

Conidiophores and chains of conidia, a pressure is exerted on the epidermis. As a result epidermis ruptures and conidia are exposed for dissemination.

\* Germination of conidia :-

Germination of conidia depends upon environment. If the nature is dry, it germinates directly by germ tube which infects the new host and forms branched mycelium.

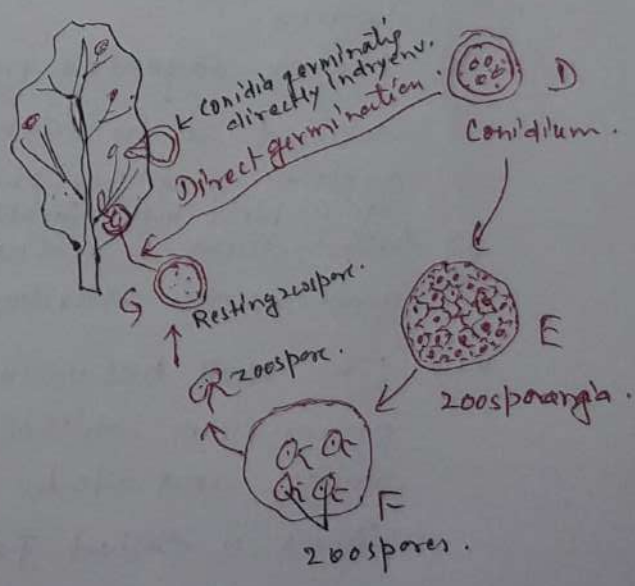
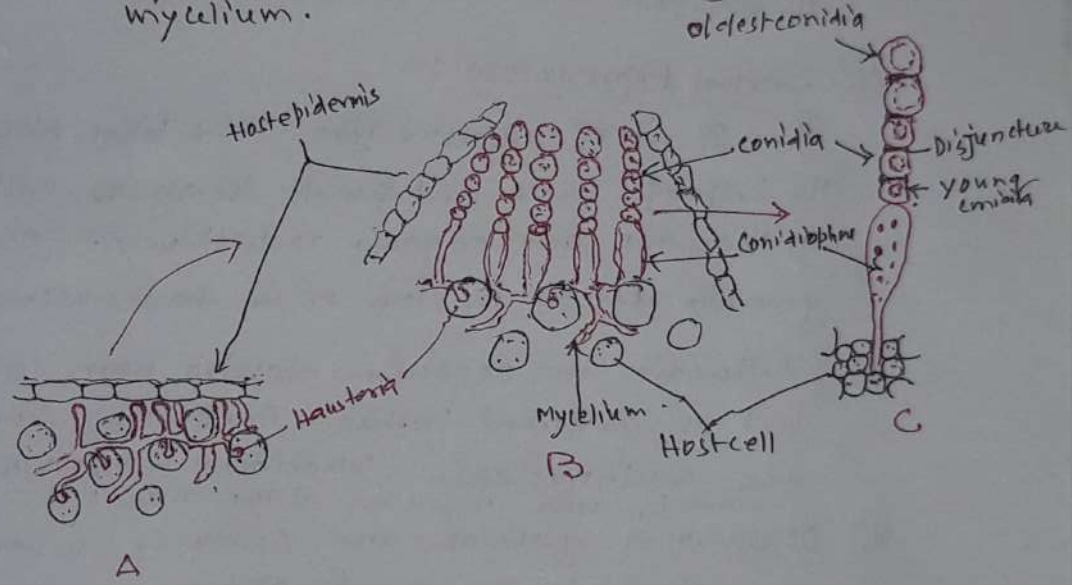


Fig - Albugo. Reproducti.  
(A-G).

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## \* Reproduction / Life cycle of Albugo.

Albugo reproduces by two means:-

- 1) Asexual Reproduction, and
- 2) Sexual Reproduction.

