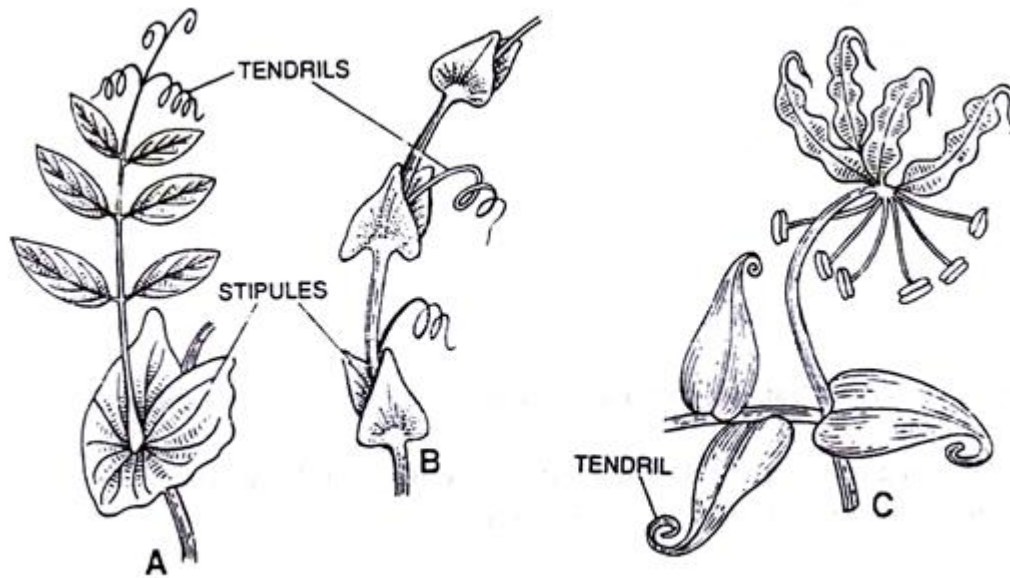


Fig. 12.37. Modified leaves A, leaf tendrils of pea; B, leaf tendrils of *Lathyrus*; C, leaf tendrils (cirrhose) of *Gloriosa*.

Colour:

Green:

Usually the leaves are green in colour.

Pigmented:

In certain leaves the pigments are developed, e.g., *Aerva*.

Note:

In a compound leaf the leaflet should be described in the manner as a simple leaf.

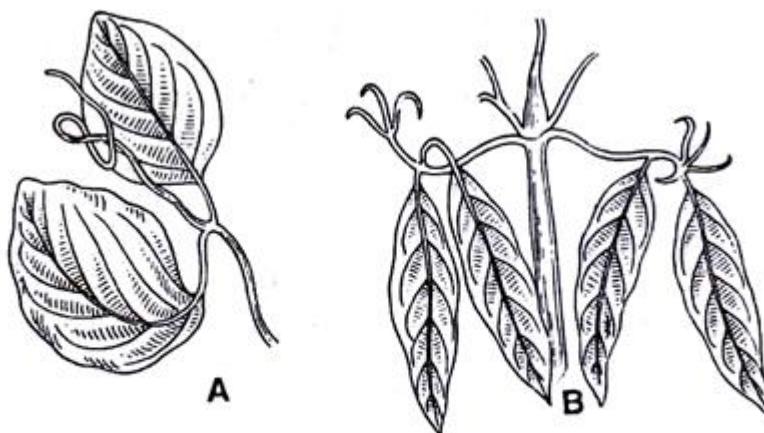


Fig. 12.38. Modified leaves. A, leaf of *Naravelia* with the terminal leaflet modified into a tendril. B, leaflet modified into hooks (*Bignonia*).

Shape of the Leaf:**Linear:**

Long and narrow leaf, e.g., many grasses.

Lanceolate:

Lance-shaped leaf, e.g., bamboo, Nerium, etc.

Round or orbicular:

Leaf with a circular leaf blade, e.g., lotus, garden nasturtium, etc.

Elliptical:

An ellipse-shaped leaf, e.g., guava, jack, etc.

Ovate:

Leaf with an egg-shaped leaf blade, i.e., slightly broader at the base than at the apex, e.g. banyan, China rose, etc.

