

CHARA

1994

Q. Describe the structure and reproduction in CHARA?

Ans - Systematic Position →

Class - Chlorophyceae

Order - Charales

Family - Characeae ✓

Genus - Chara

Occurance and structure of the Thallus →

Chara is also known as stone-wart due to heavy deposition of calcium carbonate on the thallus. It is a submerged, aquatic algae grow in the lakes, river ponds, moist places etc. But it prefers clear, fresh and stagnant water. Chara baltica grows in salty water where as Chara jaylanica is a common Indian species. All together 117 species have been reported. Out of that 27 species found in India. Chara is an autotrophic plant.

The plant body of Chara is a like an angiospermic plant. Which is attached to the substratum by means of multy cellular rhizoids. The length of a plant is 2 to 30 cm in height. The thallus has a central long axis. The axis is differentiated into well marked node and internodes. In some species internodal cells are covered by a narrow, elongated cells known as Pseudocortex. A whorl of short branches of limited growth arises from each node of the central axis or the lateral axis. In addition to the branches of limited growth. The nodes bears one or more branches of unlimited growth. They are often called axillary branches. The reproductive organs are arises from the branches of limited growth. Which is known as Antheridia

(Globule) and Oogonia (Nucule) respectively.

Each cell of Chara is covered by a cell wall. Which is made up of cellulose and above the cell wall. There is heavy deposition of calcium carbonate is found. Inside the cell wall there is dense, granular cytoplasm is found. In the cytoplasm there is well develop one nucleus and many small discoid chloroplast are distributed of which vacuole and pyrenoid are absent. The food material is reserve by means of starch grain or oil drops.

The growth of the main axis and the branches brought about by means of single, large, apical cell located at the tip of the axis. It divides and redivides and forms the nodal and internodal regions.

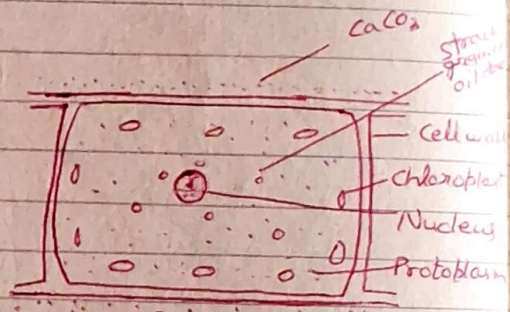
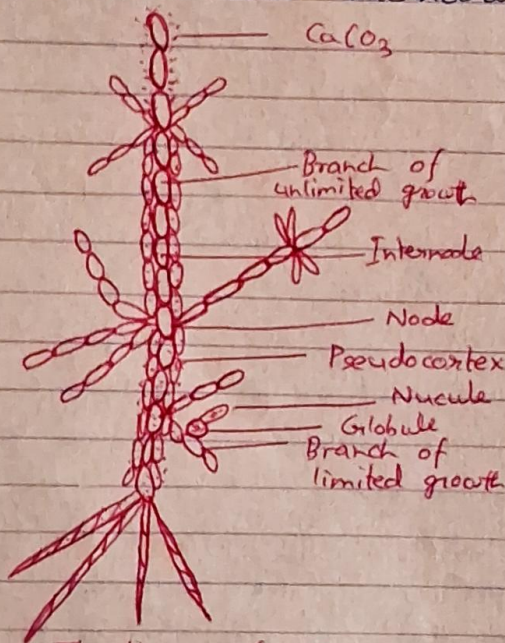


Fig - Detail cell structure of Chara

Fig - Thallus of Chara

Reproduction → It reproduces by two methods - That is Vegetative and Sexual reproduction.

1. Vegetative Reproduction → It takes place in the favourable condition by the following methods -

@ By Amylum star → These are the star shaped cells, which develop on the lower node of the thallus. These cells are full of Amylum star grain. So they are known as Amylum star cell. On maturity each Amylum star cell detached from the thallus and after returning favourable condition each cell divide and redivide and form a new thallus of Chara.