### 1) Asexual Reproduction :-

- i) Asexual reproduction takes place by means of conidia, conidiosporangia / zoosporangia. They are produced on conidiophore or conidio-sporangio-phore or sporangiophores.
- ii) Mycelium below the epidermis gives rise to many erect, short, unbranched, club-shaped hyphae called conidiophores / sporangiophores.
- iii) Conidiophores lie perpendicular to the host epidermis and parallel to one another. They form a palisade-like layer.
- iv) At the top of the club-shaped conidiophore a conidium is cut off followed by another conidium. This process is repeated so that a chain of conidia is formed in basipetal succession.
- v) Conidia are spherical, smooth and hyaline bodies and remain separated from each other by intercalary disc made up of gelatinous material.
- vi) Each conidium is multinucleate and unicellular structure.
- vii) Due to the formation of large number of

viii) Fertilization tube penetrates into oogonium and discharges male gamete/nucleus. This  $\delta$  nucleus fuses with female nucleus and form diploid oospore.

ix) Oospore is a globular body and remains surrounded by outer thick exosporium and inner thin and smooth endosporium. In few cases a third middle layer is also present.

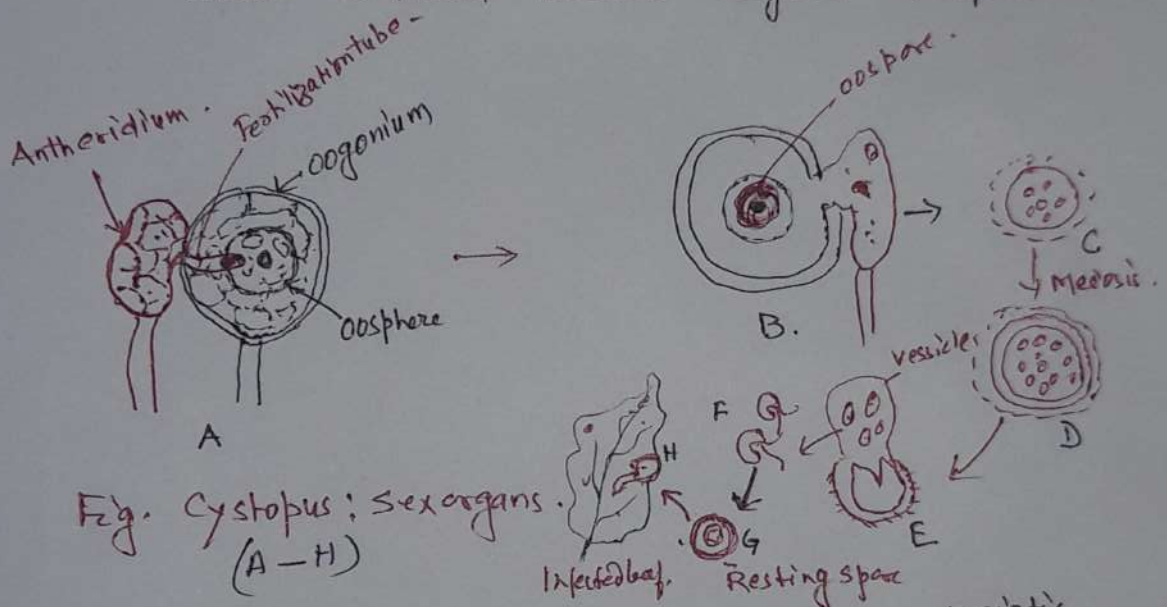


Fig. Cystopus: Sex organs. (A-H)

(x) The oospore nucleus first undergoes ~~mitotic~~ meiotic div. and then ~~meiotic~~ mitotic division so that 100 nuclei (n) are formed. All these nuclei convert into biflagellate, reniform and haploid zoospores or zoomebospores.

(xi) Zoospores after sometime withdraw their flagella and take rest and then germinate by germ tube in the host and form new mycelium.

(8)

+ In moist / wet condition, conidium behaves like zoosporangium. Its protoplast becomes segmented into uninucleate pieces. Later each segment forms a uninucleate, biflagellate and kidney shaped zoospore. Zoospores after release from zoosporangium swim for some time in dew or thin film of water and then encyst after withdrawal of its flagella. Now they germinate and infect the new host and forms new mycelium.