Spathulate:

Spathula-shaped leaf, i.e., broad and round at the top and narrower towards the base, e.g.. Calendula and Drosera.

Oblique:

Leaf with two unequal halves, e.g., Begonia.

Oblong:

Leaf with wide and long leaf blade. Here the two margins run more or less straight up, e.g., banana.

Reniform:

Kidney-shaped leaf, e.g., Indian pennywort.

Cordate:

Leaf with heart-shaped leaf blade, e.g., betel (inversely heart-shaped leaf called as obcordate, e.g., wood-sorrel).

Sagittate:

Leaf with an arrow-shaped leaf blade, e.g., arrowhead and some aroids.

Hastate:

Sagittate leaf with its two lobes directed outside, e.g., water bindweed and Typhonium.

Lyrate:

Lyre-shaped leaf, i.e., with a large terminal lobe and some smaller lateral lobes, e.g., radish, mustard, etc.

Acicular:

Long narrow and cylindrical leaf, i.e., needle shaped, e.g., pine.

Cuneate:

Wedge shaped leaf, e.g., water lettuce.

Modified Leaves:

Leaves of many plants are often modified into some specified structures to do various specialized functions. Leaf tendril is one of these structures.

Leaf-tendrils:

Leaf or part of the leaf modified as a slender, branched or un-branched, thread like structure, used by many climbing plants for attachment to a support in various ways.

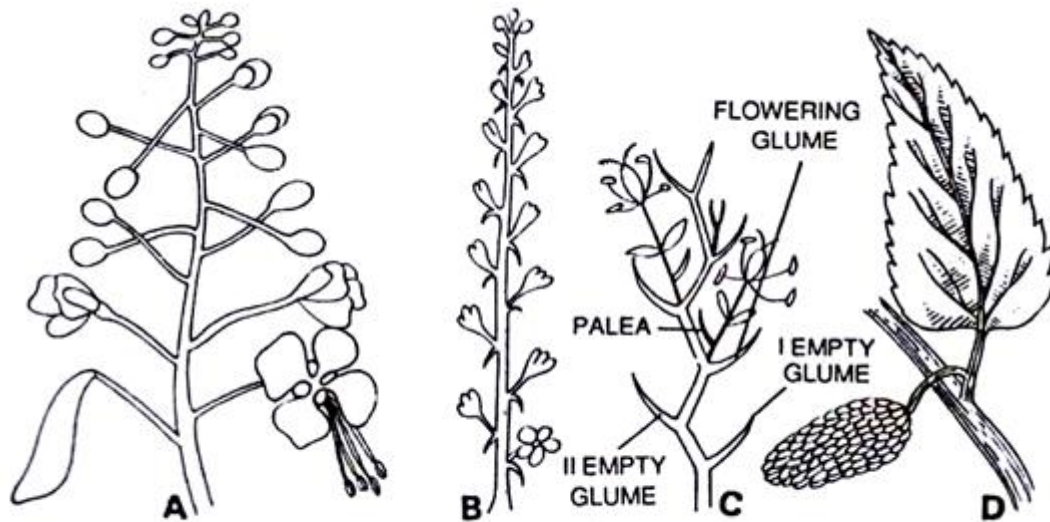


Fig. 12.39. Inflorescence-racemose. A, raceme of gul-mohur; B, spike; C, spikelet of a grass; D, female catkin of mulberry.

In the leaf of pea upper leaflets modify into tendrils while in Gloriosa leaf-apex modifies into a tendril. In Naravelia the terminal leaflet modifies into a tendril. Likely in Bignonia unguis-cati these leaflets are modified into the hooks. Lathyrus aphaca is an example of whole leaf modification into a single tendril.

