

VEGETATIVE REPRODUCTION IN BRYOPHYTA

INTRODUCTION → Bryophyta include the simplest and most primitive members of embryophyta, possessing mainly terrestrial habit except Riccia, Fluitans, Pellia, Ricciocarpus, Notans. The ability to reproduce vegetatively by a large variety is one of the most important features of Bryophytes. They appear year after year at the same place and their of regenerative growth are an indication of extensive vegetative propagation of this group.

Correns (1899) and Cavens (1900) has collected and summarised the various types of vegetative reproduction in Bryophytes. They are —

1. FRAGMENTATION → This is the most common method of vegetative reproduction among Bryophytes. As the plant matures, there is death of older parts. The decay is continuous till it reaches dichotomy when surviving branches becomes separated and grow into the new individuals. Ex - Hepaticopsida (Riccia, Pellia, Marchantia, Cassinia) Antheropsida (Anthoceros), Bryopsida having rhizome bearing erect branches.

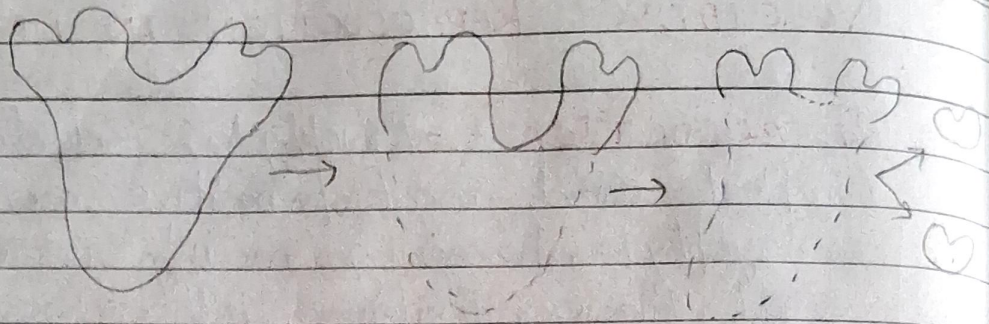


Fig - By progressive death and decay of older parts.

2. BY GROWING APEX → According to Smith (1880) in case of *Riccia* during drought conditions, the thallus dies out except its growing apex which becomes thick and passes over the unfavourable period. Again, when condition is favourable new thallus emerges from it. Ex - *Anthoceros*, *Cyathodium*.

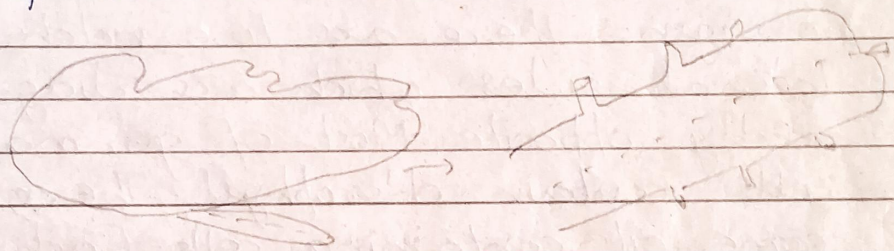
3. ADVENTITIOUS BRANCHES → According to Cavers (1903), *Riccia*, fluitans reproduces by adventitious branches which are formed in the ventral surface of the thalli. These branches after detachment form new thalli. In *Marchantia*, Pulmate Kashyap (1919) reported the formation of such roots from the stalk and disc of the archegoniophore.

In *Pellia* however such branches have been noticed on the dorsal surface. Several other genera reproduce vegetatively. Ex - *Metzeria*, *Loosinia*, *Targionia*, *Sphaerocarpon* and *Anthoceros*.

4. BY TUBERS → During the period of summer and drought, thallus becomes thick around the margin and the thickened area develops protective covering. These thickened portion are known as Tubers. These tubers can penetrate in unfavourable season and long drought while the remaining portion dies. On the approach of favourable conditions tubers germinate into new individuals.

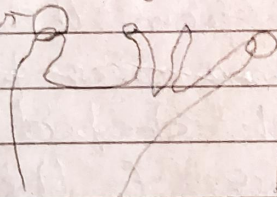
Ex - *R. Bulbifera*, *Panicaria caea*.

Uday, Chandra studied the stalked tuber formation on the natural surface of the thallus.

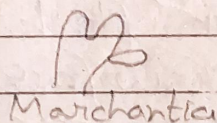


By Adventitious branches.

Apical tuber



Riccia



Marchantia

Tuber marginal



T.S of Tuber



5. BY INNOVATIONS → In case of sphagnum one of the upright branches develops upwards continuously and becomes independent due to the death of the tissue bearing sub-branches. This type of vegetative reproduction is also found in Acrogynous,

Jurgesmanniales etc.

6. BY GEMMAE FORMATION → Gemmae is the vegetative body in Bryophytes which is very common but the structure and function formation of gemmae are different in various groups.

A. HEPATICOPSIDA →

1. In Marchantia, gemmae are special reproductive bodies. There are production of large number of small gemmae cup on the dorsal surface of the thallus. Each gemmae has a small stalk and multicellular discoid body which is thick at the middle and thin at the margins. There are two notches on the lateral sides which are diagrammatically opposite. Most of gemmae cup cells contain chlorophyll. There are some oil containing cells. Each gemmae on germination gives rise to two new thalli on lateral sides from their notches.

2. Sub-spherical gemmae are produced in abundance in flask shaped gemmae cup on dorsal surface of thallus.

Ex - Blasia species.

3. The two celled endogenous gemmae formed within any external cells of the thallus. Ex - Riccia, Sinnualla, Riccardia, Palmate.

4. 1-3 celled gemmae are formed in leaf. Ex - Marsippeela, Emarginate, Cephaloziaasper.