

Ecological and Economic Importance of Bryophyte

Bryophytes are very important in initiating soil formation on barren terrain, in maintaining soil moisture, and in recycling nutrients in forest vegetation. Indeed, discerning the presence of particular bryophytes is useful in assessing the productivity and nutrient status of forest types.

Further, through the study of bryophytes, various biological phenomena have been discovered that have had a profound influence on the development of research in such areas as genetics and cytology.

Bryophytes are of great ecological importance due to following reasons:

(a) Pioneer of the land plants. Bryophytes are pioneer of the land plants because they are the first plants to grow and colonize the barren rocks and lands.

(b) Soil erosion. Bryophytes prevent soil erosion. They usually grow densely and hence act as soil binders. Mosses grow in dense strands forming mat or carpet like structure.

1. Prevent soil erosion:

(i) Bearing the impact of falling rain drops

(ii) Holding much of the falling water and reducing the amount of run-off water.

(c) Formation of soil. Mosses and lichens are slow but efficient soil formers. The acid secreted by the lichens and progressive death and decay of mosses help in the formation of soil.

(d) Bog succession. Peat mosses change the banks of lakes or shallow bodies of water into solid soil which supports vegetation e.g., Sphagnum.

(e) Rock builders. Some mosses in association with some green algae (e.g., Chara) grow in water of streams and lakes which contain large amount of calcium bicarbonate. These mosses bring about decomposition of bi-carbonic ions by abstracting free carbon dioxide. The insoluble calcium carbonate precipitates and on exposure hardens, forming calcareous (lime) rock like deposits.

2. Formation of Peat:

Peat is a brown or dark colour substance formed by the gradual compression and carbonization of the partially decomposed pieces of dead vegetative matter in the bogs. Sphagnum is an aquatic moss. While growing in water it secretes certain acids in the water body.

This acid makes conditions unfavorable for the growth of decomposing organisms like bacteria and fungi. Absence of oxygen and decomposing microorganisms slows down

the decaying process of dead material and a large amount of dead material is added year by year. It is called peat (that is why Sphagnum is called peat moss).

Various Uses of Peat are:

- (a) Used as fuel in Ireland, Scotland and Northern Europe.
- (b) In production of various products like ethyl alcohol, ammonium sulphate, peat, tar, ammonia, paraffin, dye, tannin materials etc.
- (c) In horticulture to improve the soil texture.
- (d) In surgical dressings.

3. As Packing Material:

Dried mosses and Bryophytes have great ability to hold water. Due to this ability the Bryophytes are used as packing material for shipment of cut flowers, vegetables, perishable fruits, bulbs, tubers etc.

4. As Bedding Stock:

Because of great ability of holding and absorbing water, in nurseries beds are covered with thalli of Bryophytes.

5. In Medicines:

Some Bryophytes are used medicinally in various diseases for e.g.,

- (a) Pulmonary tuberculosis and affliction of liver – Marchantia spp.
- (c) Acute hemorrhage and diseases of eye – Decoction of Sphagnum.
- (d) Stone of kidney and gall bladder – Polytrichum commune.
- (e) Antiseptic properties and healing of wounds – Sphagnum leaves and extracts of some Bryophytes for e.g., Conocephalum conicum, Dumortiera, Sphagnum protoricense, S. strictum show antiseptic properties.

6. In Experimental Botany:

The liverworts and mosses play an important role as research tools in various fields of Botany such as genetics. For the first time in a liverwort, Sphaerocarpos, the mechanism of sex determination in plants was discovered.

7. As Food:

Some Bryophytes e.g., mosses are used as food by chicks, birds and Alaskan reindeer etc.