

Acknowledgement

I ANUPRIYA VERMA from B.Sc.(hons.)Biotechnology 2nd Sem. Vikram University, Ujjain (M.P) take this opportunity to express my profound gratitude and indebtedness to Dr.Smita for her guidance and encouragement during this entire course of study.

I wish to express my gratitude to Dr. Lata Bhattacharya, professors and co-ordinators Bio-technology, Vikram university Ujjain (M.P) for providing me all facilities and valuable suggestions whenever I needed.

I wish to express my best regards towards Dr.Shivi Bhasin , Dr. Santosh Thakur and all my respected teachers of Bio-technology and supporting staff of

Date:

Place: Ujjain

Certificate

This is to certify that Anupriya Varma sadistically competed her project entitled Bryophytes in plant diversity during this academic session 2019-20 under my supervision at department of zoology and biotechnology, Vikram university, Ujjain (M.P).

Head of the department:--

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SYNOPSIS

- *Introduction*
- *General characteristics*
- 1. *Classification of Bryophytes*

Liverworts

Hornworts

Mosses

BRYOPHYTES

INTRODUCTION:-

The term “Bryophytes” comes from Greek word ‘bryon’ means ‘tree moss’, oyster-green and phyton’ means ‘plant’. The term “Bryophytes “ was first suggested by Brown in 1964. G.M Smith place this group between algae and pteridophyta.

*Bryophytes an informal group consisting of three divisions of non vascular land plants. The **liverworts**, **warmworts** and **mosses**. They are characteristically limited in size and paper moist habitats although they can survive in dryer environment. The bryophytes consists of about 80000 plants species.*

Bryophytes produce enclosed reproductive structure (gamatagonia and sporangia),but they don't produce flowers aur seeds. They produce via spores. Bryophytes are usually considered to be e a paraphyletic group and not a monophyletic group, although some studies have produced contrary results. Regardless of their status the name is convenient and remains in used as an informal collective item.

Some bryophytes species are are among the first to colonies open ground. Bryophytes are also very good indicators of Habitat quality as main plant species in this group are are sensitive to levels of moisture in the atmosphere which are are lower Indus habitats because there is less shade.

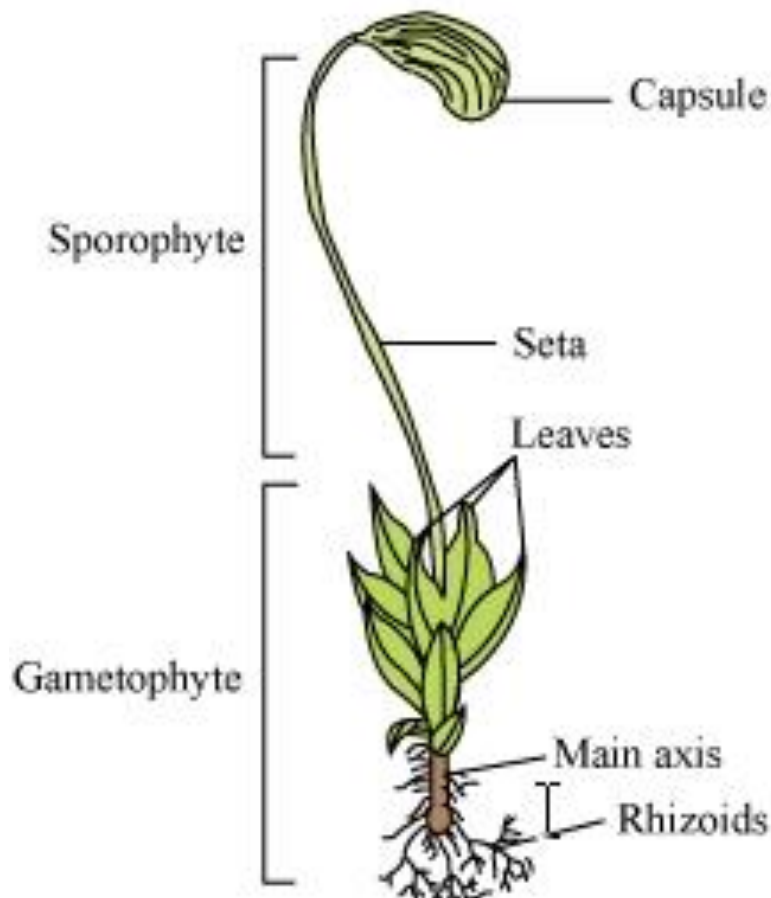
They are plants that virtually everyone has seen, but many have ignored. The most commonly encountered group is the green mosses that cover rotting logs, anchor to the bark of trees, and grow in the spray of waterfalls, along streams and in bogs.

