

Q. Discuss in detail about the followings  
① Perennation in Algae.

**INTRODUCTION** → Algae are green-thallophytes growing mostly in aquatic habitat or on moist shady places. Some times they have to face adverse situation. In such conditions the algae form dormant structure of various kinds by means of which they over come the durress. These structure helping algae to tide over the unfavourable conditions are known as Perennating structures and the process as Perennation.

**DEFINITION** → The method to tide over the unpleasant environmental condition by means of dormant structures has been termed as perennation.

**METHODS OF PERENNATION** <sup>vegetative</sup> → Algae are provided with the following method of perennation.

① **By Hormogysts** → These are thick walled hormogones -  
In dry condition the trichome of blue green algae becomes fragmented. Each fragment is called as hormogone. When the hormogone secretes a thick hard coat around itself it is termed as Hormogyst. They protect the plant from dries conditions.  
Ex - Nostoc, Oscillatoria etc.

② **By Tubers** → The small spherical or oval exogenous thick walled perennating structures

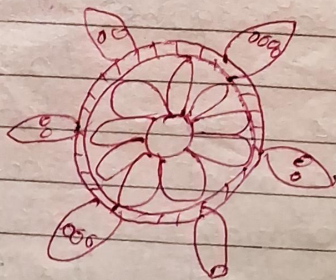
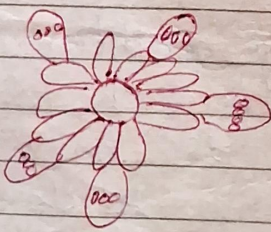
have been named as Tubers. They are formed either on rhizoids surface or take their origin from the base of thallus.

They <sup>radically</sup> germinate to form the new plant. Ex - Chara etc.

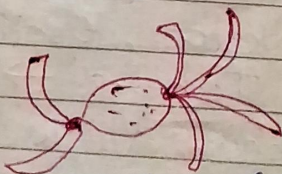
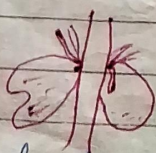
③ By **Amylum stars** → In some plants the rhizoids cells contain star-shaped of amyllum starch. These are known as amyllum stars. They are formed in adverse condition and germinating during suitable period to give new thalli. Ex - Chara, Nitella,

④ By **Bulbil** → These are small bud like structures that usually develop on the rhizoid of charophyceae. Each bulbil develops into new plant. Ex - Nitella, Chara etc.

⑤ By **Alkinetes** → These are thick walled segments. The filaments become separate in extreme dry conditions. Each segment secretes a thick wall and is called as alkinete. Ex - Vaucheria, Polysiphon and numbers of Myxophyceae.

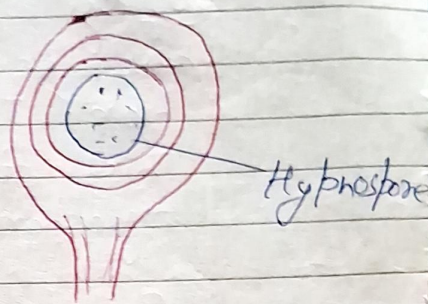
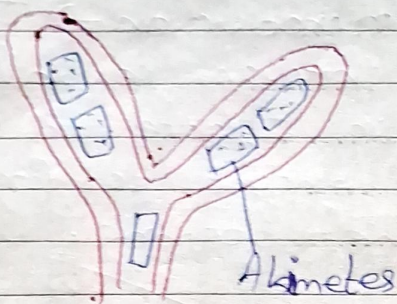


Amylum star



Spherical rhizoids bulbil of *C. Aspera*

Unilateral bulbil of *C. baltica*



- ⑥ By Hyphospore → The non-motile spherical uni-nucleate or multinucleate spores have been termed as Hyphospore. They are formed singly in terminal spherical hyphae sporangium during hot weather. They can <sup>readily</sup> germinate into new thallial the advent # of favourable conditions.
- Ex - Vaucheria Pedias.

⑦ By endospore → The small non-motile endogenous spore have got the name endospores. The protoplast in dry condition breaks into small beads. Each fragment secrete a wall around itself and become converted into an endospore.

Ex - Members of Bacillariophyceae and Myxophyceae.

⑧ By Palmella stage → In this case the successive generation of divided cells are gelatinised and a thick mucilaginous envelop develop. It is also a method to tide over the unfavourable condition.

Ex - Chlamydomonas, Ulothrix.

⑨ By statospores → Statospores are long, non-motile, thick wall spores acting as perennating bodies. Ex - Members of Bacillareophyceae and Xanthophyceae.

(c) By sexual reproduction  $\rightarrow$  The algae also perennate through sexual reproduction. They form zygote in gametic union. This structures encyst to form the zygospore or the oospore.

Conclusion  $\rightarrow$  Like other organism algae have also methods and mechanism to perennate the unfavourable condition. The methods are various. It depends primarily upon the environmental conditions.