University of Calcutta (Under CBCS)

Project Report

Semester :- III

Roll no. :- 213044-11-0003

Reg. no. :- 044-1211-0207-21

Subject :- BOTA

Paper :- CC6

TO WHOM IT MAY CONCERN

This is to certify that, the following student of B. Sc. BOTA SEM III 2022 of Muralidhar Girls' College with Roll No. 21304 4-11-0003 and Registration No. 044-1211-0207-21

has done the field visit and completed the project work as mentioned in the curriculum of BOT-A-CC-3-6-P (Reproductive Biology of Angiosperms) under my supervision.

Name of teacher: DR. SANGITA DASCHOWDHURY

Signature of the teacher with date and college seal Sangita Daschowdhury

17.02.2023.

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Introduction :-

The following inflorescences, flowers and fruits are observed during visit to A J C Bose Indian Botanic Garden, Barrackpur and Kolkata station surrounding areas.

A few also occur in college premises and local surroundings.

Fig. A → Raceme inflorescence

Fig. B → Corymb inflorescence

Fig. C → Spike inflorescence

Fig. D → Spikelet inflorescence

Inflorescence :-

I) Racemose Inflorescence :-

A) Raceme :- The main axis has indefinite growth, where more or less equally pedicellate flowers are borne, Fig. A is an example of raceme inflorescence.

B) Corymb :- The main axis is comparatively shorter and the lower flowers have much larger peticels than the upper ones, so that all the flowers are brought more or less at the same level.
Fig. B is an example of corymb inflorescence.

C) Spike :- The main axis is of indefinite growth, where sessile flowers are borne on it.
Fig. C is an example of spike inflorescence.

D) Spikelet :- It is a small spike where one or more flowers are borne on rachilla. In grasses the entire inflorescence bears at its base two sterile bracts, empty glumes. Above the empty glumes there are one or more fertile glumes, the flowering glumes are lemmas. Each lemma bears single sessile flower in its axil. Opposite the lemma a small glume is present, called palea.
Fig. D is an example of spikelet inflorescence.

Fig E. → Spadix inflorescence

Fig. F → Capitulum inflorescence

E) Spadix :- It is a spike with fleshy axis having both male and female flowers. Entire structure is surrounded by a large bract called spathe. The female flowers are always found towards the base of the axis and male flowers towards the apex, whereas there two surround the sterile flower from up and down. The terminal portion is barren and called as appendix.

Fig.E is an example of spadix inflorescence.

F) Capitulum :- In this type the main axis is much shortened and broadened out of to form a flat or more or less convex receptacle on which numerous sessile and small florets are arranged in a centripetal manner i.e. youngest at the centre and oldest towards the periphery. Individual florets are bracteate. The cluster of florets is surrounded by a whorl of bracts collectively called involucre. Two kinds of florets are distinguished :- ray florets those at the periphery with strap-shaped corolla. These florets are female and are always zygomorphic, arrange in one or two whorls. Disc florets are grouped at the center and are bisexual and actinomorphic.

Fig. F is an example of capitulum inflorescence.

Fig. G → Capitate inflorescence

Fig. H → Compound spike

Fig. I → Compound spadix

Fig. J → Solitary inflorescence

G) Capitate :- In this type, a dense cluster of sessile flowers arise upon a compressed rachis thereby they give rise to a somewhat globose structure.
Fig. G is an example of capitate inflorescence.

◉ Compound racemose type :-

H) Compound spike :- When branches of the main axis bear spikes, it is called compound spike.
Fig. H is an example of compound spike inflorescence.

I) Compound spadix :- In this type, the fleshy axis is repeatedly branched and each branch bears sessile unisexual flowers. When young, the entire inflore-scence or each branch separately enclosed in a spathe.
Fig. I is an example of compound spadix inflorescence.

II) Cymose Inflorescence :-

J) Solitary :- It is the simplest type of cymose. Here the rachis is unbranched and always terminated by a flower.
Fig. J is an example of solitary inflorescence.

K) Polychasial cyme :- In this type the primary axis ends in a flower and develops more than two daughter axes with apical flower bud from a single

Fig. K → Polychasial cyme

Fig. L → Verticillaster

Fig. M → Cyathium

node, a little distance behind the apex. The daughter axes, in their turn, also behave like mother.

Fig. K is an example of polychasial cyme inflorescence.

L) Verticillaster :- It is a condensed cymose inflorescence each occurs in the axil of opposite leaves having sessile or slightly stalked flowers. Each inflorescence is initially a dichasial cyme and the two lateral sides become reduced to two scorpioid cymes. The entire inflorescence appears like a cluster of sessile flowers forming a false whorl at the node.