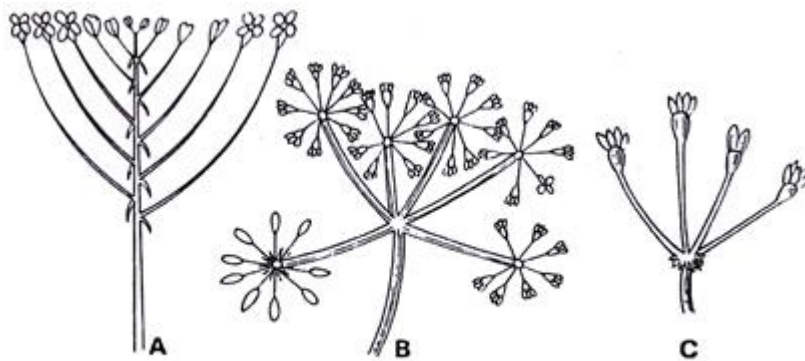


Fig. 12.40. Inflorescence. A, corymb; B, compound umbel (umbel of umbels); C, simple umbel.

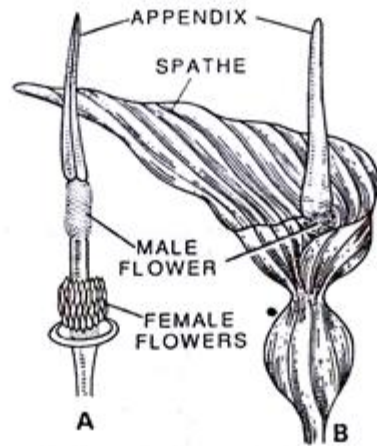


Fig. 12.41. Inflorescence-spadix. A, spadix of an aroid without spathe; B, same with spathe.

Inflorescence of Angiosperms:

Inflorescence – Method in which flowers are arranged on an axis.

Racemose:

Inflorescence with monopodial branching.

Raceme:

Inflorescence having a common axis and stalked flowers in acropetal succession, e.g., Brassica.

Corymb:

A raceme with lower pedicels elongated so that the top is nearly flat, e.g., Candytuft.

Spike:

Inflorescence with sessile flowers along axis, e.g., Achyranthes.

Catkin:

A spike with unisexual flowers and pendulous rachis, e.g., Moms.

Umbel:

An arrangement of flowers springing from a common centre and forming a flat or rounded cluster, e.g., Coriandrum, Foeniculum, etc.

Spadix:

A racemose inflorescence with elongated axis, sessile flowers, and an enveloping spathe, e.g., Colocasia, Alocasia, Palm, Musa, etc.



Fig. 12.41. (a). Inflorescence. Spadix of spadices (compound spadix) in coconut palm; A, male spadix of spadices; B, male flowers on the branched peduncle; C, female spadix of spadices; D, female flowers on branched peduncles.

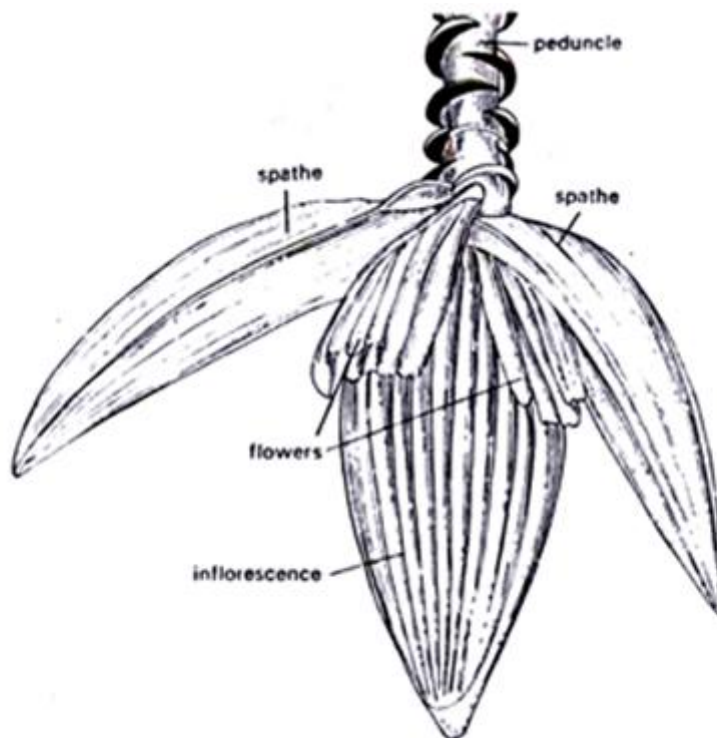


Fig. 12.41. (b). Inflorescence-spadix. Spadix of spadices (compound spadix) in *Musa*.

