



Epitome : International Journal of Multidisciplinary Research

ISSN : 2395-6968

AN ALBUM : SCIENTIFIC TERMINOLOGY OF PLAN LEAF



Dr. Sunia Fatima

M.Sc., Ph.D., F.S.Sc., F.S.L.Sc.
Associate Prof. & Head, Botany
Dr. Rafiq Zakaria College for Women,
Aurangabad-431001 (MS)



Dr. Syed Zafar Javeed

M.Sc., Ph.D.
(Environmental Science)
Safety Manager
ENOC, Fujairah, UAE

ABSTRACT

There are two basic forms of leaf occur in flowering plants i.e. simple leaf & compound leaf. There is a great variation in colour, size, shape, texture, arrangement of leaf in vascular plants. A complete leaf is composed of a blade, petiole and stipules and in many plants one or more might be lacking or highly modified. During survey leaves of indigenous plants collected for study and described scientifically by following key proposed by V. N. Naik (1974). Scientific terminology of leaf presented in the form of images.

KEYWORDS

Scientific terminology, plant parts

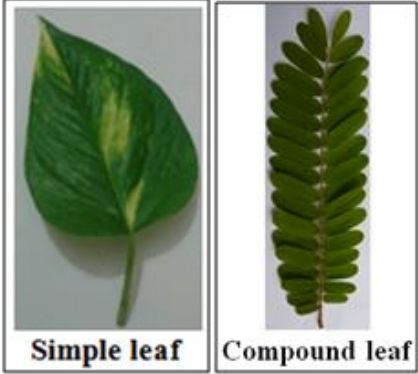
RESEARCH PAPER


INTRODUCTION

The leaf is a thin or thick, flat, broad, narrow, green or other than green, structure of vascular plants. It has distinct dorsal and ventral surface. The water supplying pipelines present in the leaf are termed as veins, which are greatly variable according to the type of plant. There is a great variation in colour, size, shape, texture, arrangement of leaf in vascular plants. A complete leaf is composed of a blade, petiole and stipules and in many plants one or more might be lacking or highly modified. Leaf is a very important part of plant. The entire processes of plant growth, development and reproduction depend on vital energy which is received by plant from leaves. Leaf is natural factory of food preparation; the prepared food is utilized by plant itself to perform all the processes of metabolism.


Material & method: During survey leaves of indigenous plants collected for study and described scientifically by following key proposed by V. N. Naik (1974)





SCIENTIFIC TERMINOLOGY OF LEAF

 <p data-bbox="236 1379 392 1413">Simple leaf</p> <p data-bbox="427 1379 624 1413">Compound leaf</p>	<p>Simple leaf: When the leaf is having single leaf blade, the leaf is termed as simple. The leaf is thin, green expanded structure borne on stem or branch. The simple leaf may be petiolate or sessile. The simple leaves have axillary buds in their axil.</p> <p>Compound leaf: The lamina of compound leaf is divided into small leaf like structures which are known as leaflets. The leaflets do not have buds in their axils. The compound leaves are petiolate or non petiolate. The characteristic features of compound leaf are presence of rachis and leaflets. The leaflets may be odd or evenly pinnate . Stipules may be present at or absent.</p>
---	---

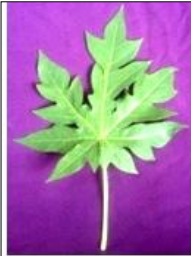
 <p>Petiolate leaf Sessile leaf</p>	<p>Petiolate leaf: The leaf which possesses a stalk or petiole is termed as petiolate leaf. Petiole is a stalk like structure which help in attachment of leaf to the stem and free movement of leaf lamina to receive sun light. Eq. China rose</p> <p>Sessile leaf: The leaf which does not possesses a stalk or petiole is termed as sessile leaf. The sessile leaves possesses sheathing leaf bases or without sheathing leaf bases.</p>
---	--

TYPES OF PINNATELY COMPOUND LEAVES

 <p>Unipinnate leaf Bipinnate leaf</p>	<p>Unipinnate: The leaflets are arised directly from the unbranched rachis. Examples: <i>Cassia quadrifolia</i>.</p> <p>Bipinnate: The compound leaf is having leaflets arranged on both side from base to top of the secondary rachis. The main rachis is branched which produce secondary rachis in pairs. The leaflets are originated from both sides of secondary rachis.</p> <p>Tripinnate: The leaflets are borne on tertiary rachis. The main rachis produces secondary rachis on both the side in pairs and the secondary rachis again produces pairs of tertiary rachis .The leaflets or pinnae are arranged on both the side of tertiary rachis. Such arrangement of leaf rachis and leaflets occur in tripinnate compound leaf. The tripinnate compound leaves are imparipinnate.</p>
---	---

