

mother cell transversely and forms lower (4) supplementary cell (or supporting cell) and an upper cell. The upper cell acts as an oogonium proper of which the whole protoplast transforms into an egg. The mature egg develops a hyaline receptive spot and is much larger than the veget. cell.

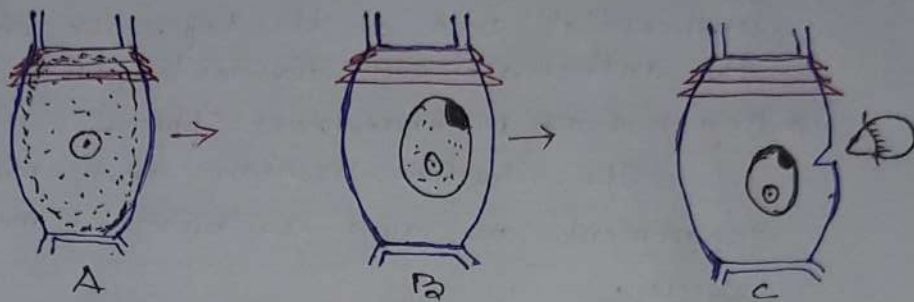


Fig. Oögonium spp. A - oögonium
 B - Mature oögonium with receptive spot
 C - fertilization with antherozoids.

B. Sexual Reproduction in Nannandrous Species:-

In Nannandrous form, the male cells are dwarf and are called "androsporangia". Here, two types of filaments are found - one having both androsporangia and oogonia is called - "Gynandrosporous" while in other case both are found on separate filaments which are known as "idioandrosporangia". The structure and development of androsporangium, antheridium and oogonium are similar in all the species.

* Androsporangium:- Androsporangia are larger than the antheridia of macrandrous type. It's nucleus

5) Any capcell of the veg. filament may function as A.M.C. by the antheridial mother cell. A.M.C. ~~first~~ transversely divides into a lower ^{larger} sister cell and an upper small antheridial cell. The sister cell divides and redivides and produces 2-40 rectangular, uninucleate antheridia.

Now the nucleus of the antheridium divides mitotically and forms 2 nuclei. Each nucleus becomes surrounded by cytoplasm and metamorphoses into an antherozoid. In this way two antherozoids are developed from each antheridium.

The antherozoids are unicellular, uninucleate, multiciliate, pyriform and yellowish in colour. Morphologically it is similar to zoospore and androspace but much smaller in size. They are released in a vesicle (as zoospores) which ultimately goes off and antherozoids are released.

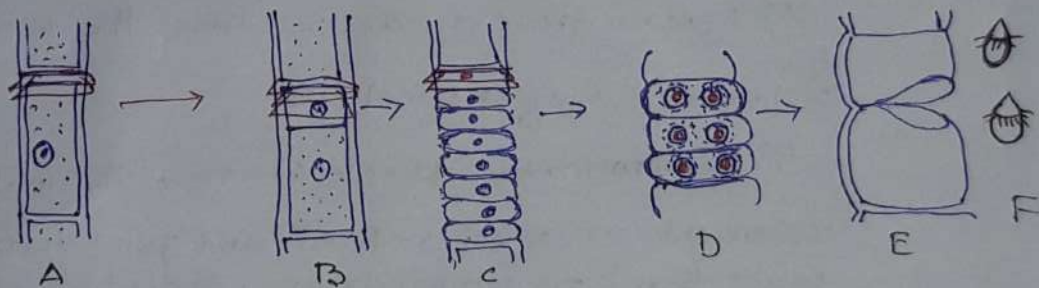


Fig. Oedogonium spp. - A. capcell ; B. Nucleus divides.
C. Antheridia in chain ; D. Development of Antherozoids, E. Liberation, F. Antherozoids

* Development of oogonium : - oogonium is born terminally or intercalary by cap cell singly or in chain of 2-8 oogonia. The oogonium

⑨

spot develops on the oogonial wall. Later an opening appears in the wall from which small amount of mucilage comes out. Antherozoid is attracted and reaches up to the egg. Fertilization occurs and a reddish coloured oospore develops with 3 layered walls. It is finally liberated after the decay of oogonial wall.

* Germination of Oospore:-

At the time of germination, oospore protoplasm divides into four segments. Each segment develops into zoospore. In this way four zoospores are formed.

After breaking oogonial wall, zoospores are set free in a vesicle. They are very similar to asexual zoospores. Finally zoospore attaches with the substratum by its anterior end. It loses its cilia and divides into two cells. The lower develops into holdfast while the upper develops into new oedogoneal filament.

In Oedogonium plagiostrum var. gracilipes, out of four zoospores, two develop into male filament while two develop into female filament.

