VEGETATIVE PROPAGATION IN BRYOPHYTES

PAPER-I
Group-B

TDC Part-I (Hons)
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Introduction:

Most of the bryophyte members adopt various methods and structures to propagate vegetatively under favourable conditions of the habitat and the surrounding environment. This is a supplementary mode of multiplication of the progeny in addition to the usual methods of asexual and sexual reproduction. Exceptionally, some bryophytes reproduce only by vegetative methods (e.g., Bryum).

Important Methods of Vegetative Propagation:

Some of the most common methods of vegetative propagation observed in different bryophytes include the following:

1. By death and decay of older parts

(i) Commonly found in many bryophyte members, e.g., Riccia, Marchantia, Anthoceros, Notothylas, etc.

(ii) Under this method, the older part of the thallus starts decaying gradually from the basal region towards the apical parts. — When such progressive degeneration reaches a dichotomy, two new segments are separated apart which grow into new thalli.

2. By branch tips

(i) Smith (1955) observed that in the geographical regions of prolonged drought period, all parts of the gametophyte except the branch tips get killed.

(ii) Each such branch tip is capable of growing into a new thallus on the return of the favourable conditions. eg., Riccia

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3. By Adventitious Branches

(i) Several species of Riccia produce adventitious branches from the undersurface of the gametophyte (Cavers, 1904).

(ii) On being detached from the parent thallus these branches grow into new gametophytes.

(iii) Some other members of bryophytes also follow this kind of vegetative propagation. e.g., Marchantia, Anthoceros, Lunularia, Funaria etc.

4. By Gemmae Formation

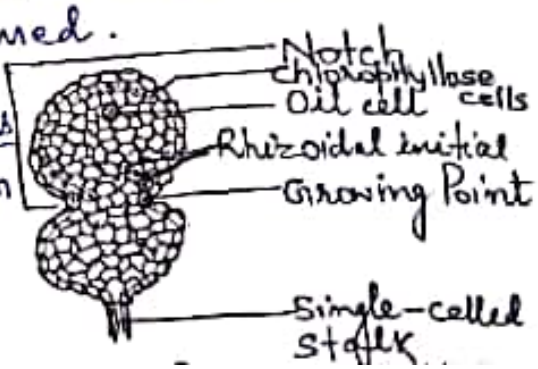
(i) Some mosses and liverworts (e.g., Marchantia) special bodies known as gemmae develop on the leaf, branch or thallus.

(ii) Gemmae are lens-shaped structures which are produced in large numbers in globlet-shaped cups known as gemmae cups.

(iii) Each gemma is attached to the thallus by means of one-celled stalk, from which the gemma is easily detached.

(iv) Each gemma has two notches in the middle, and when it falls on the substratum, cell divisions begin at the notches and two thalli are consequently formed.

(v) In Anthoceros glandulosus gemmae develop on the margin and dorsal surface of the thallus.



(vi) Small multicellular,

or upon stalks on the ventral surface, e.g., Anthoceros himalayensis or near the growing points of the thallus, e.g., Anthoceros laevis

(iii) Tubers germinate into new gametophytic thalli on the return of the favourable conditions of the environment.

6. By Primary Protonema

(i) Primary protonema are formed as a result of germination of spores, e.g., Funaria.

(ii) Protonema may break into small pieces, and each such fragment is capable of growing into a new protonema.

(iii) Protonema bears several buds and each such bud develops into a new plant.

7. By Secondary Protonema

(i) Protonema developing from other methods than from the germination of spores are known as secondary protonema.

(ii) Morphologically they are largely similar to the primary protonema.

(iii) Secondary protonema may develop from the exposed rhizoid or any other detached living segment of the gametophyte.

(iv) These protonema produce buds which grow into new gametophytes.

e.g., Funaria hygrometrica

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