

## Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (First Year)

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Unit: 01- Pteridophytes

Module Name: Vegetative and Asexual reproduction in *Pteris*

Module No: 19

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### Notes

#### VEGETATIVE AND ASEXUAL REPRODUCTION OF *PTERIS*

##### VEGETATIVE REPRODUCTION

Fragmentation : the older parts of the rhizome rot and rotting reaches a dichotomy or branching regions, the two branches separates and carries on growth as separate plants.

##### ASEXUAL REPRODUCTION

##### Reproduction by spores

- It is homosporous bears only one kind of spores, and is produced in sac like structure known as sporangia.
- The sporangia form continuous sorus known as Coenosorus.

- Coenosorus are borne on margins connecting veins of fertile pinnules and is protected by upper false indusium formed by the incurved margin of the pinnae.
- Sorus is of mixed type. Sterile hairs are present in between the sporangia.

### **Structure of Sporangium**

**Sporangium is made up of a stalk or pedicel and capsule or body.**

**Stalk:** It is long, slender multicellular and three celled in height. It bears water gland.

**Capsule or body:** It is oval and of biconvex shape. The sporangial wall or jacket is single layered and modified to form annulus and stomium.

**Annulus:** It is vertical row of 16 thick walled large cells, which forms an incomplete ring around the sporangium and covers 2/3rd of the of the capsule. The annulus has thick inner tangential and radial walls, and thin outer and sidewalls. It becomes hygroscopic in mature sporangium.

**Stomium:** It is small group of long, flat and thin walled cells immediately below the annulus in remaining 1/3rd of the capsule on one side. Two narrow and radially elongated cells are present in stomium region and are called the lip cells.

**Both annulus and stomium help in the dehiscence of sporangium and dispersal of spores. The total number of spores varies from 32 to 64.**

### **Dehiscence of sporangium**

It occurs in dry weather. The annulus and stomium brings about the dehiscence at maturity. The annulus acts as a spring and stomium as a weak point for easy cleavage. The dispersal of spores takes place in two stages. In the first stage the sporangium breaks open the stomium. The mature dry sporangium loose water throughout its surface. This causes inward contraction of annulus in outer walls. This results in rupture of sporangium or a split along the cells of stomium. The annulus slowly straightens out and gradually bends backwards as attached with axis. The annulus carries upper half of capsule containing the exposed spores.

In the second stage the annulus works like a spring, which returns to its original position after throwing out the spores with a jerk into the air forcibly.

### **Structure of Spore**

The spores are tetrahedral in shape. The spore wall is two layered:

Outer thick, smooth and brown Exine or Exosporium. Inner thin Intine or Endosporium.

### **Germination of spore**

The spores germinate depending on environmental conditions. It germinates to produce the prothallus under favourable condition. The intine emerges out in the form of a small germ tube along with enclosed contents on rupturing of exine in the beginning of germination. Further it undergoes several divisions and a new prothallus is formed.