Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (First Year)

Subject: Botany

Course Code: BOC 101

Course Title: Biodiversity I

Unit: 4

Module Name: Range of thallus organization in Bryophytes

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Notes

Introduction:

- In Bryophytes, the plant body of adult gametophyte shows a considerable range of size and structure.
- In certain forms, the whole plant is microscopic and barely visible to naked eyes.
- At the other extent, they may attain a height of 30 to 50 cm.
- Some of the smallest members includes *Zoopsis argentea* and male plants of *Buxbaumia aphylla* are hardly few milli meter in size.
- *Dawsonia superba* is the tallest member and can grow up to 50cm height, whereas *Fontinalis antipyretica* grows 50-70cm long.

Morphology:

- The gametophytic plant body may be simple thallus (Thalloid) or leafy shoot (Foliose).

Thalloid form

- It is the simplest form of plant body in bryophytes.
- Found in Hepaticopsida and Anthocerotopsida.
- Thallus is usually flat, prostrate, dorsiventral and in some dichotomously branched.
- In many genera a distinct midrib is present but some do not possess it.
- *Riccia, Marchantia, Dendroceros* have midrib.
- Thalloid forms are usually dichotomously branched.
- In *Riccia*, repeated dichotomy leads to a rosette.

Leafy forms:

- Have distinct stem and leaf like structures.
- Includes leafy Jungermanniales and mosses.
- Among Jungermannials *Porella* is a best example.
- In *Porella* the axis has 3 rows of leaves. Two rows of lateral leaves and a row of under leaves (amphigastria) on ventral side. Lateral leaves are unequally lobed forming ventral lobe (postical lobe) and dorsal lobe (antical lobe)
- In *Funaria*, the gametophyte has a stem like axis with many leaves or leaf like appendages. Leaf like bodies have a midrib. The sporophyte is terminal in position with long seta and a capsule.
- Between the typical thalloid and leafy forms, there are some interesting intermediate forms belonging to Metzgerinea. e.g. *Treubia, Fossombronia*

Rhizoids:

- Bryophytes lack roots and their place is taken up by rhizoids.
- Unicellular (liverworts and hornworts) and multicellular, branched with oblique septa in mosses.
- Unicellular rhizoids are of two types: Smooth walled and tuberculated. The tuberculated roots have inward projection on the inner wall.
- Water forms don't have rhizoids (*Riccia fluitans*).

Scales:

- Scales are found in the majority of Marchantiales.
- Serve as protective organs for the growing region, also retain moisture.

Anatomy:

- In bryophytes, thallus varies greatly in its internal structure.
- Simplest thalloid form consists of one to several layers of nearly uniform cells.
- Others exhibit high degree of anatomical differentiation into storage and photosynthetic zone.
- In some members the dorsal assimilatory zone has air chambers or pores towards the photosynthetic or assimilatory zone.
- **Leaf like structures** without midrib are single cell in thickness and the leaf like structures with midrib are multicellular only along the midrib.
- **Stem like structures** in some of the leafy forms are composed of uniform cells.
- A variation in size of the cells in cortical and central medullary zone.
- In mosses the cells show greater differentiation.