### (2) Sexual Reproduction :-

- i) It is of oogamous type and takes place with the help of male and female sex organs called antheridia and oogonia respectively. Sex organs generally develop in stem or in deeper tissues.
- ii) Antheridia and oogonia develop near each other but on different hyphae. Both the sex organs are multinucleate, antheridium develops in close contact with oogonium at the side.
- iii) Oogonium is globular and contains a large amount of food material. It bears a septum at the base.
- iv) Mature oogonium in C. candidus remains divided into central uninucleate dense ooplasm and peripheral multinucleate periplasm. In C. bliti many functional female nuclei are found.
- vi) Antheridium is elongated, club-shaped and multinucleate structure having a septum at the base.
- vii) The wall between antheridium and oogonium dissolves at the point of their contact, and a tube is formed by antheridium. This is called fertilization tube.

(10)

\* Control of the disease:-

- i) By growing disease resistant varieties.
- ii) By rotation of cruciferous crops with non-cruciferous ones.
- iii) By spraying saw dust mixed with the solution of copper sulphate & fungicides.
- iv) Complete destruction of infected plants.

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On Line Study material (e-content)

(5)

College: S.S. college, Jehanabad.

Department: Botany

Subject: Fungi

Topic: Albugo

Medium of Teaching: Whats App & college Web site

Date: 16.07.2020

Time: 11.00-12.00

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

Glass: Biotech II-Sub B.Sc (Bot) PE-Hons.

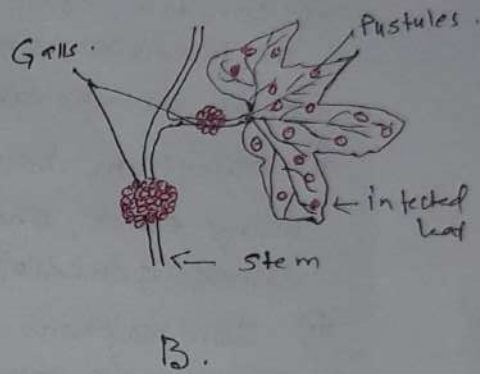
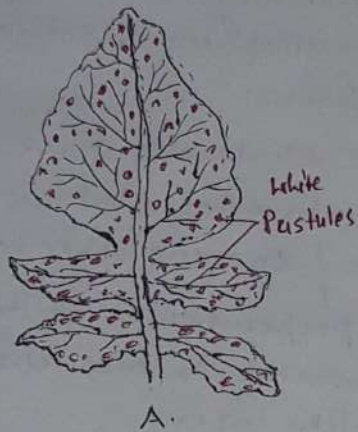


Fig - Albugo: Symptoms  
A - Infected radish leaf  
B - Galls on stem.

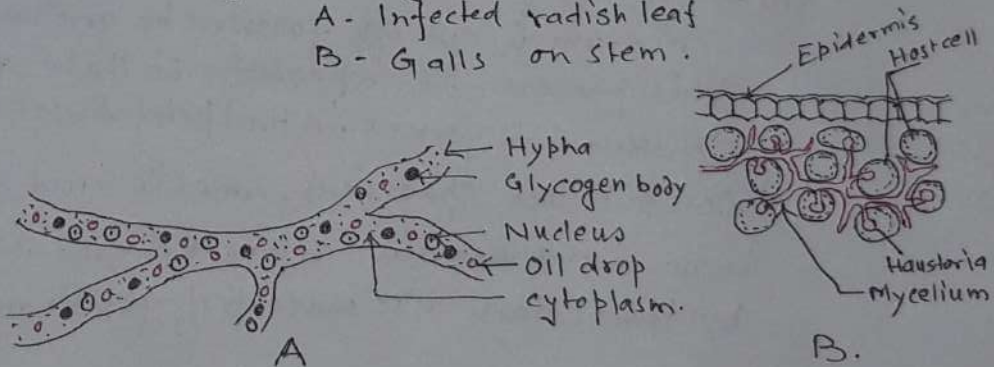


Fig - Albugo: mycelium.  
A - structure of mycelium  
B - Mycelium with haustoria inside the cell.