

# ERYSIPHE (POWDERY MILDEWS) :-

Superficial fungi

Ectophytic

## SYSTEMATIC POSITION

Class - Ascomycetes

Sub-class - Euascomycetes

Series - Plectonycetes

Order - Erysiphales

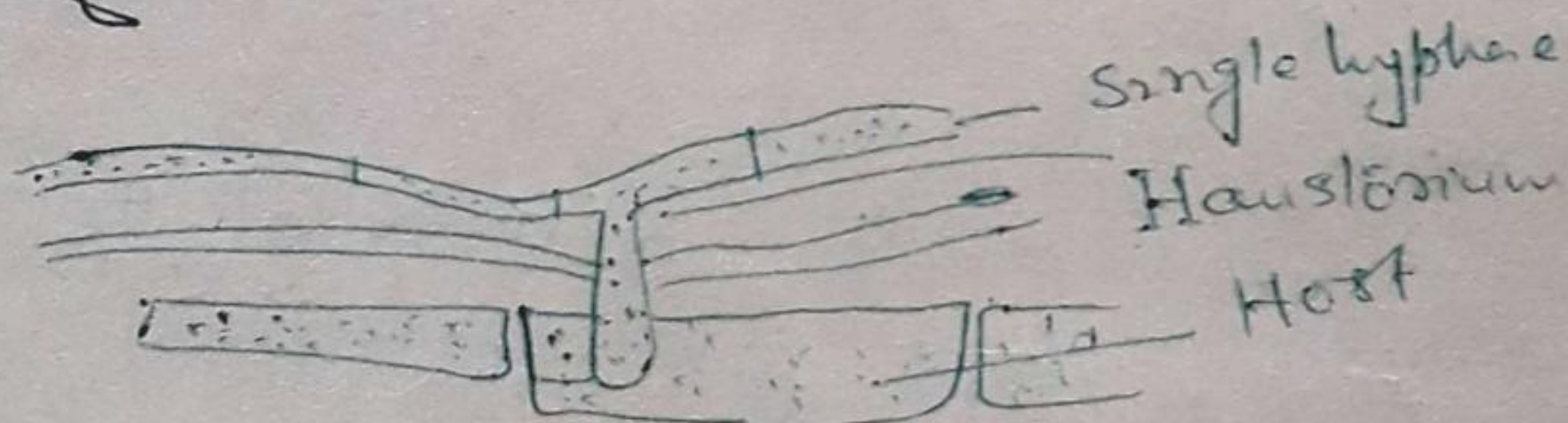
Family - Erysiphaceae

Genus - Erysiphe

## OCCURRENCE AND HABIT :-

It is an obligate parasite causing ashy-white powdery mildews on many different plants by different species such as *E. polygoni* causes upon Pea, *E. graminis* causes upon barley and wheat, *E. cichoracearum* causes disease upon cucurbits.

MYCELIUM :- The mycelium consists of branched septate hyphae, which are ectophytic and confined to both the surface of the host leaf. The hyphae produce haustoria of two types, it may be simple, unbranched in *E. polygoni* or branched in *E. graminis*. The haustorium penetrates to the host cell and ~~absorbs~~ <sup>absorbs</sup> the food.