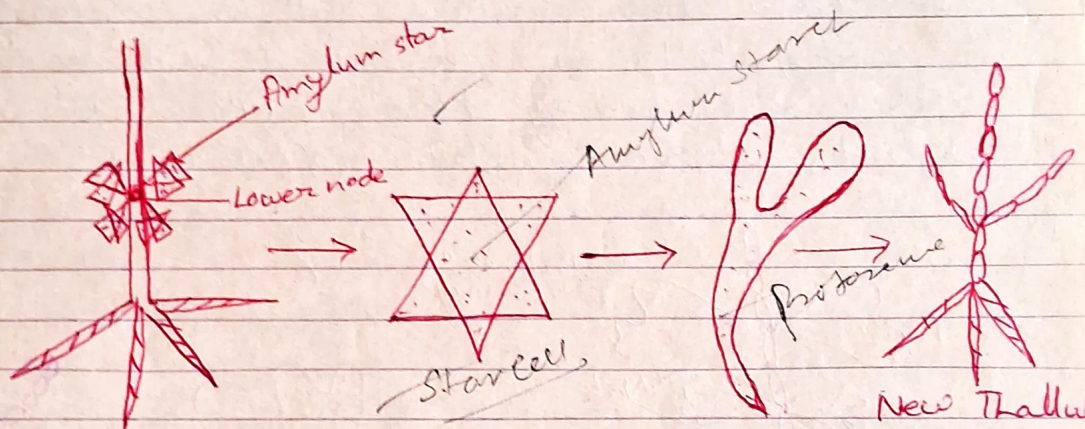


Fig - Showing Vegetative reproduction in Chara by Amylum Star

@ By Bulbils → These are the small round tubercle like structure which develops on the rhizoids of the thallus. These tubercle like structures are known as Bulbils. When Bulbils are mature they detached from the rhizoids and after returning suitable condition each Bulbil forms a new thallus of Chara.

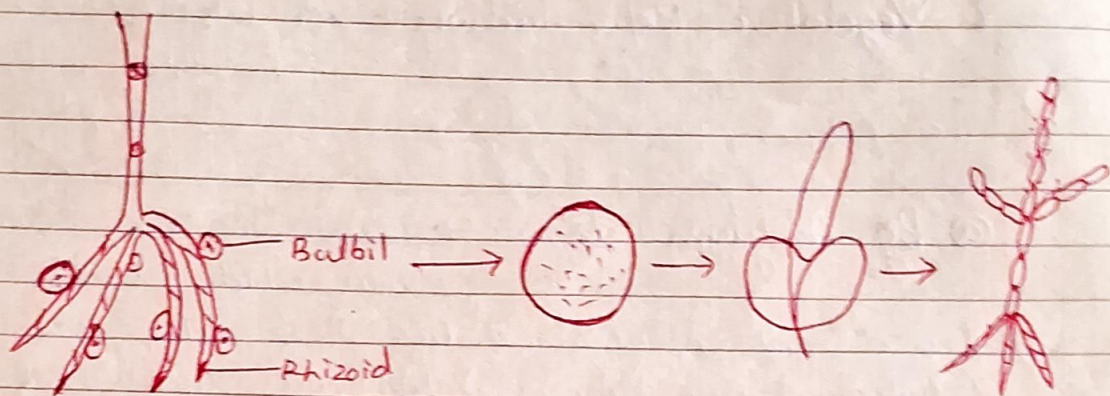


Fig → Showing Vegetative Repdⁿ in Chara by Bulbil

© By Secondary protonema → Some times adventitious nodal region of the older plant except lower nodes forms Secondary protonema like structure and on maturity each Secondary protonema give rise to new thallus of Chara like primary protonema (Primary protonema is found in sexual reproduction of Chara).

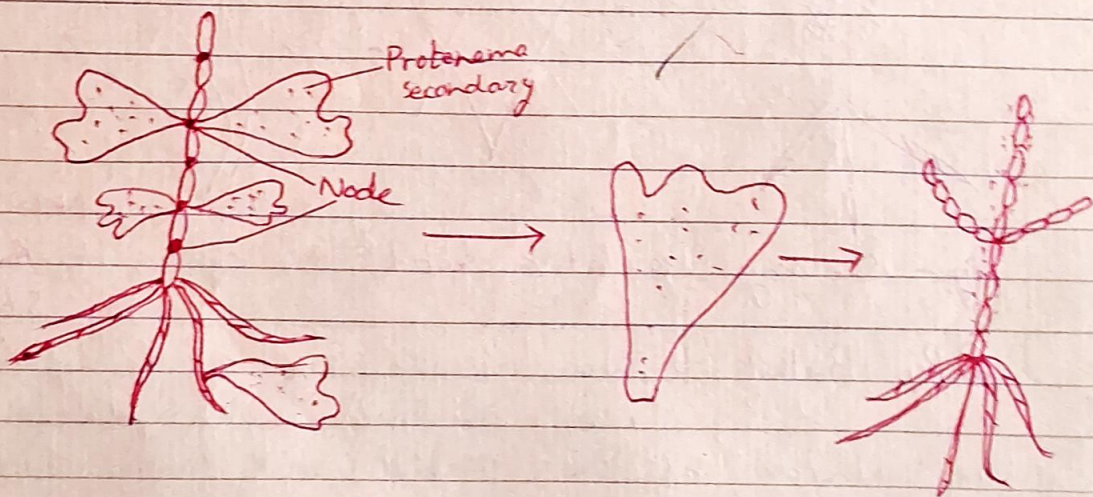


Fig - Showing Vegetative Repdⁿ in Chara by Secondary Protonema

2. Sexual Reproduction → It is Oogamous type of reproduction. The development of the sex organ are more complicated than the other thallophyte. The male sex organ is known as Antheridium or Gelidium and the female sex organ is known as Oogonium.