 <p>Pinnately compound leaf</p>	 <p>Pinnately compound leaf</p>	<p>PINNATELY COMPOUND LEAF: The leaf rachis is having pinnae arranged from the base to top. Such arrangement of pinnae on leaf rachis is termed as pinnately compound leaf. The simple compound leaf is known as pinnate leaf. Leaf consists of rachis and rows of leaflets on both side of rachis. The leaflets are called as pinnae hence the leaf is termed as pinnate. The arrangement of pinnae may be alternate or opposite.</p>
 <p>Bi-paripinnate leaf</p>	 <p>Imparipinnate leaf</p>	<p>Bi-paripinnate: The leaflets are borne on secondary rachis. There are equal numbers of leaflets on both the sides of main rachis.</p> <p>Imparipinnate or odd pinnate: The leaflets are borne on secondary rachis. There are unequal numbers of leaflets on both the sides of main rachis. The rachis of leaf is unbranched which bear leaflets on both the side, in pairs. But the uppermost leaflets are without pair. It is terminal in position. Such a leaf with odd number of leaflet or pinnae is termed as imparipinnate leaf. The leaf is also termed as odd pinnate leaf.</p>

PALMATELY COMPOUND LEAF

 <p data-bbox="373 517 564 584">Palmately compound leaf</p>	<p data-bbox="657 262 1123 293">PALMATELY COMPOUND LEAF</p> <p data-bbox="657 311 1409 680">The leaflets or pinnae arise from the tip region of rachis. The rachis is highly reduced. It is never seen. The leaflets or pinnae originate from a single point i.e. from the top of the petiole. On the basis of number of leaflets, the palmately compound leaf divided as Unifoliate, Bifoliate, Trifoliate, Quadrifoliate, Pentafoliate, Multifoliate, and Parvifoliate.</p>
--	--

TYPES OF PALMATELY COMPOUND LEAF

Unifoliate: The term used for palmately compound leaf which is having single leaflet. In case of citrus plant, a single leaflet originated from top of the petiole which is modified to wing like structure. It is termed as unifoliate leaf.



Bifoliate: The term used for palmately compound leaf which is having two leaflets. From the top of the petiole only two leaflets are originated. This type of leaf is termed as bifoliate.

Trifoliate: The term used for palmately compound leaf which is having three leaflets. Here three leaflets originated from the topmost region of the leaf petiole. Such leaf is termed as trifoliate.



Quadrifoliate: The term used for palmately compound leaf which is having four leaflets. The leaflets originated from a single origin especially from the apex of the leaf petiole, which are four in number. The leaf is termed as quadrafoliate.



Pentafoliate: The term used for palmately compound leaf which is having five leaflets. The leaflets originated from a single origin especially from the apex of the leaf petiole, which are five in number. This type of leaf is termed as pentafoliate.



Multifoliate: The term used for palmately compound leaf which is having many leaflets. More than 5 leaflets originated from a

single point i.e. from the top of the petiole and spread like a palm. Such leaf is very common that is called as multifoliate leaf.

Parvifoliate: The plant having leaves which are smaller in relation to its stem. It is termed as parvifoliate.



Multifoliate leaf

DECOMPOUND LEAF & LEAF MOSAIC



Decompond type of leaf

DECOMPOUND LEAF

The rachis of compound leaf is divided into many branches on which the leaflets are situated. The leaf with such type of arrangement of leaflets on rachis is termed as decompounds leaf. A leaf consists of indefinite number of leaflets on a rachis which may have great variation in size and shape. The example is *Parthenium hysterophorus*.



Leaf mosaic

LEAF MOSAIC

The small herbs growing in forest or even on branches of large trees where light reach for short duration. The plant produces very attractive arrangement of small and large leaves on its stem. The leaves are arranged in such manner that no space is left. Such type of leaf spreading herb of leaves is termed as leaf mosaic. In Plant pathology the mosaic is the name of viral disease. Due to viral infection the infected leaf become abnormally wrinkled and loose its softness.

Result: Leaf plays very important role in identification of plants. The parts of leaf possesses characteristic features such as leaf apex, leaf bade, leaf margin, leaf shape, pattern of venation, arrangement, attachment, surface texture, form etc. that helps in identification of plant. Scientific terminology of leaf presented in the form of images.

REFERENCES

- Arber, A., (1950). The Natural Philosophy of Plant Form. Cambridge University Press.
- 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 .
- Corson, Francis; Adda-Bedia, Mokhtar; Boudaoud, Arezki, (2009). "In silico leaf venation networks: Growth and reorganization driven by mechanical forces". *Journal of Theoretical Biology* **259** (3): 440–448.
- Cutter, E.G., (1971). Plant Anatomy, experiment and interpretation, Part 2 Organs. London: Edward Arnold. p. 117. ISBN 0713123028.
- 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.
- Mauseth, James, D., (2008). *Botany: An Introduction to Plant Biology*. Jones & Bartlett. ISBN 978-0-7637-5345-0.
- Meenakshi Mahajan and Sumia Fatima (2014). *Families of angiosperms Vol. I*, Lap publication Germany, ISBN: 978-3659511912.