⑧ does not divide and entire protoplast metamorphoses into a single androspore.

The androspores are unicellular, uninucleate and multiflagellate and are larger than antherozoids. They are yellowish in colour and are liberated in a vesicle.

After few minutes they become free and swim in water.

* Germination of Androspore - After some time androspore attaches itself on oogonial wall or on supporting cell. It elongates and cut one, two or ~~three~~ more antheridial cells on its top. The content of the antheridial cell divides to form 2 antherozoids.

* Oogonia of Nannandrous spp: -

The structure, position and mode of development are same as those of macrandrous species.

* Fertilization! - At the time of fertilization a receptive

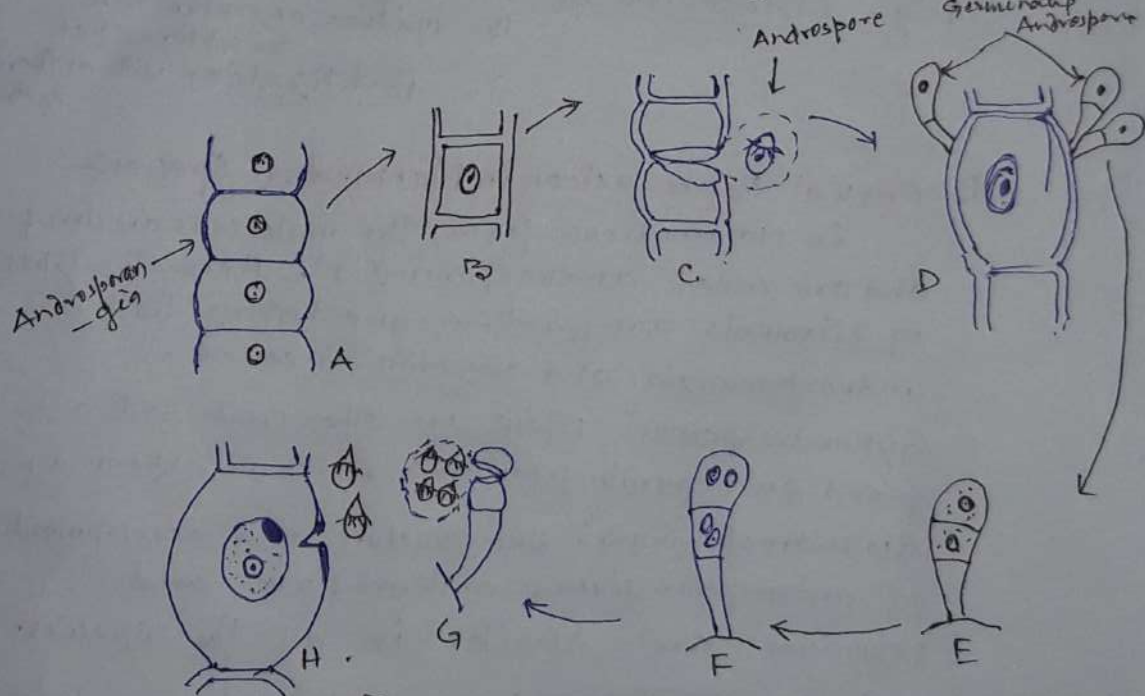


Fig - Oedogonium spp. A-G - Dev. of Antherozoids
H - Fertilization.

ONLINE STUDY MATERIAL (e-Content)

(5)

Name of the College: S.S. college, Jehanabad.

Date: 03.09.2020

Name of the Deptt: Botany

Time: 11.00 - 12.00

Subject: Algae

Name of the Teacher: Dr. S.S. Sharma

Topic: oedogonium: Sexual Reproduction.

Class: B.sc. Bot. H. PI

Medium of Teaching: WhatsApp & college website.

Biotech. Sub. PI.

Oedogonium: Reproduction (Sexual).

Sexual reproduction of oedogonium is of advance type i.e., oogamous type. The male sex organ is known as antheridia while female sex organ is ~~oogonia~~ ^{oogonia}. The development of sex organ is promoted by an alkaline pH, light, CO₂ and some Nitrogen deficiency.

On the basis of the size of the male filament oedogonium ^{spp.} are divided to two groups :-

A) Macrandrous species :- Here, the male filament is of normal size.

B) Nanrandrous species :- Here, the male filament is much reduced and form dwarf male plant or nanrandrium. Androsporangia ^{varangium} are developed in series. Single androspore formed/androspoⁿ

(A) Macrandrous spp. - Here, the plants may be monoecious (e.g. *O. fragile*, *O. hirsutum*) or dioecious (e.g. *O. gracillius*)

Male and female sex organs are prominent in both monoecious and dioecious species.

• Development of Antheridia :- Antheridium is terminal or intercalary and is produced