



---

## **Study of Different Shapes of Leaf of Indigenous Plants of Marathwada**



**Sumia Fatima**

Botany Research Laboratory

Dr. Rafiq Zakaria College for Women, Aurangabad, MS, India

### **ABSTRACT**

The plant kingdom is composed of a vast number of plants of different kind and forms which are growing in greater or less abundance over most of the surface of earth. The study of angiospermic plants is bases on deep knowledge and complete enculcating of external characteristics of

plants. To know the natural resources of the earth one requires vast understanding of plants. The morphology of leaf plays a very important role in identification of plant.

**Keywords :** Indigenous plants, Leaf shapes, Plant identification.

### **RESEARCH PAPER**

**Introduction:** The present work is not intended as a mere dictionary of miscellaneous information about morphology of leaf shape but also ends in an equal degree as a guide to the scientific study of morphology of shape of plant leaf. The study of external features of leaf

is termed as leaf morphology. The correct identification of plants is very important to use the plant as medicine, ( Bayer, 1982).The entire Aayurvedic system of medicine is entirely dependent on correct identification of plants and its races. The paper consists of the scientific description

of shapes of leaf of plants. In this paper the shapes of plant leaf has been studied.

The leaf plays very important role in identification of plants. The parts of leaf possesses characteristic features such as leaf apex, leaf base, leaf margin, leaf shape, pattern of venation, arrangement, attachment, surface texture, form etc. that helps in identification of plant, (David Krogh, 2010).

There is great variation in leaf shape, size, texture and colour of leaf. The leaf shape plays an important role in identification of plants. (Heywood, et. al, 2007). The broad shape increases the photosynthetic area. The needle like leaves is to avoid excess loss of water from the plants. The shape of leaf has important ecological consequences, (James & Bell, (2000).

**Material and Methods:** In order to study the different shapes of leaf of indigenous plants of Marathwada survey was carried out during 2014 to 2016 in crop fields, gardens, Kinwat forest, Mahabaleshwar forests, railway tracts, open cow grazing lands etc. ( Jackson, Benjamin, Daydon , 1928). The shapes of plant leaf was identified by following authentic literature, identification key and several literature concern with the subject. Total 45 types of leaf shapes described in scientific language, (Field et. al, , (2001).

### **Result:**

Total Forty five different shapes of leaf discussed in scientific language are- Obovate, Mucronate, Obtuse, Round, Triangular, Orbicular, Cordate, Oblanceolate, Lyrate, Cuneate, Runcinate, Linear, Palmately laciniate, Elliptical, Lanceolate, Oblong, Laciniate, Spatulate or subulate, Spine shaped (Awl like) , Scale like, Acicular, Peltate, Ovate or oval, Needle (Acicular), Aristate, Caudate, Ternate, Cochleate, Deltoid, Flabellate, Sagittate, Digitate, Trifoliate, Pinnatisect, Bilobed, Rhomboid, Fenestrate, Hastate, Truncate, Spindle shaped , Elliptical, Oblique, Aristate, Spatulate and Acuminate., (Bright and Rausher, (2008); Cooney-Sovetts and Sattler, (1987).

- **Obovate:** The leaf is egg shaped but the narrow end of leaf attached to the shoot. It is a term used for shape of leaf which is ovate without any divisions.
- **Mucronate:** In this type of shape of leaf the apex of leaf is pointed and the lower part of leaf show more contraction of leaf lamina. The leaf lamina looks like a stalk. For some extent the leaf looks like feathers of birds.
- **Obtuse:** The leaf with no pointed apex or blunt apex is described as obtuse.
- **Round:** The spherical shape of leaf is described as round.
- **Triangular leaf:** The leaf shapes resemble a triangle of geometry. On the

basis of its shape the leaf is termed as triangular leaf.

