11-FLOWER DIAGRAMES, FORMULAS AND FLOWER SYMETRY

FLOWER FORMULAS and DIAGRAMES

1. FLOWER FORMULAS

Floral formula is a means to represent the structure of a flower using numbers, letters and various symbols, presenting substantial information about the flower in a compact form. It can represent particular species, or can be generalized to characterize higher taxa, usually giving ranges of organ numbers. Floral formulae are one of the two ways of describing flower structure developed during the 19th century, the other being floral diagrams.

Apart from the ***graphical*** diagrams, the flower structure can be characterized by ***textual*** formulae.

A floral formula consists of five symbols indicating from left to right:

Floral Symmetry
Number of Tepal
Number of Sepals
Number of Petals
Number of Stamens
Number of Carpels

Tepals	Sepals	Patals	Stamen	Carpels
P	K	C	A	G

The parts of the flower are described according to their arrangement from the outside to the inside of the flower.

If an organ type is arranged in more whorls, the outermost is denoted first, and the whorls are separated by "+".

If the organ number is large or fluctuating, is denoted as "∞".

2. FLOWER DIAGRAMES

Floral diagram is a graphic representation of flower structure. It shows the number of floral organs, their arrangement and fusion. Different parts of the flower are represented by their respective symbols.

Rather like floral formulas, floral diagrams are used to show symmetry, numbers of parts, the relationships of the parts to one another, and degree of connation and/or adnation. Such diagrams cannot easily show ovary position.

FLOWER SYMMETRY

Floral symmetry describes whether, and how, a flower in particular its perianth, can be divided into two or more identical or mirror-image parts. Or Symmetry in a flower is the expression of how many **equal parts**, not how many parts can be divided.

Four different flower symmetries were determined among flowering plants.

1. **Actinomorphic** (Radial) **Symmetry**
2. **Bilateral symmetry**
3. **Zygomorphic symmetry**
4. **Asymmetry**





1. Actinomorphic (Radial) Symmetry:

It can be divided into 3 or more identical sectors which are related to each other by rotation about the centre of the flower.

For example, occurs in *Rosa, Ranunculus*, and *Galanthus* genus flowers.

2. Bilateral symmetry

Its means having two (and only two) planes of symmetry. With this symmetry, a flower is divided into four equal parts.

For example, occurs in members of *Brassicaceae* family

3. Zygomorphic Symmetry

There is only one plane of symmetry. The flowers can be divided by only a single plane into two mirror-image halves.

For example, occurs in members of *Fabaceae*, *Lamiaceae*, and *Orchidaceae* family.

4. Asymmetric Flowers

The flower lacks any plane of symmetry, usually the result of twisting of parts.

For example, occurs in members of *Cannaceae*, *Centranhus* family.

Flower symmetry can be an important adaptation relative to pollination systems.

Actinomorphic flower symmetry is likely the ancestral condition in angiosperms and is found in a large number of groups.

Zygomorphy has evolved repeatedly in many groups, typically as a means of more efficiently transferring pollen to an animal (usually insect) pollinator.

Thanks…