

CLASS - 8 BIOLOGY

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CHAPTER 6 - SEED - STRUCTURE & GERMINATION

This lesson is for Class 8 for the subject of Biology Topic - Types and structure of Seeds, which is covered in Ch.6 titled Seed - Structure and germination starting on Page No 47 of your text book titled Concise Biology Selina Publications and is being submitted to you on 17.07.2023. Dear students Let us start our discussion with a few definitions -

Seed - is a fertilized (ripened) ovule. Seed contains an embryo (baby plant) that grows into a new plant. Eg Bean seed

Fruit - is a fertilized (ripened) ovary. ovary wall forms the fruit wall which encloses the seeds.

The fruit is protecting the seed (inside) and also helping in the dispersal of seed. Eg Mango

Grain - is a fruit in which the fruit wall and seed coat is fused together to form a protective layer. Eg Maize.

Embryo (baby plant) consists of -

Radicle - that later forms the future root

Plumule - that later forms the future shoot

Cotyledons or seed leaves - that forms future leaves.

Cotyledons store the food for growing embryo in some seeds.

Embryo remains inactive - called as dormant seed. but on exposure to favourable conditions such a dormant seed germinates

Endosperm is the tissue that stores the food material for the growing embryo providing it nourishment for its growth and development. Some seeds are small like poppy seeds, while some are very large like coconut.

TYPES OF SEEDS

On basis of presence/absence of endosperm.

Albuminous or Endospermic seeds - seed that contain the endosperm which stores food for the growing embryo. In such seeds

cotyledons are thin and membranous Eg -

Monocot albuminous seeds - Cereals, millets

Dicot albuminous seeds - Poppy, custard apple

(ii) Exalbuminous or Non endospermic seeds -

Such seeds do not have endosperm. Here the cotyledons store food for the growing embryo, hence are thick and fleshy. Eg -

Monocot exalbuminous seeds - Vallisneria, orchids.

Dicot exalbuminous seeds - Gram, pea

Two types of seeds

(i) Mono cotyledons - seeds that contain one cotyledon (seed leaf) Eg. Maize, grasses

(ii) Dicotyledons - seeds that contain two cotyledons (seed leaves) Eg. Pea, Gram.

Before going further let us take a quick recap of what we have learnt so far. Answer the following questions in this short break

Q1) Name the term given to a fruit in which fruit wall and seed coat is fused together.

Q2) Give term given to the seeds that contain endosperm

Q3) Give example of monocotyledonous seed.

Break is over children Listen to the correct answers -

A1) Grain

A2) Albuminous or Endospermic seeds

A3) Maize.

Now let us resume the topic with the discussion of -

STRUCTURE OF DICOT SEED [BEAN SEED]

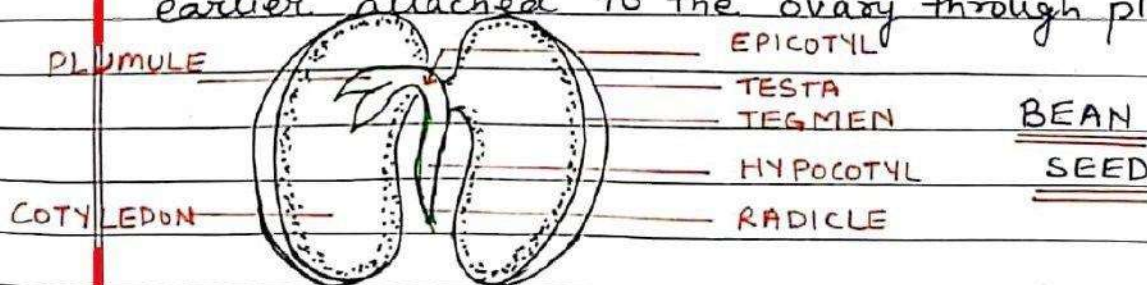
Most bean seeds have a kidney shape with a convex and a concave side.

Seed coat has 2 layers -

Testa - outermost hard brownish covering, protecting the delicate inner parts of seed from injury and from the attack of bacteria fungi & insects

Tegmen - inner thin layer lying next to testa. It is also providing protection to the inner parts.

HILUM is whitish oval scar on the concave side of the seed. It represents the spot where the ovule (now the seed) was earlier attached to the ovary through placenta.



MICROPYLE - a tiny pore near hilum, it marks the opening through which the pollen tube had entered the ovule. Functions

- 1) When soaked in water, seed absorbs water mainly through the micropyle and make it available to embryo for germination.
- 2) It provides for diffusion of respiratory gases for growing embryo.