- **Orbicular:** The apex of leaf is circular in shape. The spherical shape of leaf is termed as orbicular. The leaf of lotus is spherical in shape. It is also termed as orbicular.
- **Cordate:** The shape of resemble the shape of heart; the leaf may be petiolate or sessile. Such shape is described as cordate.
- **Oblanceolate:** Leaf is elongated with broad middle region. It is attached with stem with pointed region of leaf.
- **Lyrate:** The lowermost region of leaf divided into lobes of variable shape. The smallest lobe present at the base of the leaf and upper most regions broad with irregularly divided margin. The apex of leaf lamina has a large sized lobe with blunt end. Eg. mustard
- **Cuneate:** A triangular wedge shaped leaf is termed as cuneate. The leaf tip reaches to a highest development and acts as a major part of leaf. The apex is flat and broad and tapering to the base and acute at the apex. Such type of apex of the leaf is termed as cuneate. The example is water lettuce (*Pistia stratiotes*).
- **Runcinate:** The elongated leaf with toothed margin. The tooth directed towards basal region of leaf.

- **Linear:** A very narrow long leaf called linear. The leaf has approximately parallel margin. The leaf which is longer than broad is termed as linear. The example is tube rose.

- **Palmately laciniate:** The leaf possesses incised margins. The teeth of margin slightly bent towards base of the leaf. Such type of leaf is termed as lacinate. The leaf margin is very deeply lobed. The leaf shape is termed as laciniate. The marginal lobes resemble palmate leaf; hence it is termed as palmately laciniate leaf.

- **Elliptical:** It is an oval shaped leaf with the short pointed apex. The width of leaf may be about one half of its length. Such a shape is termed as elliptical. The example is periwinkle (*Catharanthus roseus*).

- **Lanceolate:** The shapes of leaf resemble the lance. The leaf is elongated with broad middle region. It is attached to the shoot with its broader region. The apex and base of leaf is somewhat tapered. The example is *Nerium indicum*.

- **Oblong:** The leaf is having elongated form, the leaf lamina is having parallel margin from top to bottom and rounded apex. The elongated form of leaf which is with a parallel lamina is termed as oblong. The example is banana (*Musa paradisiaca*).

- **Lacinate:** The leaf possesses incised margins. The teeth of margin slightly bent towards base of the leaf. Such type of leaf is termed as lacinate. Leaf margin is very deeply lobed. The leaf shape is termed as lacinate.

- **Spatulate or subulate:** The spoon shaped leaf is termed as spatulate or subulate. The lamina is narrow, firm and tapering gradually from basal region to the apex. Such type of shape of leaf is described as spatulate or subulate.

- **Spine shaped (Awl like) leaf:** The awl like leaves may have short, tough structure spine like shape. Such types of leaves are described as spine shaped leaves.

- **Scale like leaf:** The leaf having small scale like structure which is closely associated with stem, which occurs in Pteridophytes plants and certain xerophytes.

- **Acicular:** The pointed needle shaped leaves which are slender, green in colour mostly occur in xerophytic plants. In the taxonomic language such leaf shape is termed as acicular. The example is *Pinus longifolia*. It is a gymnosperm plant.

- **Peltate:** The leaf lamina is almost spherical, round. The margin is not divided which is entire, the petiole is attached at central region at the ventral surface. Such a disc shaped leaf is termed as peltate. The

round plate or shield shaped leaf is termed as peltate. The attachment of leaf is present at the centre of the leaf.

- **Ovate or oval:** Leaf shapes resemble the shape of hen's egg, with tapering apex and base. The base of leaf is broad. The shapes resemble the shape of egg. Such type of shape is described as ovate or oval. The example is *Ficus bengalensis*.

- **Needle (Acicular):** The shape of leaf is like a needle; such shape is described as needle like or acicular. The example is the leaf of the genus *Pinus*.

- **Aristate:** The leaf is elongated with broad lamina. The terminal region of leaf ends into a small pointed tip which is like a bristle. Such type of leaf shape termed as aristate.

- **Caudate:** The leaf with broad lamina with a very long tail like structure at apex.

- **Ternate:** The leaf which consists of three leaflets is termed as ternate.

- **Cochleate:** The leaf shape looks like a shell of mollusca. In certain ornamental plants the leaves are folded like shell of mollusca. Such type of shape is termed as cochleate.

- **Deltoid:** The shape of leaf resembles a triangle. Triangular leaf may have broad base covering two angles of

leaf and remaining angle is the apex of leaf. The shape is termed as deltoid.

- **Flabellate:** The wind blowing fan shaped leaf is termed as flabellate. The leaf lamina is semicircular in shape. The plant leaf resemble a fan in its shape, it is termed as flabellate.

