VAUCHERIA

Q. Describe the structure, reproduction and position of Vaucheria.

Ans → Systematic Position →

Class - Chlorophyceae
Order - Siphonales
Family - Vaucheriaceae
Genus - Vaucheria Frisch (1935)

Systematic Position →

Class - Xanthophyceae
Order - Heterosiphonales
Family - Vaucheriaceae
Genus - Vaucheria
Blakmann and Smith (1954)

Occurrence and structure of the Thallus

• Vaucheria usualy grows either in fresh wat or terristerial or even marine • Filamentous thallus is tubular. It includes about 40 Spec Out of that 9 species reported from Indi Some of them are terristerial like Vauch sessilis and Vaucheria hamata • Vaucheria amphibia grows in water as well as o land • Vaucheria sessilis and Vaucheria geminata are comman Indian species • Wh is found during winter season.

The filament of Vaucheria yellowish green, Cylindrical, tubular, branch acepted and it attached by means of narow colourless rhizoids (Hold fast) like branches which anchorage the plant in muddy substratum.

The thallus is provided with a cell wall which is thin and composed of two layers. The outer most layer is made up of Pectose and inner layer is made up of Cellulose. Due to pectose it is smooth to touch. Inside cell wall there is prominent single central vacuole and protoplasm. Many chloroplast are present towards the inner side of the cell wall. Oil drops occurs as the reserve food material (Pyrenoid are absent). In protoplasm there is multy nucleate structures scattered. Due to is multy nucleate structure the thallus is called Coenocytic. The entire thallus is attached with a substratum by means of colourless holdfast.

Fig →

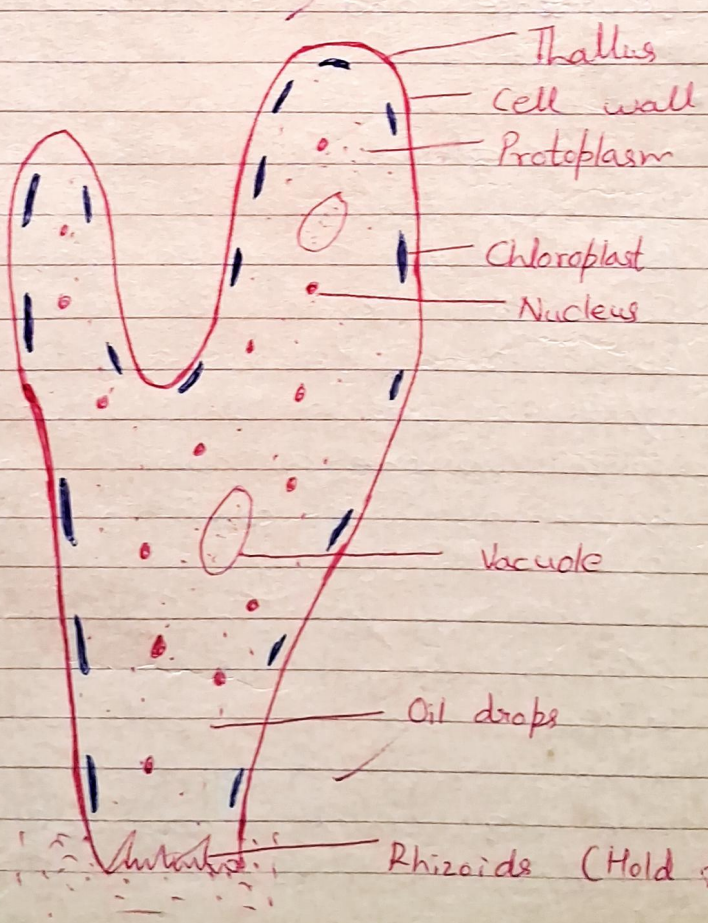

Fig - Thallus of Vaucheria in detail

Reproduction → It reproduces by three methods. They are

1. Vegetative Reproduction → Underfavourable condition it takes place by means of fragmentation of the filament. And each fragment by repeated cell divition develops into a new thallus of Vaucheria.

2. Asexual Reproduction → This type of reproduction may be takes place both in favourable and unfavourable condition. In aquatic species Asexual reproduction takes place by means of zoospores formation under favourable condition, And in terristerial species it takes place by means of Aplanospores, Akinetes Hypnospores and Cyst formation under unfavourable condition.

(A) By means of Zoospores formation → The thallus of the Vaucheria behave like a Zoosporangia. Where a septa is form and each Zoosporangia produce a syn-zoospores. A Zoosporangia is cut off from rest of the branch by means of a septa. But before septa is form protoplasm, nuclei, plastids etc move towards the apical portion of the thallus. The terminal portion of this thallus swells slightly where protoplasm, nuclei, plastids inserted in this portion. Then a septa is form. Where zoosporangia is cut off from the parent plant. And on return of favourable condition the dence internal centroplasm of the zoosporangia divides and redivides and form a

zoospores. These form zoospores are multy nucleate, multi-flagelate and globose. So they are known as Synzoospores or Compound zoospores.