Fig. L is an example of verticillaster inflorescence.

M) Cyathium :- It is a specialised cymose inflorescence but looks like a single flower. The axis becomes suppressed to form a convex receptacle. In the centre of the receptacle, there is a long-stalked, naked female flower with tricarpellary gynoecium, surrounded by a large number of male flowers arranged in a scorpioid cyme. The male flowers consists of a single stamen, joined to a short stalk i.e. the pedicel and each one develops in the axil of a hairy bracteole. The entire inflorescence is surrounded by a cup shaped green involucre formed by the union of bracts. The involucre is with one or two nectar glands on its outer wall or often without gland. The flowers are developed in centrifugal manner i.e. from inner to outer side.

Fig. M is an example of cyathium inflorescence.

Fig. N → Dichasial cyme

Fig. O → Hypanthodium

Fig. P → Mixed spadix

Fig. Q → Corymbose cyme

N) Dichasial cyme :- In this type, the primary axis ends in a flower and develops two daughter axes with apical flower bud from a single node, a little distance behind the apex.

Fig. N is an example of dichasial cyme.

O) Hypanthodium :- In this type a hollow sphere-like receptacle (syconium) is formed by the fusion of the rachis of three closely placed cymes. The spherical receptacle is like a closed fleshy vessel with a small opening at the apex. Three types of unisexual flowers (male, fertile female and sterile female) are arranged on the inner surface of the receptacle in cymose groups.

Fig. O is an example of Hypanthodium inflorescence.

III) Mixed Inflorescence :-

P) Mixed spadix :- In this type, cymose group of flowers are covered by spathe and are arranged racemosely on a fleshy stalk. The entire structure is also covered by spathe, when young.

Fig. P is an example of Mixed spadix inflorescence.

Q) Corymbose cyme :- In this type the cluster of flower looks like a corymb but the oldest one at the centre.

Fig. Q is an example of corymbose cyme inflorescence.

Fig. B → Spirocyclic flower

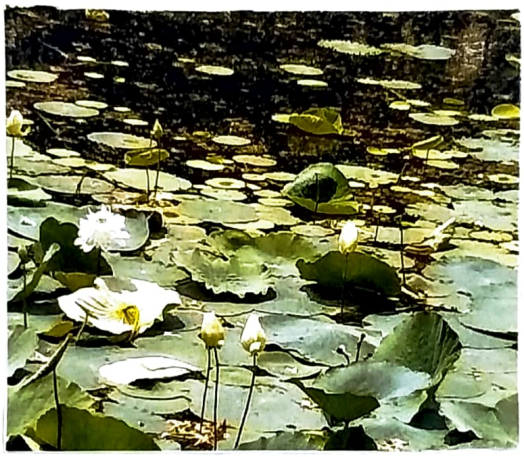

Fig. A → Acyclic flower

Fig. C → Zygomorphic flower

Flower :-

A) Acyclic flower :- When all the floral leaves are arranged spirally on the thalamus, they are called acyclic flower.

Fig. A is an example of acyclic flower.

B) Spirocyclic flower :- When out of four sets of floral leaves some sets are arranged in whorls, while others are in spiral, they are called spirocyclic flower.

Fig. B is an example of spirocyclic flower.

C) Zygomorphic flower :- When flower can be divided into two equal and symmetrical halves after cutting it through only one vertical plane passing through the axis, it is called symmetrically zygomorphic flower. But in some cases the flower may not even be cut into two equal halves through any vertical planes, is called asymmetrically zygomorphic flower.

Fig. C is an example of zygomorphic flower.

Fig. A → Caryopsis

Fig. B → Regma

Fig. C → Berry

Fruit :-

A) Caryopsis :- This is dry indehiscent type of fruit, The fruits develop like achene, but the pericarp is inseparably fused with the seed coat.
Fig. A is an example of caryopsis fruit.

B) Regma :- This is schizocarpic fruit. The fruits develop from multicarpellary ovary and after maturation they divide into parts - as many as carpels. Each one seeded part is called coccus. Thus the number of cocci is three in castor.
Fig. B is an example of regma.

C) Berry :- This is succulent fruit, The fruits are developed from the multicarpellary syncarpous superior or inferior ovary. Placentation is axile or parietal. The seeds lie embedded freely in the massive pulp developed from mesocarp and endocarp. The epicarp remains as the outer thin covering of the fruit.
Fig. C is an example of berry.

Conclusion :—

The inflorescences, flowers and fruits are identified based on their morphological characters.

S. Daschowdhury
10.01.2023.