GENERAL CHARACTERISTICS:-

There are several characteristic features of bryophytes.

- 1. Their life cycles are dominated by the gametophyte stage.*
- 2. There is sporophytes are unbranched.*
- 3. They don't have true vascular tissues containing **lignin**. Although some have specialised tissue for the transport of water.*
- 4. They are live in humid and shaded places.*
- 5. The tissue organisation is not Complex. But they do display some amount of diversity.*
- 6. Some bryophytes maybe just over a m m long and some are a metre long too.*
- 7. They contain chlorophyll and can synthesise food through the process of photosynthesis.*
- 8. They generally have something similar to two roots call the **rhizoids**.⁵*
- 9. The main body of the bryophytes is more thallus like and haploid.*
- 10. The sex organ of bryophytes are multicellular.*
- 11. the green tissue that makes up most of the plant body is not vascularized; it does not have **xylem** and **phloem** cells.*
- 12. This absence of specialized tissues for transporting water and dissolved food throughout the organism limits terrestrial forms to being very short plants.*
- 13. The only way to move substances through the plant body is by **osmosis** and diffusion from surface moisture.*
- 14. These roots or rhizoids do not absorb nutrients like other usual plant roots.*
- 15. As is typical of bryophytes, mosses produce large, multicellular sex organs for reproduction.*

16. *As is typical of bryophytes, mosses produce large, multicellular sex organs for reproduction.*
17. *Sex organs are multicellular and jacketed. They are male antheridium and female archegonium.*
18. *Sexual reproduction is of oogamous type. Fertilization produces an embryo inside the archegonium, which grows into a sporophyte.*
19. *Bryophytes show heteromorphic or heterologous alternation of generation in the life cycle.*
20. *Sexual reproduction is of oogamous type. Fertilization produces an embryo inside the archegonium, which grows into a sporophyte.*



Classification of Bryophytes:-

Bryophytes are mainly classified in

three types:-

- 1) Liverworts*
- 2) Hornworts*
- 3) Mosses*

1)Liverworts:-

Liverworts are typically small, usually from 2–20 mm wide with individual plants less than 10 cm long, and are therefore often overlooked. However, certain species may cover large patches of ground, rocks, trees or any other reasonably firm substrate on which they occur. They are distributed globally in almost every available habitat, most often in humid locations although there are desert and Arctic species as well. Some species can be a nuisance in shady greenhouses or a weed in gardens.



Luminaria cruciata

2)Hornworts:-

Hornworts may be found worldwide, though they tend to grow only in places that are damp or humid. Some species grow in large numbers as tiny weeds in the soil of gardens and cultivated fields. Large tropical and sub-tropical species of Dendroceros may be found growing on the bark of trees. The plant body of a hornwort is a haploid gametophyte stage. This stage usually grows as a thin rosette or ribbon-like thallus between one and five centimetres' in diameter.



Rhinoceros laevis

3) Mosses:-

mosses are non-vascular plants in the land plant division Bryophyta. They are small (a few centimeters tall) herbaceous (non-woody) plants that absorb water and nutrients mainly through their leaves and harvest carbon dioxide and sunlight to create food by photosynthesis.[5][6] They differ from vascular plants in lacking water-bearing xylem tracheids or vessels. As in liverworts and hornworts, the haploid gametophyte generation

is the dominant phase of the life cycle. This contrasts with the pattern in all vascular plants (seed plants and pteridophytes), where the diploid sporophyte generation is dominant. Mosses reproduce using spores, not seeds, and have no flowers. Mosses do not absorb water or nutrients from their substrate through their rhizoids. They can be distinguished from liverworts (Marchantiophyta or Hepaticas) by their multicellular rhizoids. Spore-bearing capsules or sporangia of mosses are borne singly on long, unbranched stems, thereby distinguishing them from the polysporangiophytes, which include all vascular plants.

Clumps of moss on the ground and base of trees in the [Allegheny National Forest](#), Pennsylvania, United States