After returning the favourable condition the synzoospores comes out from the zoosporan-gium. By means of a pore. And begins to germinate. At the time of germination all flagella are with drawn and secrets a double layer wall arround it. After some time the outer wall rupture and the inner wall germinate in the form of a germ tube. Ultimatly the germ tube by repeated cell divition. They develops a new thallus of Vaucheria.

Eg →

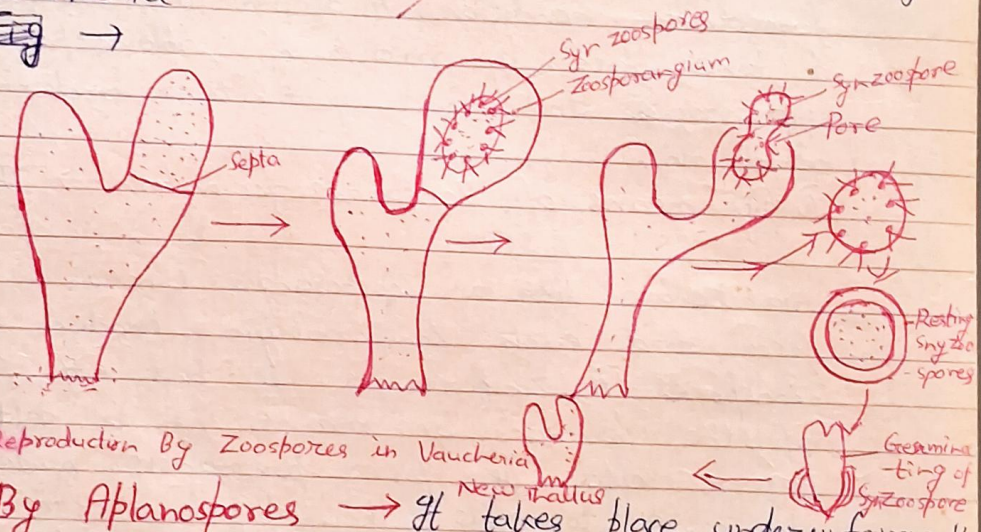

Fig - Asexual Reproduction By Zoospores in Vaucheria

(B) By Aplanospores → It takes place under unfavourable condition in terristerial plant only. They develop within Aplanosporangium. They are non-motile spores. They form like synzoospores But there is absent of flagella. On returning favourable condition each Aplanospores comes out from Aplanosprarangium. Through a pore and after taking some rest they germinate and

produce a new thallus of Vaucheria on return-ing favourable condition.

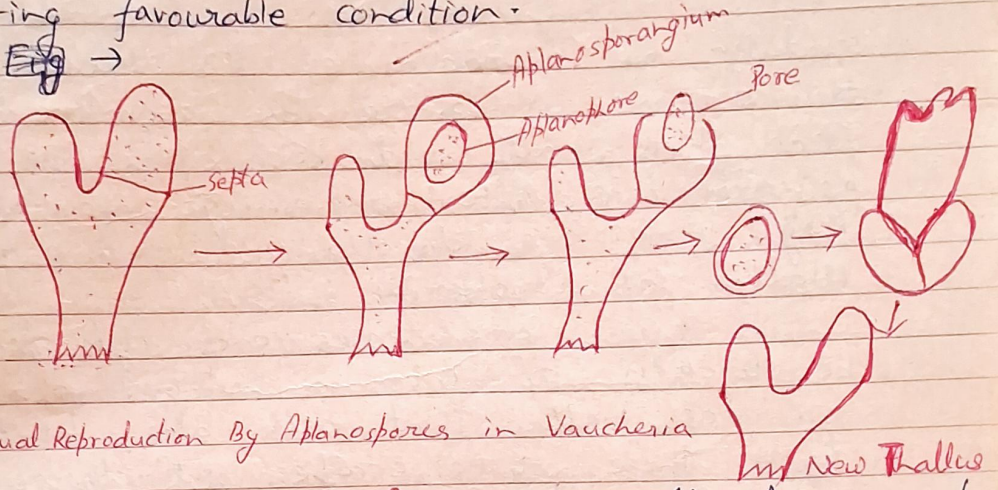

Fig- Asexual Reproduction By Aplanospores in Vaucheria

© By Akinetes formation → Akinetes may be form in any part of thallus under unfavourable condition the protoplast of the thallus divides into small parts. And each parts surrounded by thick cell wall. Which is known as Akinetes. After returning favourable condition they are de-tatched by a pore of the thallus and after returning favourable condition each Akinetes germinate and form a new thallus of Vaucheria. Occasionally the Akinetes may germinate, when they still of the thallus.

