

Quadrant II – Transcript and Related Materials

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Unit: 01 -Morphology of Angiosperms

Module Name: Variations in flower-I

Module No: 18

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Notes

Variations in flower-I

Flower is considered as a highly modified shoot meant essentially for the sexual reproduction of the plant. It bears four whorls: Calyx, Corolla, Androecium and Gynoecium. Calyx and Corolla are sterile whorls whereas Androecium and Gynoecium are fertile whorls. Different terminologies are used for the flowers based on different criteria.

A. Based on the presence of floral units

Based on the presence of floral units, flowers are of two types

1. Complete flower: A flower with all the four whorls ie, Calyx, Corolla, Androecium and Gynoecium, is called a complete flower. e.g. *Cleome viscosa*, *Hibiscus rosa sinensis* (Shoe flower)

2. Incomplete flower: In a flower if one of the floral whorl out of four is absent, it is called incomplete flower. e.g. *Ricinus communis*, *Cocos nucifera*, *Alocasia spp.*

B. Based on the Symmetry

Symmetry of a flower is determined by vertically dividing it from the middle.

1. Actinomorphic / Regular flower: A flower in which the parts of each whorl are similar in shape and size, the flower can be divided in to two equal halves along more than one median longitudinal plane. Eg. *Ipomoea sp.*, *Mirabilis jalapa*, *Hibiscus rosa sinsensis*, *Citrus limon*, *Vinca rosea*. Actinomorphic flowers are radially symmetrical flowers. The symbol used for Actinomorphic flowers is



2. Zygomorphic/ Irregular flower: A flower in which the parts of some or all the floral whorls are unequal. Most of the flowers can be divided in to two equal halves through one vertical plane. These are actually the bilaterally symmetrical flowers. e.g. *Clitoria ternatea (Gokarn)*, *Caesalpinia pulcherrima (Shankar,)* *Zingiber officinale*, *Vanda roxburghi*. The symbol used for Zygomorphic flowers is %.

In some plants, the flowers cannot be divided vertically in to two equal halves through any plane. Such flowers are called **Asymmetric flowers**.

C. Based on the Sexuality

Sexuality of a flower depends up on the presence or absence of Andorecium - the male reproductive organs and Gynoecium – the female reproductive organs.

Based on the sexuality of a flower the plants are divided into:

1. Bisexual flower: Bisexual flowers are those which have both Andorecium - the male reproductive organs and Gynoecium – the female reproductive organs. They are also called as hermaphrodite flowers. e.g. *Hibiscus rosa sinsensis*, *Citrus limon*, *Vinca rosea*.

2. Unisexual flower: Unisexual flowers have only one type of sex organ. Either the Androecium or the Gynoecium. Based on the type of sex organ found in them they are further divided into two types:

- a. Staminate flower: The flower bears only male reproductive organs i.e. they have only stamens. Carpels are absent in these flowers.
- b. Pistillate flower: The flower bears only female reproductive organs i.e. they have only carpels. Stamens are absent in these flowers.
e.g. Ricinus communis, Cocos nucifera, Alocasia spp.

In addition to the bisexual and unisexual flowers, there are certain plants which bear the flowers without the male and the female reproductive organs. Such flowers are called as neuter flowers. e.g. *Alocasia spp.*

D. Based on the sexuality of the plant

The Staminate and Pistillate flowers are borne on the same plant or two different plants. Sometimes the plants bear the bisexual as well as unisexual flowers. Based on type of the flowers the plants bear, they are classified into three different.

- a. Dioecious plants: Plants are those male and female flowers are borne on two different plants. e.g. *Phoenix dactylifera* (Date palm).
- b. Monoecious plants: Plants are those male and female flowers are borne on the same plant. e.g. *Cocos nucifera* (Coconut), *Zea mays* (Maize).
- c. Polygamous plants: These are the plants which bear bisexual as well as unisexual male and unisexual female flowers. e.g. *Carica papaya*.