- **Sagittate:** It is an elongated triangular leaf, arrow shaped. The basal region is broad with two lobes facing downwards, forming a notch for attachment of petiole. The leaf shapes resemble a elongated triangle such type of shape termed as sagittate. Eq. Sagittaria

- **Digitate:** The lobes of leaf divided into 3-4 or more fingers like structures. A variety of ornamental plants possesses digitate type of leaves. The lamina of leaf is highly divided into fingerlike projections. The entire finger like projections of leaf originated from a single point. Such type of leaf is termed as digitate.

- **Trifoliolate leaf:** It is a compound leaf. A leaf is having three entire leaflets. The trifoliolate leaves occur in *Butea monosperma*.

- **Pinnatisect:** The leaf lamina from both the lateral side cut, but not up to the midrib. Cutting the lobes is not in definite shape. Such a shape of leaf termed as pinnatisect.

- **Bilobed leaf:** The leaf lamina consists of two lobes. The apex of leaf may have a deep notch, so that the leaf is divided into two lobes. Such type of leaf is termed as bilobed leaf.

- **Rhomboid:** The round dimond shaped leaf is termed as rhomboid.

- **Fenestrate:** The leaf lamina shows holes of variable size. It is a natural phenomenon. The leaf resembles the window. The shape of such a leaf is termed as fenestrate.

- **Hastate:** The shape of leaf is somewhat triangular with leaf lobes mostly towards the basal region and apex is pointed as shown in photograph.

- **Truncate:** The square shaped leaf having rectangular apex is termed as truncate.

- **Spindle shaped leaf:** The leaf shapes resemble a shape of spindle is termed as spindle shaped leaf.

- **Elliptical:** The middle region of leaf is broad and the apex and the base are narrower or tapered.

- **Oblique:** The leaf of certain plants have asymmetrical leaf base as in case of *Datura*. Such leaves are described as oblique.

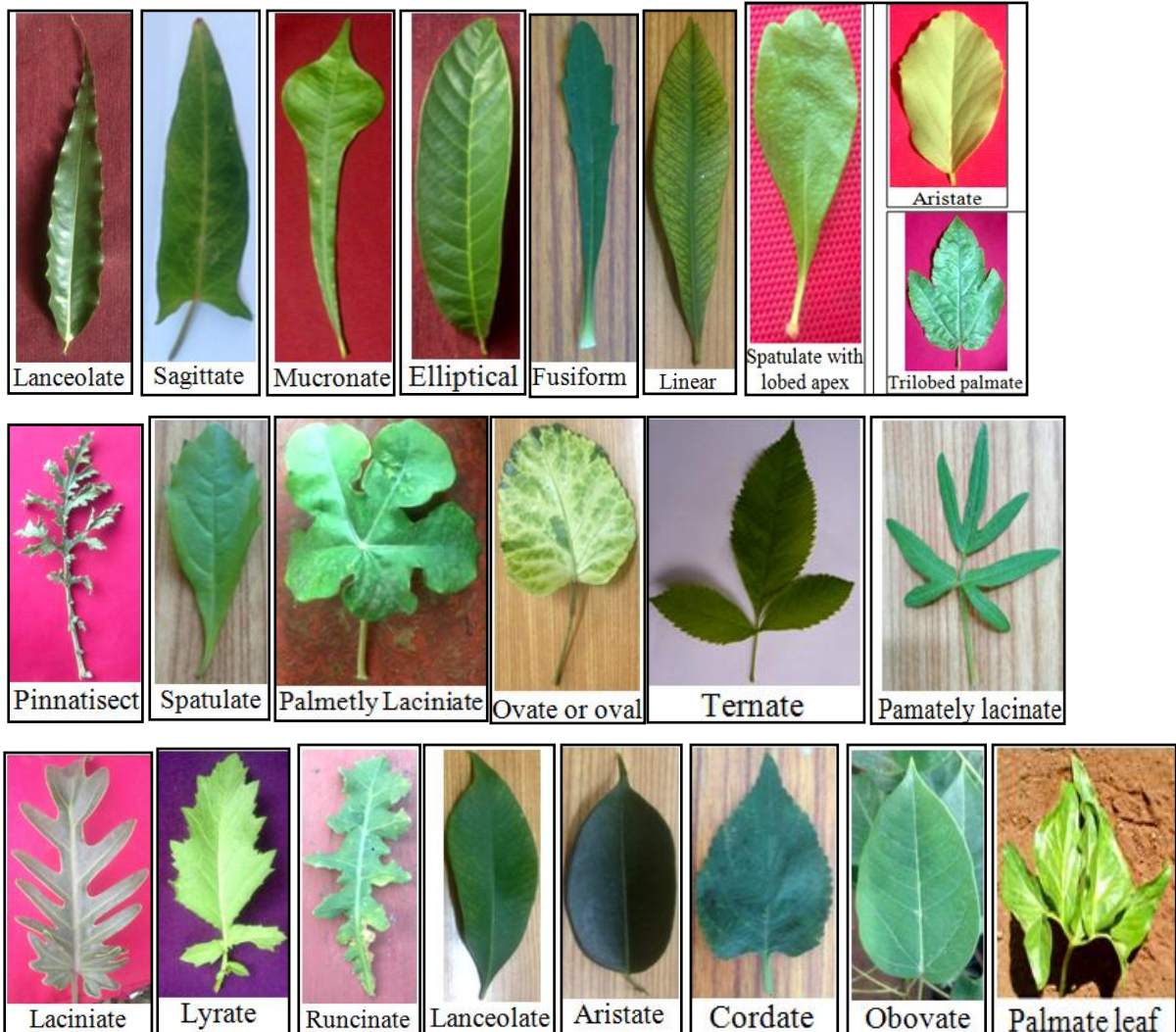
- **Aristate:** The shape of leaf having pointed bristle like apex is described as aristate.

