TENDER HEART HIGH SCHOOL, SEC-33B, CHD

CLASS - 8 BIOLOGY

TEACHER - Ms Nidhi Rana

03.07.2024

This lesson is for Class 8 for the subject of Biology Topic - Agents of Cross Pollination which is covered in Chapter 5 titled - Pollination and Fertilization starting on Page No. 38 of your text book - Concise Biology Selina Publications

AGENTS OF CROSS POLLINATION

Flowers are pollinated by certain animals, birds, air water, insects and wind. A few agents are discussed below -

I. INSECT - POLLINATED FLOWERS or entomophilous flowers.

[Phenomenon is called entomophily i.e. pollination occuring with help of insects

Characteristics of Entomophilous flowers -

1. Flowers are large, brightly coloured, produce nectar, emit scent - to attract insects for pollination
2. Pollen grains are sticky or spiny to enable them to be carried by the insects easily.
3. Similarly stigma is sticky to catch the pollen grains and does not hang out from the flower
4. If the flowers are small in size, then flowers tend to be in clusters to make them conspicuous, so that insects can easily see/locate them.

II. WIND POLLINATED FLOWER or Anemophilous flowers

[Phenomenon of pollination of flowers occuring with the help of wind is called anemophily.

Characteristics of Anemophilous flowers -

1. Flowers are small (need not be large), not brightly coloured, do not produce scent or nectar. All these features are needed in flower to attract insects. Wind will carry the pollens from flowers (with or without these features) Hence wind-pollinated flowers saves a lot of nutrients which otherwise would be used in production of these features.

2. The stamens are long and hang out of the flowers to be exposed to wind so that anther containing pollens can easily drop the pollens in the air.
3. Anthers are large and loosely attached to the filaments so that the slightest wind may move them (and pollens may come out in the air)
4. Pollens are produced in large quantities as there is a lot of wastage of pollens while transferring them from one flower to another.
5. Pollens are light, dry and smooth so that they can be easily carried by wind.
6. Stigmas are feathery and hang out of the flowers to trap the pollens.

III. **WATER-POLLINATED or Hydrophilous flowers**

[Phenomenon of pollination of flowers occuring with the help of water is called hydrophily]

Characteristics of water pollinated flowers -

1. Pollen grains are produced in large numbers as there is a lot of wastage of pollen grains (while pollination)
2. In some plants specific gravity of pollens is almost equal to that of water, so that the pollens remain floating below the surface of water.
3. In some special cases male flowers are such that they float on the surface of water till they meet fesinale flowers.

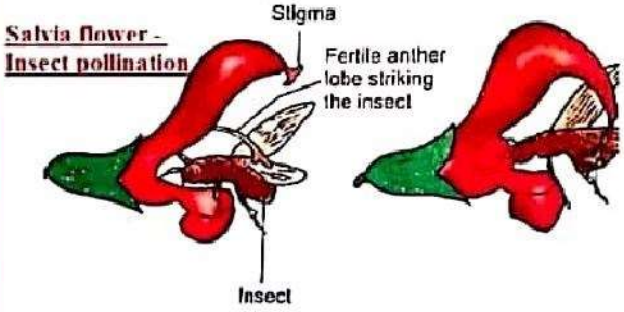
Entomophilous flower - Eg Dahlia
Anemophilous flower - Eg Maize
Hydrophilous flower - Eg Vallisneria.

Now before going further let us take a short break. Answer the following questions during the break -

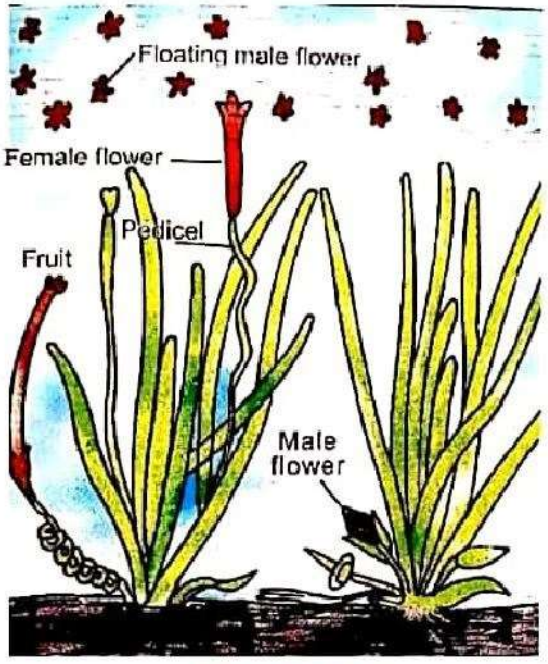
Q-1) Give term given to wind pollinated flowers
Q-2) Give one example of water pollinated flower.
Q-3) Give one characteristic of insect pollinated or entomophilous flowers.