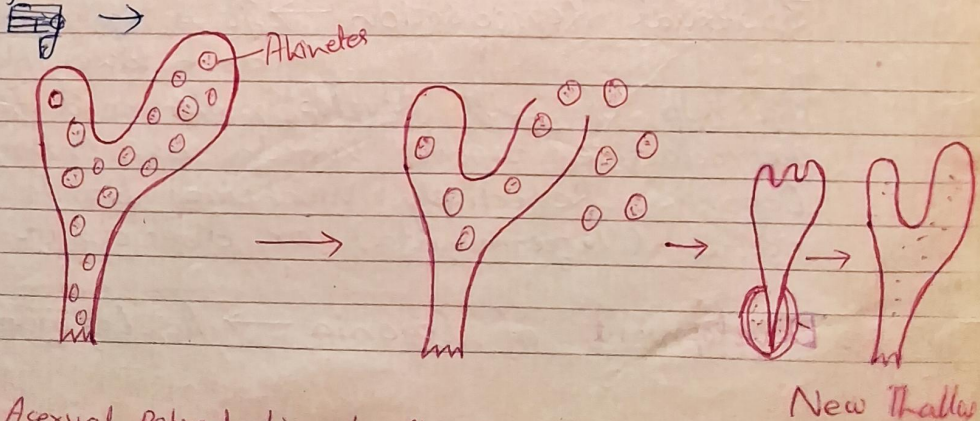

Fig- Asexual Reproduction by Akinetes in Vaucheria

① By Hypnospores or Cyst formation → Under unfavourable condition the protoplasm of the thallus gets divided into a square like chamber which form thick wall and each part is known as Hypnospore. After returning favourable condition they germinate directly and forms a new thallus of Vaucheria.

Some times each Hypnospore may be broken of into a number of thin minutes cells. That cell are known as Cysts. These cysts escapes out through a pore of the thallus and germinate immediatly to form a new thallus of Vaucheria underfavourable condition.

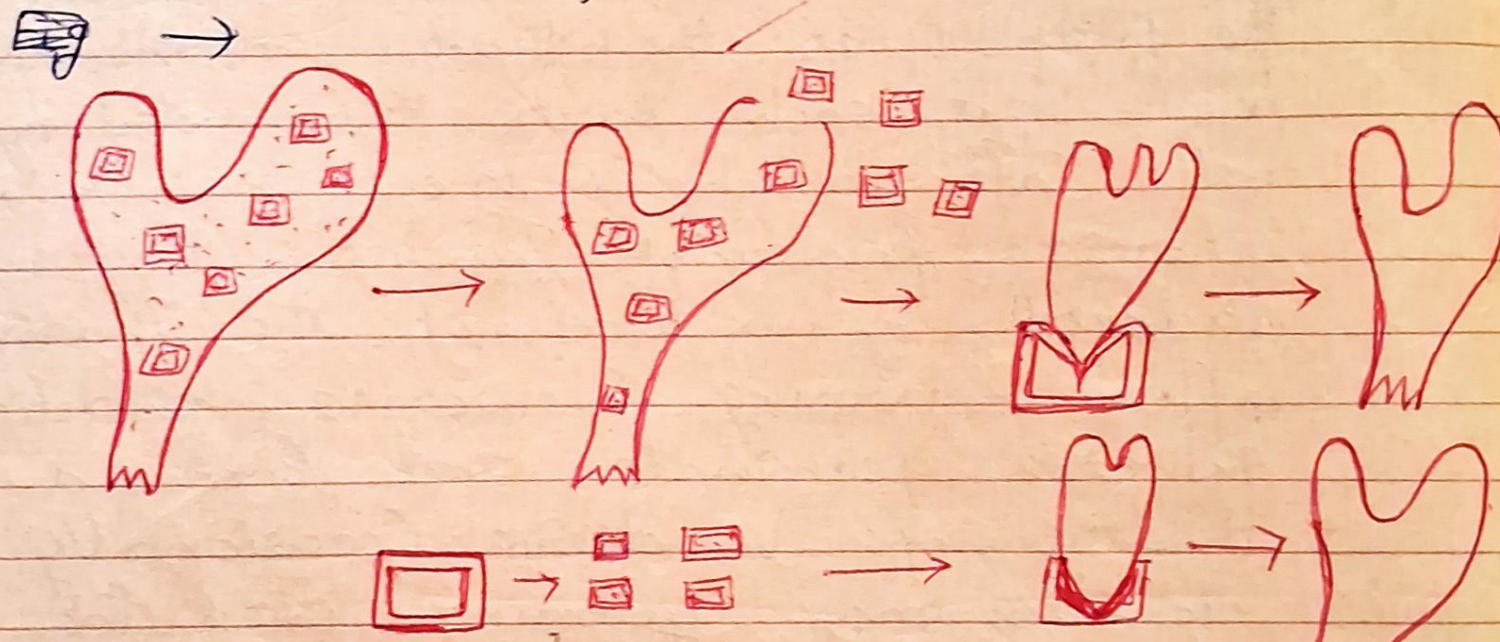

Fig - Asexual Reproduction by Hypnospores in Vaucheria