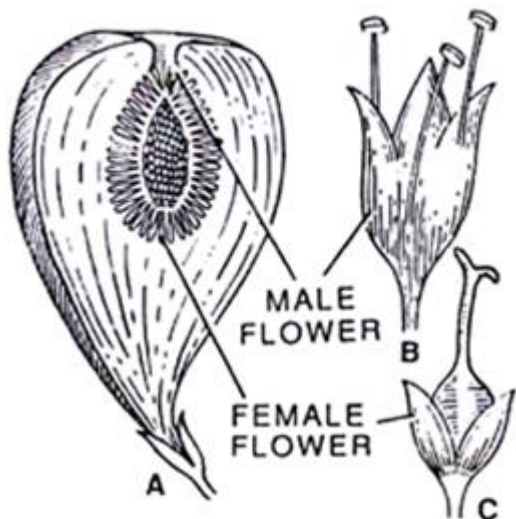


Fig. 12.42. Inflorescence. A, hypanthodium of *Ficus*; B, male flower; C, female flower.

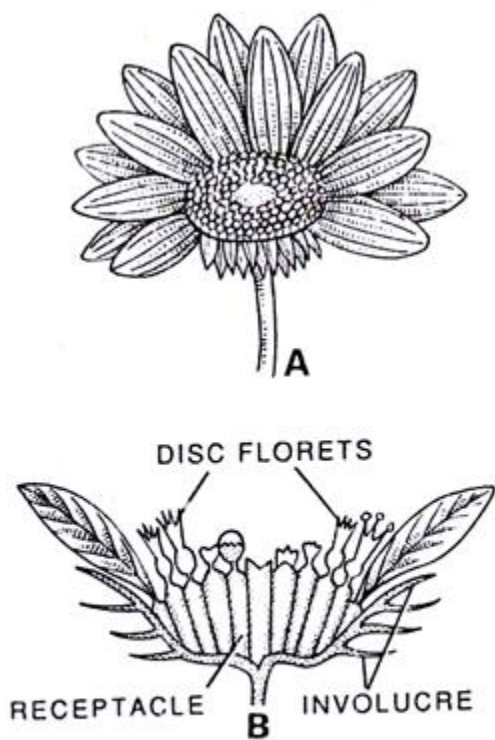


Fig. 12.43. Inflorescence. Head (capitulum). A, a head B, a head in L.S.

Hypanthodium:

An inflorescence with concave capitulum on whose walls the flowers are arranged, e.g., *Ficus*.

Capitulum:

An inflorescence of sessile flowers or florets crowded together on a receptacle and usually surrounded by an involucre.

Cymose:

Sympodially branched.

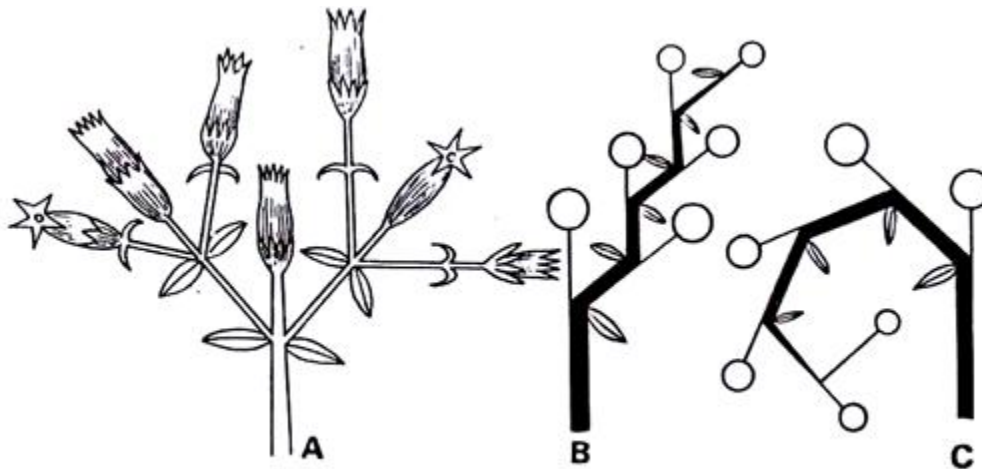


Fig. 12.44. Inflorescence. Cymose. A, biparous (dichasial) cyme; B, scorpioid cyme; C, helicoid cyme.

