

## LEAF FORMS

Botanists have assigned certain geometrical terms as elliptic, oblong, acute etc to leaf forms in order to give precision where exactness and conformance to definition may not exist. While some leaf forms are equivalents of these terms others approach equivalents and more represent intermediates. To this latter class (intermediate class), hyphenated combination of the terms are applied. Among the various leaf forms are:-

1. Linear:- e.g. grasses :- Long and narrow, flattened, the sides parallel or almost parallel.
2. Acicular:- Long, narrow and cylindrical if i.e. needle-shaped as in pines leaves very slender and usually round in cross-section.
3. Lanceolate:- The shape is like that of a lance. The leaf is lanceolate e.g. bamboo leaf. Mangifera indica etc such leaves taper at both ends.
4. Ovate:- Ovate leaves are shaped in such a way that the lower half is bigger than the upper half i.e. an egg-shaped leaf, broadest below the middle e.g. hibiscus leaf.
5. Oval or Elliptical:- A leaf that is shaped in such a way that there is little or no difference between its lower and upper leaves. Such a leaf is said to be oval or elliptical i.e. it has more or less the shape of an ellipse.
6. Oblong:- When the blade is wide and long, with the 2 margins running straight up e.g. banana.
7. Obligate:- Two halves of a leaf unequal e.g. Azadirachta indica.
8. Obovate:- Inversely egg-shaped leaf.
9. Cordate:- Heart-shaped as in betel.
10. Obcordate:- Inversely heart-shaped.
11. Round or Orbicular:- Circular blade as in lotus.
12. Spathulate:- When the shape is like that of a spatula, i.e. broad and somewhat rounded at the top and narrower towards the base, as in sundew (Drosera).

## 5. LEAF APEX

Leaf apex is the terminal end of the leaf farthest from the point of attachment of the leaf.

Among the several variations are:

1. Filigiform and curling as in tendril.
2. Acuminate:- Sharp apex of a leaf. It is always pointed.
3. Acute:- Ending in a point with straight sides.
4. Cordate:- Tail-like appendage as tip or apex.
5. Round/Obtuse:- Round apex.
6. Retuse:- Shallow notch e.g. Water lettuce.

7. Emarginate:- Deep notch e.g. *Bauchinia*

## 6. LEAF BASES

Leaf bases refer to the end of the blade nearest to the point of attachment. Several variations can again be distinguished; among which are:-

1. Cuneate:- A type of leaf base that tapers to the leaf stalk.
2. Cordate base:- Deeply notched base of a leaf e.g. *Gmalinaarborea*.
3. Obtuse:- The nature of the base is rounded constricting sharply or abruptly to the petiole.
4. Rounded:- Rounded base as shown.
5. Alternuate:- With narrow sides constricting concavely and gradually into somewhat wing-like petiole.
6. Oblique:- With the lower most sides markedly unequal.

## 7. LEAF MARGIN

Among the numerous variations of leaf margin patterns are:

1. Entire:- Uncut, without indentation smooth margin.
2. Undulate:- With an edge wavy in a vertical plane.
3. Serrate:- With deep rather coarse sawlike teeth that point forward e.g. *balsam* and *hibiscus* leaves.
4. Ciliate:- With a row of hairs sometimes so minute as scarcely to be discernible by naked eyes.
5. Dentate:- Teeth almost (1) per perpendicular to the mid-rib.
6. Lobed:- With incisions or sinuses not more than half way from margin to mid-vein e.g. *Triplochifonseleroxylon*.
7. Parted:- Here the incision are nearly reaching the mid-rib.

## 8. LEAF VENATION

Venation is the arrangement of the veins and veinlets in the leaf blade. There are 3 major types of leaf venation.

1. Parallel Veination:- This occurs when the veins run parallel to each other. It is common with monocots.
2. Reticulate Venation/Pinnate:- Is the irregular distribution of the veins and veinlets to form a network. This is characteristic of dicots.
3. Palmate Venation:- In this type of venation, 3 or more 1<sup>o</sup> veins diverge from the point of petiole, similar to the trees of a duck.

## THE FLOWER

The study of flower is very important because it helps greatly in tree identification. The flower is the reproductive organ which produces pollen grains and seeds during sexual reproduction in plants. Floral parts are conservative and less affected by the environment than other traits. A flower is termed solitary or axillary when it appears singly in the axil of ordinary foliage leaves. When several flowers are arranged on a common peduncle, the arrangement is referred to as inflorescence. A flower is sessile when pedicel (flower stalk) is absent, otherwise it is pedicellate. An inflorescence flower may be determinate or indeterminate. It is determinate when the terminal or central flower matures first thereby arresting the growth by elongation of the primary axis. It is indeterminate when the lower flowers mature first, and the inflorescence often elongating as the flowers develop from the lower to the upper portions of the primary axis. A typical or complete flower is made up of four whorls – 2 lower accessory whorls – calyx and corolla, and two upper essential or reproductive whorls – androecium and gynoecium.

The petals and the sepals protect the flower at the bud stage, and in most cases give it the attractive look after the bud stage. The outer-most part of the flower is the sepals collectively called CALYX. In some spp, below this outer-most part of the flower are epicalyx e.g. Malvaceae family (Okro, Cotton, hibiscus etc).

When a flower has 5 sepals, it is said to be PENTAMEROUS.

Generally speaking, most flowers have 3 or 5 sepals. This is common with the cereal crops. The collective name for the petals is corolla. The essential or reproductive part of the flower is made up of the androecium is the male part of a flower and it consists of anther and filament which are collectively called stamen.

The sign for representing this male part is ♂. The female part of the flower is gynoecium consisting of stigma, style and ovary collectively called Pistil. The sign for representing this female part is ♀.

The four whorls of the flower develop in an ascending order from the swollen suppressed end (thalamus or receptacle) of the floral axis or stalk (pedicel). The shape of the receptacle/thalamus varies in flowers. Below the receptacle is the pedicel, followed by the peduncle or the stalk.

A stamen without the pollen grain is said to be staminodes.

Drawing