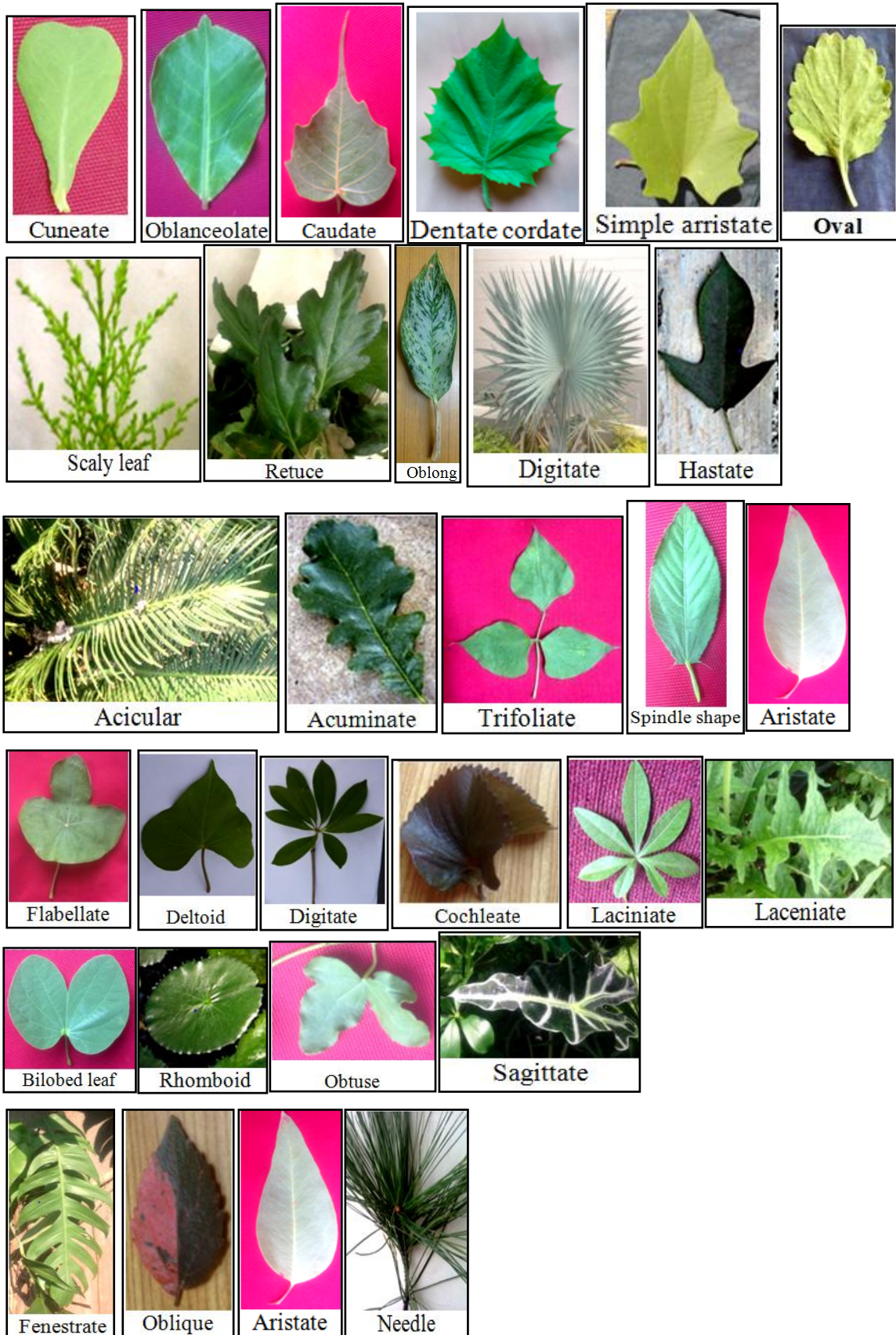


- **Spatulate:** The spoon shaped leaf generally having large rounded tip and narrow base is described as spatulate.

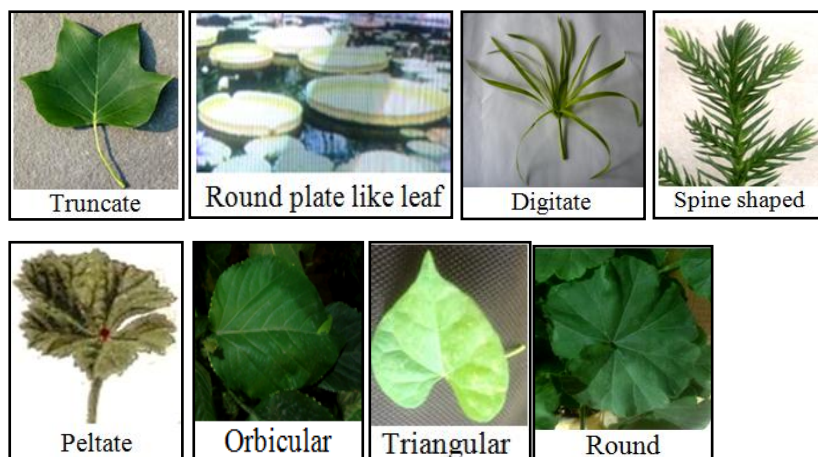
- **Acuminate:** The acuminate leaf is possesses a long pointed tapering apex.

### DIFFERENT SHAPES OF LEAF









### BIBLIOGRAPHY

Bayer, M. B., (1982). *The New Haworthia Handbook*. Kirstenbosch: National Botanic Gardens of South Africa. ISBN 0-620-05632-0.

Bright, K. L. , and M. D. Rausher, ( 2008) . Natural selection on a leaf-shape polymorphism in the ivyleaf morning glory ( *Ipomoea hederacea*). *Evolution; International Journal of Organic Evolution* 62 : 1978 – 1990 .

Cooney-Sovetts, C. and Sattler, R., ( 1987). Phylloclade development in the Asparagaceae: an example of homoeosis. *Botanical Journal of the Linnean Society* 94: 327-371.

David Krogh, (2010). *Biology: A Guide to the Natural World*, Benjamin-Cummings Publishing Company, p. 463, ISBN 978-0-321-61655-5.

Feild, T. S.; Lee, D. W.; Holbrook, N. M. , (2001). "Why leaves turn red in autumn. The role of Anthocyanins in senescing leaves of red-osier dogwood". *Plant physiology* 127 (2): 566–74.

Heywood, V.H.; Brummitt, R.K.; Culham, A.; Seberg, O. ,(2007). *Flowering plant families of the world*. New York: Firefly books. p. 287.

James, S. A.; Bell, D. T. ,(2000). "Influence of light availability on leaf structure and growth of two *Eucalyptus globulus* sp. *globulus* provenances". *Tree Physiology* 20 (15): 1007.

Jackson, Benjamin, Daydon , (1928). *A Glossary of Botanic Terms with their Derivation and Accent*; Published by Gerald Duckworth & Co. London, 4th ed 1928

Published by Thames and Hudson (London) .