Uniparous (monochasial):

Having a cymose inflorescence with one axis at each branching. Biparous (dichasial). Dichotomously branched cymose inflorescence, e.g., *Ixora*, *Saponaria*.

Helicoid cyme:

An uniparous inflorescence produced by suppression of successive axes on same side, thus causing the sympodium to be spirally twisted, e.g., *Begonia*, *Juncus*.

Scorpioid:

An uniparous inflorescence in which the lateral branches develop on alternate sides evidently forming a zigzag, e.g., *Heliotropium*.

Special Types:

Cyathium:

The peculiar inflorescence in *Euphorbia*, a cup-shaped involucre with stamens and stalked gynoecium, each stamen and the gynoecium being a separate flower.

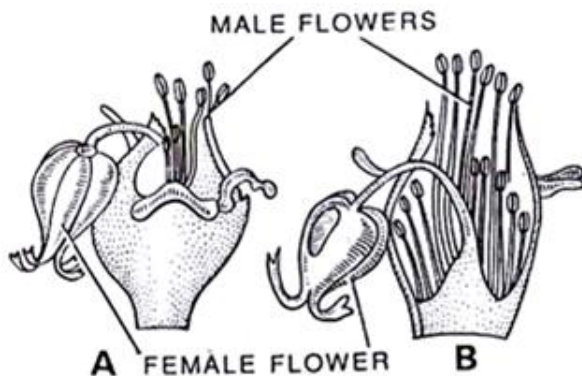


Fig. 12.45. Inflorescence. Special. Cyathium. A, cyathium of *Euphorbia*; B, L.S. of same.

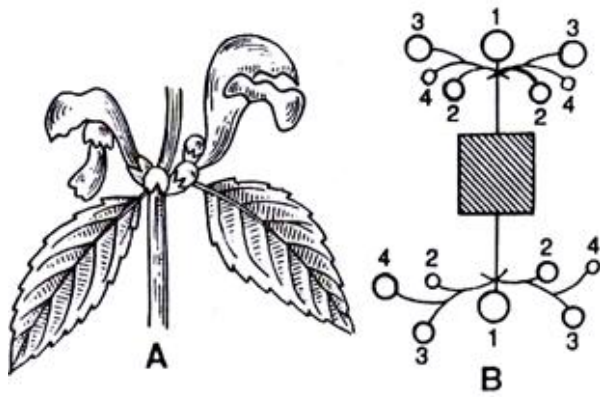


Fig. 12.46. Inflorescence. Special verticillaster. A, verticillaster of Labiatae; B, diagram of same.

Verticillaster:

A much condensed cyme with appearance of whorl, but in reality arising in axils of opposite leaves, e.g., characteristic of Labiatae.

Panicle:

A compound branched raceme, e.g., Mango, Melia.

Spikelet:

A secondary spike of grasses, bearing few flowers.

Compound umbel:

Umbel of umbels.

Compound corymb:

Corymb of corymbs.

Solitary flower:

Single flower.

Solitary axillary:

Single flower in the axil of leaf, e.g., Cucurbita.

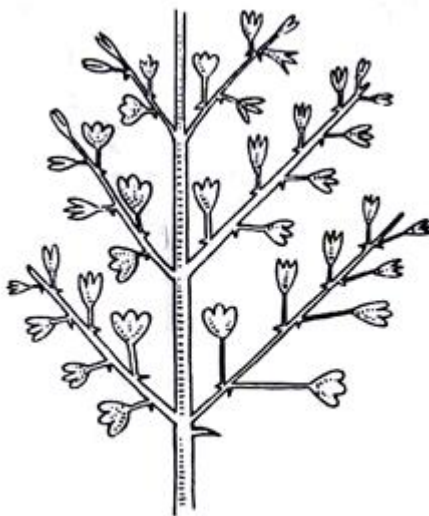


Fig. 12.47. Inflorescence. Panicle.