Break is over children listen to the correct answers. -

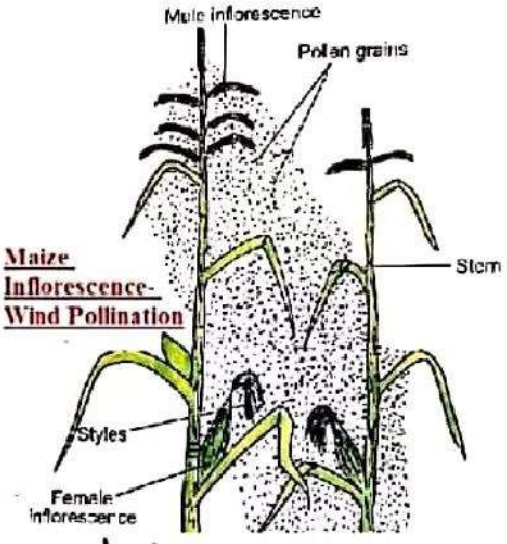
A-1) Wind pollinated flowers are called Anemophilous flower.
A-2) Water pollinated flower - Vallisneria
A-3) Entomophilous flowers are brightly coloured, scented and produce nectar.



Salvia flower - Insect pollination



Vallisneria Flower - Water Pollination



Maize Inflorescence - Wind Pollination

Let us resume the topic and discuss some other agents of pollination.

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ORNITHOPHILY - Pollination of flowers occuring with the help of birds Eg Bignonia, Canna

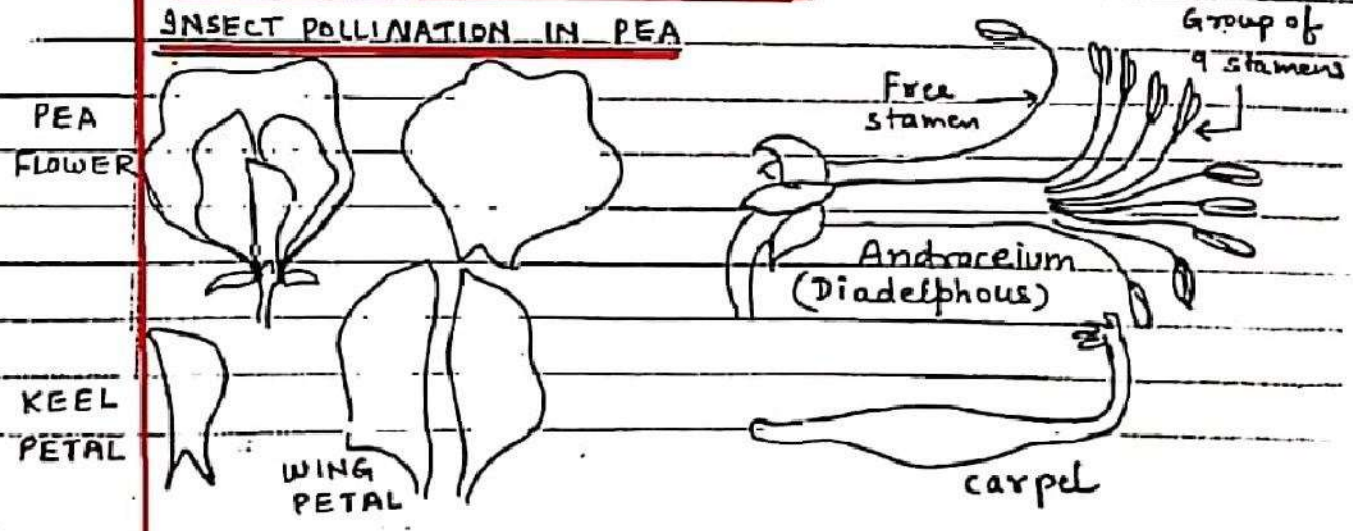
ELEPHOPHILY - Pollination of flowers occuring with the help of elephants Eg. Rafflesia whose flowers are big and found at ground level. When trampled by the feet of elephant the pollens of the flower may get attached to the feet of elephant and may be carried to the stigma of another flower (when the elephant reaches another flower while walking)