*E. Polygoni*

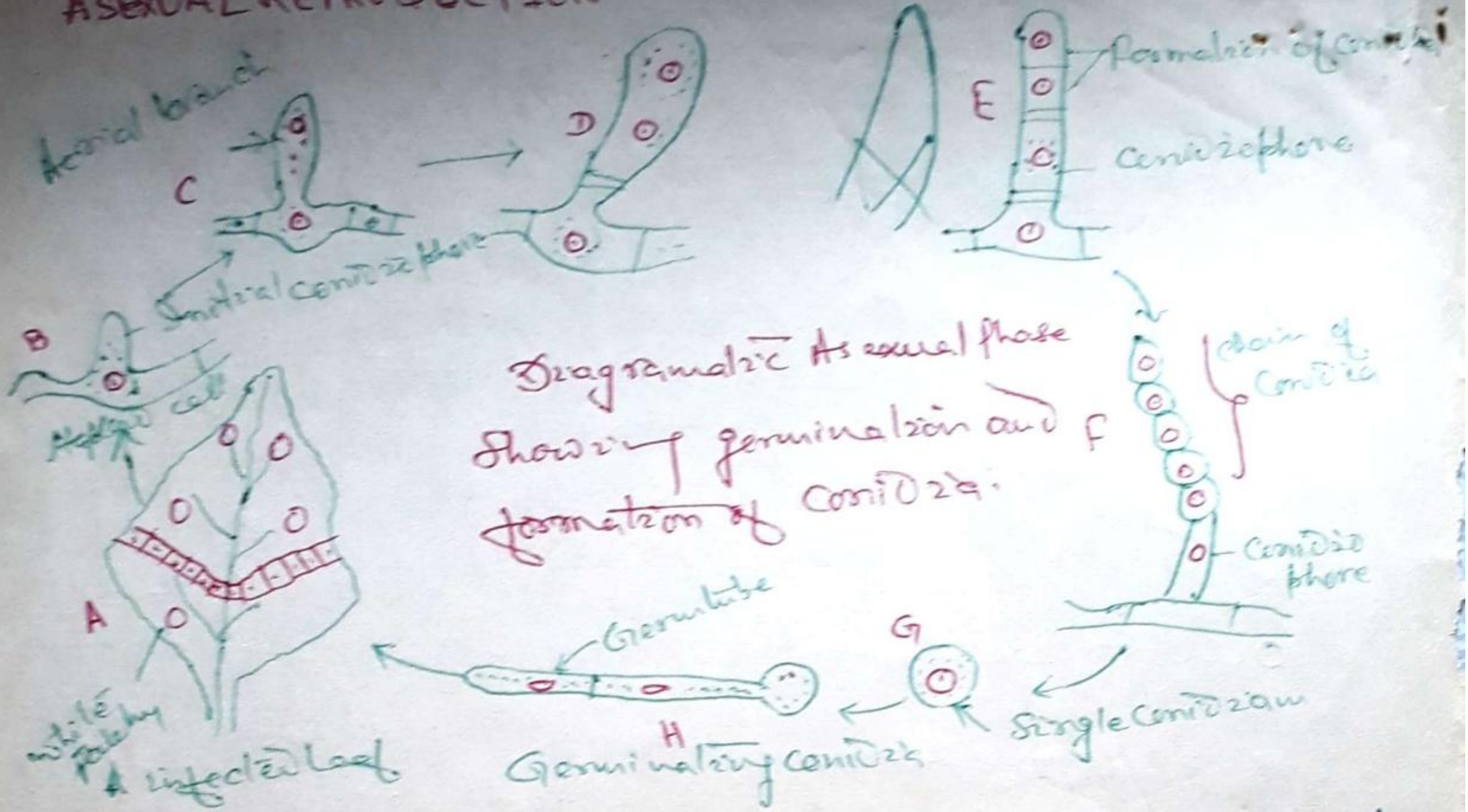
## SYMPTOMS :-

The fungus generally attacks the leaves of the host but it may attack the stem inflorescence and fruits. After attacking, some white patches appear on the leaves which gradually enlarge because of this the leaves or other part of the plant become white.

REPRODUCTION :- *Erysiphe* reproduces both by asexual and sexual methods.



# ASEXUAL REPRODUCTION



Few days after infection a single cell of a hypha elongates and forms a long, erect, hyaline, and unbranched structure, conidiophore. Each conidiophore cuts off in besipetal succession a chain of conidia. Conidium is a uninucleate, oval or elliptical, structure which is formed in large number and are easily carried by wind. If they fall on a suitable host they directly germinate by producing germ tube.

SEXUAL REPRODUCTION: → The species of *Ery-* siphie may be homothallic or heterothallic. The sex- organs produce on the same hypha or on the separately different hyphae. The antheridium and ascogonium are uninucleate and arise at the tips of neighbouring hyphae twirling around each other. The antheridium is a stalked structure. [The cause of linking antheridium and ascogonium come in contact and the connecting wall dissolves. (at the point of mutual contact, followed by) ♂ nucleus migrates into the ascogonium through the dissolved connecting wall of. But there is no evidence about the ♂ & ♀ nucleus fusion. Ale to Clausen ♂ & ♀ nuclei lie in pair and form dikaryon, but ale to Harper (1937), when ♂



