

Topic: Endosperm

B.Sc. Botany Subs. II

Group: B

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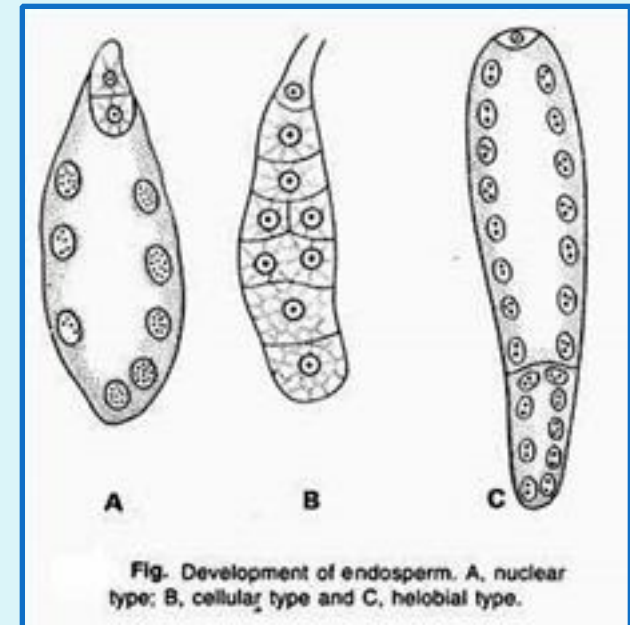
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Types of Endosperm Formation:


There are three general types of endosperm formation-


- (a) Nuclear type,
- (b) Cellular type and
- (c) Helobial type.




(a) Nuclear Type:

- In this type, the first division and usually several of the following divisions are unaccompanied by wall formation.
- The nuclei may either remain free or in later stages, they may become separated by walls.

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- As divisions progress, the nuclei are being pushed towards the periphery, thus a large central vacuole is formed.
 - Often the nuclei are especially aggregated at the micropylar and chalazal ends of the sac and form only a thin layer at the sides.
 - Generally the endosperm nuclei in the chalazal part of the embryo sac have been observed to be larger than those in the micropylar end.
 - The number of free nuclear divisions varies in different plants.
 - The development of the endosperm of *Cocos nucifera* of Palmae deserves special mention.

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- Here the primary endosperm nucleus undergoes a number of free nuclear divisions.
 - When the fruit is about 50 mm long the embryo sac remains filled with a watery fluid or milk containing free nuclei and fine cytoplasmic particles.
 - At a later stage when the fruit becomes about 100 mm in length the liquid shows in addition to free nuclei, several cells each enclosing variable number of nuclei.
 - Gradually these cells and free nuclei set at the periphery of the cavity, and layers of cellular endosperm are formed, and this becomes the coconut meat.

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- On maturity of coconuts the endosperm does not have free nuclei or cells.
 - In Areca nut the development of the endosperm is like that of coconut but the embryo sac cavity is small and it is completely filled up by the growth of the endosperm, and later becomes very hard.
 - The nuclear type of endosperm formation is the most common type and found in maize, wheat, rice, sunflower, etc.