ARTIFICIAL POLLINATION / ARTIFICIAL CROSSING

When man himself transfers the pollens to the stigma it is called artificial pollination It is a practice adopted by plant breeders to improve the plant varieties and their produce. In this pollination practice they first remove the anthers from the flowers (so that self pollination does not occur) and then they cover the flowers with plastic bags (so that pollens which may be present in air or from any other source should not cause pollination of flower) Later the plant breeders pollinate these flowers with the pollens from the plants of desired variety.

SOME EXAMPLES OF POLLINATION

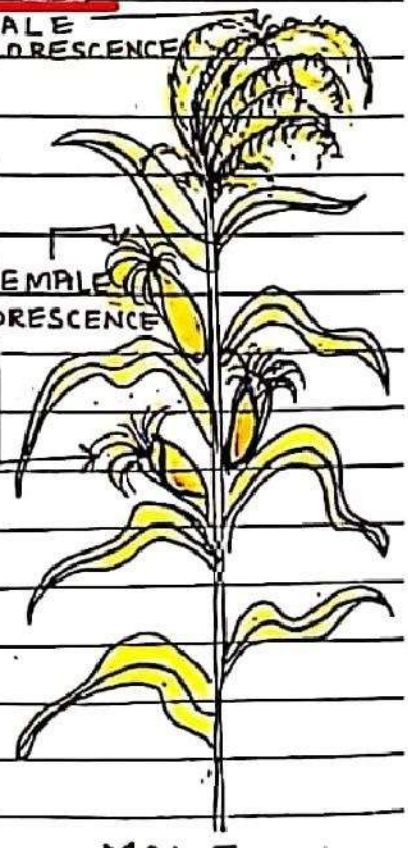
INSECT POLLINATION IN PEA



In pea plant the corolla is made up of five free petals. The largest and outermost one is - standard petal, two lateral petals are - wing petals and the innermost two, called the keel petals Insect sits on this conspicuous corolla and thrusts its long tongue / probosis in search of nectar In this struggle the 'wing petals' along with 'keel petals' are forced down and the stamen and stigma touch the underside of the body of insect. Thus the insect may transfer the pollens (taken from stamens) to the stigma of the same flower (stigma, stamens enclosed within the petals, and are more or less at same level) or the ~~star~~ pollens may be transferred to another flower when this insect visits another flower (as the pollens were sticking on its body)

WIND POLLINATED FLOWER - MAIZE

In maize pollination is occuring with help of wind. As the wind blows the pollen from the outwardly hanging anthers (in the tassel) is blown away easily because the anthers are so loosly attached to the filament that the slightest wind will shake them. The pollens blown away by the wind may fall on the feathery stigmas of the female flowers which have large surface for this purpose. Maize shows protandry - (ie. male flowers mature earlier than female ones, hence favours cross pollination.



MAIZE

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NOTE FOR STUDENTS

Students are required to go through the topic "agents of pollination" carefully in the given notes as well as being discussed in the text book with understanding.
It may require multiple readings to grasp the topic completely.

HOME ASSIGNMENT

1. Learn and write the differences between insect pollinated and wind pollinated flowers (given in Table 5.2 of your text book).

2. Answer the following questions in your notebook from Review Questions (given on Pg 46 of textbook at the end of Ch.5]

C. Short Short Answer type

Q No 1. [Explain the following terms -
Ornithophily, Elephophily, Artificial Pollination]

D Long Answer type

Q No 1. [What are the advantages of the following in a flower to the plant concerned ?]

(a) Long & feathery stigma
(b) Brightly coloured petals
(c) Smooth and light pollens
(d) Protruding and easily movable anthers
(e) Fragrant nectar