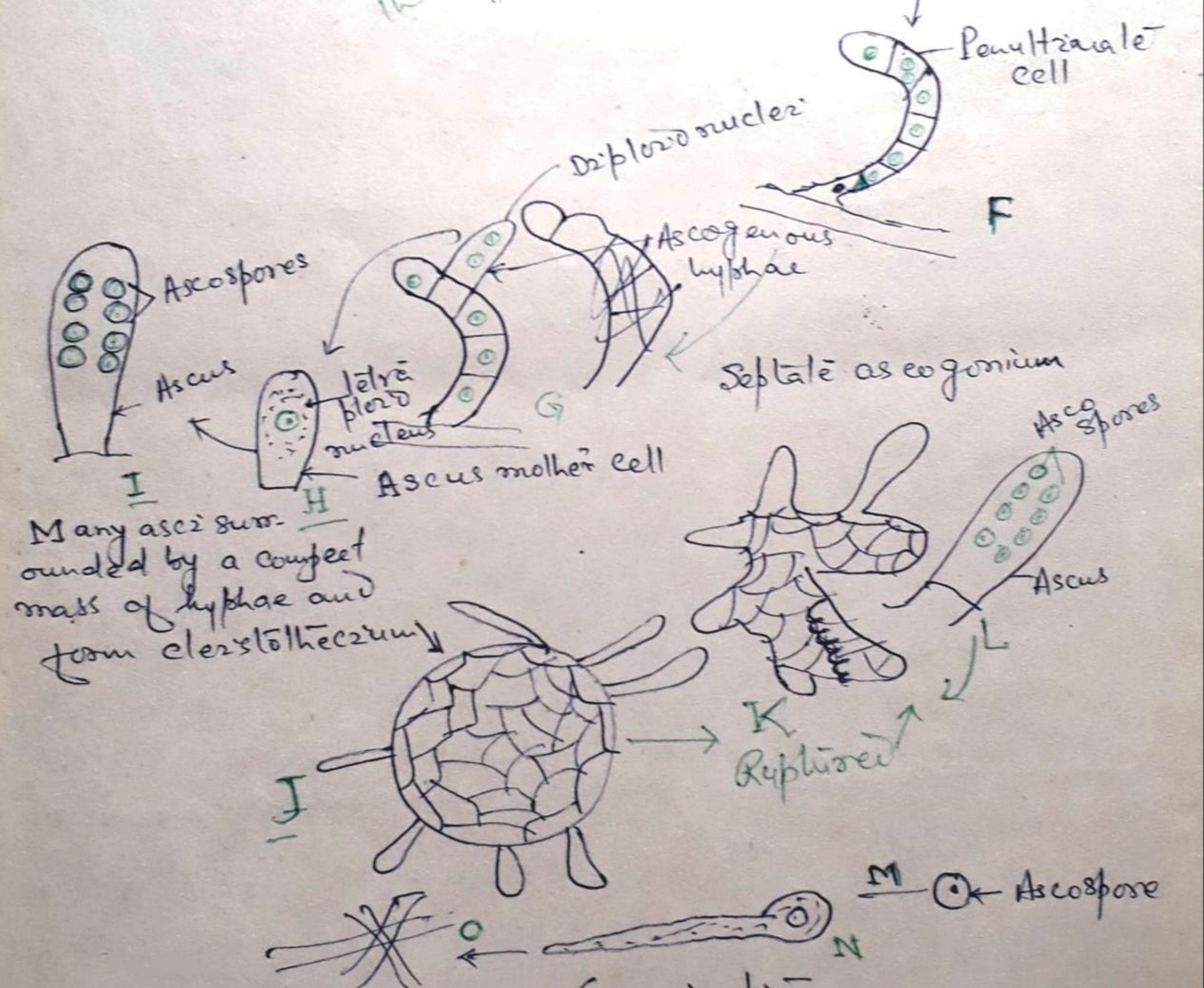
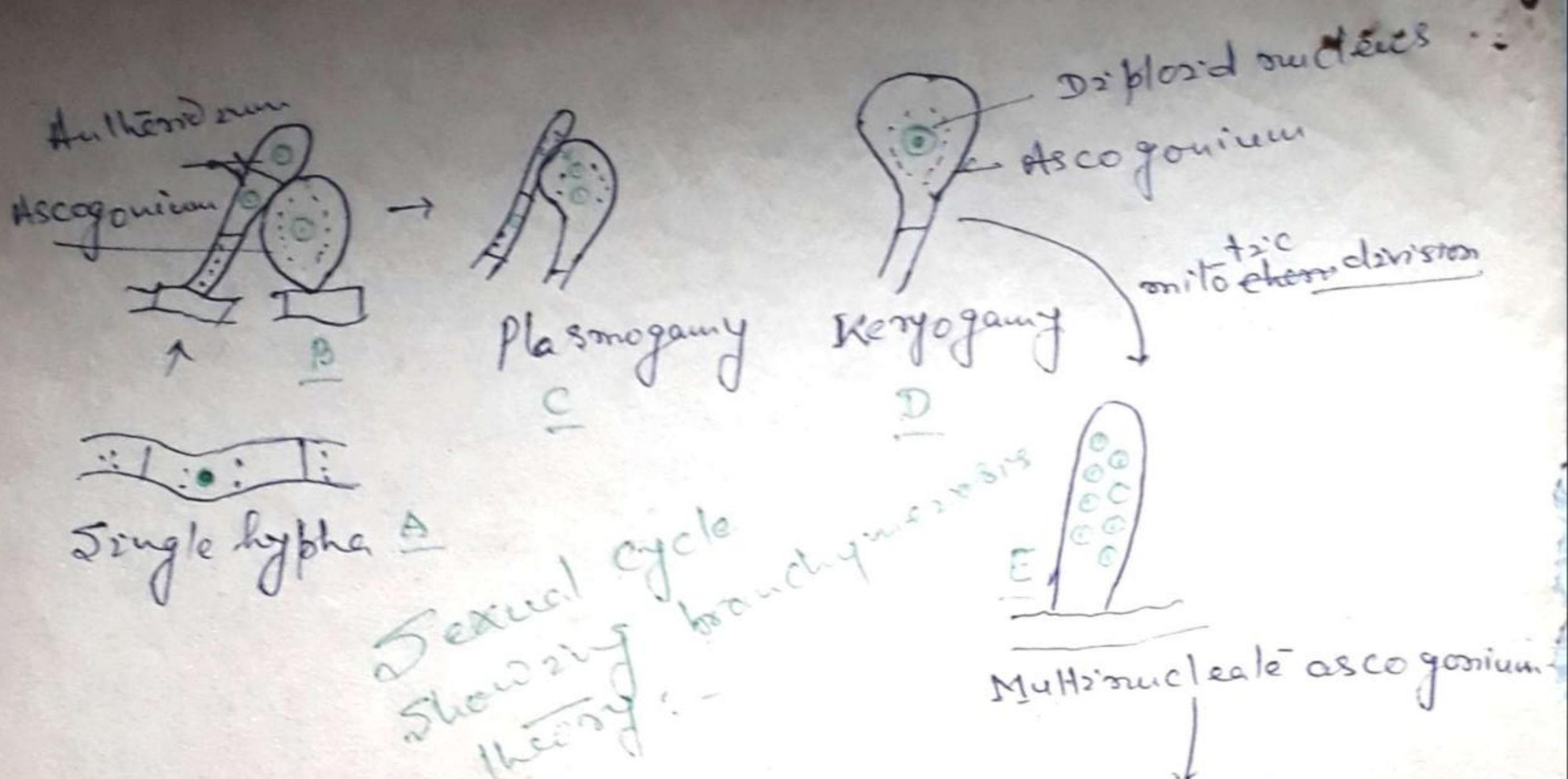
and 2 nuclei fuse forming a diploid nucleus.

