TENDER HEART HIGH SCHOOL, SEC-33B, CHD

CLASS - 8 BIOLOGY DATE - 05.08.2024

TEACHER - Ms Nidhi Rana PAGE NO - 1

CHAPTER - 6 SEEDS - STRUCTURE AND GERMINATION

Good morning Students

This lesson is for Class 8 for the subject of Biology Topic 'Germination of Seed' which is covered in Chapter 6 Seeds - Structure and germination starting on Page No 47 of your text book titled Concise Biology Selina Publications and is being Submitted to you on 05.08.2024

Dear students in the last class we have learnt about Structure of seed, now let us learn about its germination and the conditions required for germination of seeds.

Firstly understand the definition of germination given below :-

Germination - Process of formation of a seedling developed from the embryo (of seed).

Seed contains dormant (inactive) embryo, it is in state of rest. When the conditions are unfavourable the seed remains in the period of dormancy, though all the metabolic life activities are occuring inside the seed, although they are very slow. When placed under proper conditions, the dormant seed's embryo becomes active and start growing into seedling. A fresh seed from a plant normally does not germinate even if the conditions for germination are favourable. During this dormancy period it undergoes physiological maturation.

CONDITIONS NECESSARY FOR GERMINATION

(1) Water is absorbed by seed all over the surface but mainly through micropyle. Uses of water
(a) By absorbing water seed swells, seed coat ruptures allowing the elongating radicle to come out and form root system
(b) Water is required for various chemical reactions or metabolic activities occuring inside a seed. and for the enzymes to act on food (stored in cotyledon/endosperm) and convert it into simple, soluble, diffusable form which can be used by embryo for growth.

2) Suitable Temperature - Very low temperature inhibits the growth of embryo and very high temperature distroys its delicate tissues. A moderately warm temperature (25 °C to 35 °C) is favourable for germination

(3) Oxygen - During germination there is rapid cell division and cell growth for which energy is required. This energy is available only by respiration (oxidation of food) and hence the need for oxygen (or air).

Seeds sown very deep in soil fail to germinate?

Reason - (a) No proper supply of oxygen which is needed for respiration (by the seed for germination)
(b) Seed if placed in deeper layer of soil, its embryonic parts will not have sufficient pushing force to break through and come out of the upper layer of soil

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

Q1 Name the process of formation of a seedling developed from the embryo.

Q2. Name 3 essential conditions required for germination of seeds.

Q3 Give the suitable temperature range for germination of seeds.

Break is over children. Listen to the correct answers -

A1 Germination

A2 Water, suitable temperature and oxygen

A3 25 - 35 °C.

Experiments on Germination.

Experiment 1 Aim - To prove that water is necessary for germination

Take two beakers A & B in an ordinary room as -

Beaker A - with some green gram seeds placed on wet cotton wool

Beaker B - with some green gram seeds placed on dry cotton wool

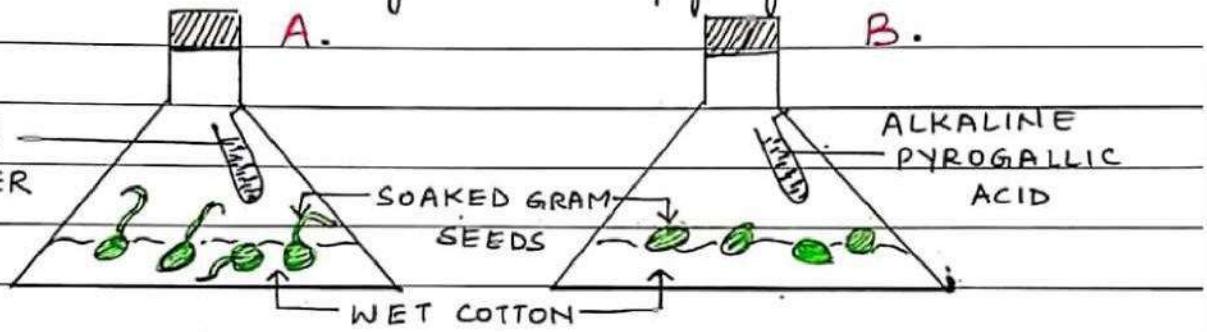
observation : Seeds in beaker A germinate

Seeds in beaker B donot germinate

Conclusion - Water is necessary for germination

Experiment 2 Aim - To prove that a suitable temperature is necessary for germination
Take two beakers. Place some green gram seeds on wet cotton wool in both beakers and then -
Beaker A - Keep in ordinary room
Beaker B - Keep in refrigerator
observation - Seeds in beaker A germinate
Seeds in beaker B do not germinate.
Conclusion - Suitable temperature is needed for germination

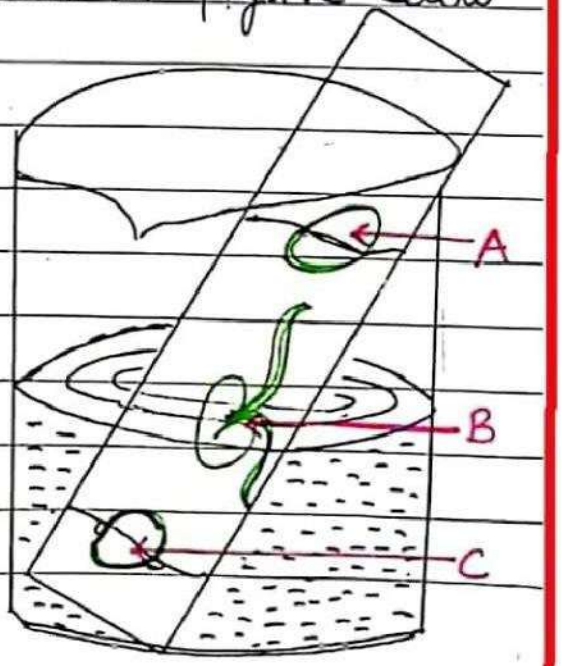
Experiment - 3 Aim - To prove that air (oxygen) is necessary for germination
Take two conical flasks A & B. Place some green gram seeds on wet cotton in both flasks and then -
In Flask B - lower a small test tube containing alkaline pyrogallic acid (which absorbs oxygen)
In Flask A - lower a small test tube containing water
Observation - Seeds in Flask A germinate
Seeds in Flask B donot germinate
Reason Seeds in Flask B donot germinate because there is no oxygen in Flask B. All the oxygen has been absorbed by alkaline pyrogallic acid.



Experiment 4. The three bean seed experiment

AIM - To demonstrate germination

Take 3 bean seeds and tie them to the glass slide at three position as shown in figure below This slide is kept in a beaker containing water in a manner that the top seed A is well above water, the middle one B is just at the water level and botton one C is completely immersed in water. Keep the experimental set up in warm place



observation

Top seed - does not germinate as it gets only oxygen but no water

Middle seed - germinates as it gets both oxygen and water

Bottom seed - doesnot germinate as it gets water but very little oxygen (dissolved in water)

Conclusion - water is essential for germination but other requirement of oxygen is not fully demonstrated

Dear Students with this I am ending todays discussion Kindly go through the given explanation and with reference to the detailed explanation answer the following home assignment questions in your notebooks

HOME - ASSIGNMENT -

Q 1 Do the following Review Questions (given on Pg 53-54) of your text book in notebook.

C Short Answer type

Q No 1 , & 3 , & 4.

D Long Answer type

Q No 1 & 8