COTYLEDONS - Below the seed coat, cotyledons are present that contain food for the embryo & protect it.

Embryo - The tiny baby plant consists of two parts -

Radicle - baby root which later form the future root

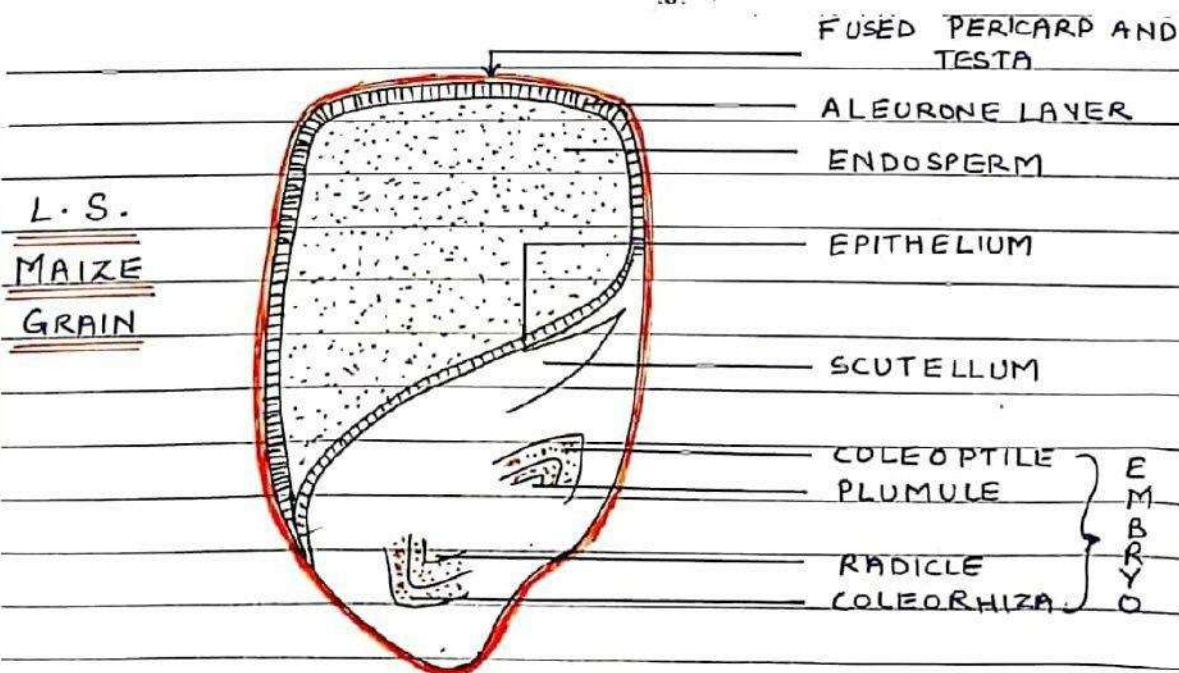
Plumule - baby shoot which later form the future shoot

The plumule consists of short stem with a pair of tiny leaves and a growing point between them.

Epicotyl The region of the axis between the point of attachment of cotyledons and the plumule

Hypocotyl The region of the axis below the cotyledon and above the radicle.

MAIZE GRAIN is a single seeded fruit in which fruit wall and seed coat are fused together. Hence it is called a grain.



STRUCTURE OF MAIZE GRAIN

Embryo - One side of the grain occurs a small light coloured oval area which marks the location of the embryo inside. The remaining major part of the grain contains a large endosperm which is rich in starch.

Endosperm - contains food for the growing embryo. Endosperm and the embryonic part are separated from each other by a thin epithelial layer. Outermost layer of endosperm is rich in protein called the aleurone layer.

Parts of Embryo

Embryo consists of single cotyledon called the scutellum, a radicle and a plumule.

Coleorhiza - Radicle is towards the pointed end and it is enclosed in a protective sheath called the coleorhiza.

Coleoptile - The plumule is towards the upper, broader side of the embryonic region and is enclosed in a protective sheath called coleoptile.

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With this I am ending today's discussion children. On the basis of your understanding of today's topic, all students are required to answer the following home assignment questions in the notebooks.

HOME ASSIGNMENT

Q-1 Draw a well-labelled diagram of (in notebook)

(i) Bean seed (ii) Maize grain

Q2. Learn and write the differences between Bean seed and maize grain (given on Page 49 of textbook) in the notebook.

Page 5 [Last Page]