The fusion nucleus divides mitotically and forms a multinucleate ascogonium which divides into a row of 13 to 8 cells by septation. The penultimate cell of this ascogonium has two or more nuclei. Several 2-celled ascogenous hyphae now arise from the upper side of the penultimate cell which are binucleate and function as ascus mother cell.

The two diploid nuclei fuse in the ascus mother cell and form a tetraploid nucleus. It divides thrice the first and third divisions are meiotic while the second is each with some protoplast forms an ascospore. This process of ascospore formation support to the brachymerosis theory. But acc to Clausen there is only one fusion in ascus mother cell (crozier) and the diploid nucleus undergoes two divisions of which only the first division is meiotic and other is mitotic. The ascus are usually surrounded by a compact mass of hyphae forming closed fruit body or cleistothecium.

Cleistothecium is a small, usually black more or less spherical structure. Often cleistothecium has some simpler branched hyphal appendages. When mature, the cleistothecium is to blown by wind and it may become attached to fresh leaves by appendages. The wall of cleistothecium ruptures and the ascus burst liberating ascospores which germinate and give to the new hyphae. The cleistothecium contains from 5 to 30 ascus which arise in one or more from the base.





Many asci surrounded by a compact mass of hyphae and form cleistothecium

Mycelium uninucleate - upon the host leaf surface

**CONTROL:** - 1. By dusting the infected plants with scabber dust (2) By field sanitation (3) By the burning of the diseased plants (4) Early varieties should be preferred for vegetable crops etc.