

E-Content on Algal habitats for B.Sc. First Semester Students

Dr. Sonu Yadav

Department of Botany

Shaheed Smarak Government College

Algae

- *Scientific study of algae is known as Phycology or Algology*
- Father of algology: F.E. Fritsch
- Father of Indian algology: M. O. P. Iyengar
(Mandayam Osuri Parthasarthy Iyengar)
- Algae are diverse group of photosynthetic, oxygen evolving organism that consists of prokaryotic organisms such as cyanobacteria, also known as blue-green algae as well as other group of eukaryotic algae.
- Plant body consists of unicellular, colonial, filamentous, Siphonaceous as well as

parenchymatous.

- The word algae have its origin from Latin, where alga means **seaweed**.
- The term algae were first time used by **Carolous Linnaeus in 1753**.

Algal Habitats

- Algae are mostly aquatic but they are present almost every available ecological habitat on this earth.
- They are thus **ubiquitous** in their distribution. On the basis of their variety of habitat they are following types-
 - Aquatic Algae
 - Terrestrial Algae
 - Parasitic algae
 - Symbiotic Algae
 - Algae with some special habitats

Aquatic Algae:

Algae found in water body called aquatic algae.

Most of algae are aquatic found in fresh water (lakes, ponds, rivers, ditches, tanks, streams, etc.) or sea. Bottom dwelling organism are called **benthophytes** or may be present on the surface of water bodies are called **Phytoplanktons**.

Phytoplanktonic algae are called **euplankton** (*Chlamydomonas*, *Cosmarium*, *Scenedesmus*) if they are free floating from the beginning or as tychoplankton (*Cladophora*, *Oedogonium*, *Zygnema*) if attached in the beginning but later got detached and became free floating.

- Sometimes planktonic algae show extensive growth in the water bodies and impart greenish colour to water. This is known as **water bloom**

or algal bloom e.g. *Chlamydomonas*, *Chlorella*, *Scenedesmus*, *Microcystis* etc.

- **Fresh water forms** such as *Volvox*, *Hydrodictyon*, *Chlamydomonas* etc grow in stagnant water while *Cladophora*, *Oedogonium*, *Ulothrix* etc. prefer to grow in slow running water. Algae grow in running water is called lotic algae while in stagnant water is known as lentic algae.

Fresh Water Planktonic Algae: *Chlorella*, *Chlamydomonas*, *Scenedesmus*, *Volvox*, *Eudorina*, *Microcystis*, *Oscillatoria*.

Fresh Water Benthic Algae: *Chara*, *Cladophora* (Chlorophyceae) *Bodanella*, *Pleurocladia* (Phaeophyceae) *Batrachspermum* (Rhodophyceae).

Marine Planktonic: *Chlamydomonas*, *Cyclotella*, *Trichodesmium*,

Marine Benthic Algae: *Acetabularia*, *Caulerpa*, *Ulva* (Chlorophyceae) *Ectocarpus*, *Fucus*, *Laminaria*, *Sargassum* (Phaeophyceae) *Chondrus*, *Gelidium*, *Polysiphonia* and *Porphyra* (Rhodophyceae).

Terrestrial Algae Or Edaphophytes

Algae which grow on or inside the moist soil are known as terrestrial algae, e.g. *Vaucheria*, *Botrydium*, *Oedogonium*, *Frittschiella* etc. Those algae which are growing on the surface of soil called saphophytes. Whereas those algae are growing inside the surface of soil called cryptophytes. Eg. *Anabeana* and *Nostoc*.

Parasitic Algae:

Algae which grow on some plants and cause plant diseases. E.g. *Cephaleuros virescence* parasite on tea leaves and causes red rust disease.

Harveyella mirabilis are obligate parasite and lack pigmentation. Rhodochytrium, Phyllosiphon, etc are other examples of parasitic algae. Polysiphonia lanosa is a semi parasite on brown alga Ascophyllum.

Symbiotic Algae

Algae which are living with other group of organism and both are mutually benefited. For Example-

Algae to Algae association- *Rhizosolenia* forms association with green algae *Calothrix* sp.

Algae to Fungi Association- Many green algae and BGA live in symbiotic with fungi and form new group lichens. Green algae *Trebouxia* is the most common **phycobiont** in lichen. Other green algae are *Coccomyxa*, *Trentipohlia* etc. BGA are *Nostoc*, *Scytonema*, *Stigonema*, *Gloeocapsa* etc.

Algae to Bryophytes Association- Nostoc found in the mucilage filled cavity of *Anthoceros* and *Notothyllus* (Hornworts) thalli.

Algae to Pteridophytes Association- *Anabaena azollae* found in leaves of water fern *Azolla* which is used as a biofertilizer in paddy fields

Algae to Pteridophytes Association- *Nostoc* and *Anabaena cycadae* live in symbiotic association in the coralloid roots of *Cycas*.

Algae to Pteridophytes Association- *Nostoc* found papillose outgrowth of ***Gunnera*** near the petiole of their leaves.

Algae with some special habitats

1- Thermophytes: Some algae which are growing in hot water springs at a temperature range of 65-85⁰C, where ordinary plant life is not possible. Only BGA like *Mastigocladus*, *Phormidium* and *Oscillatoria*

brevis etc.

2- Cryophytes: Some algae which are growing in polar regions on ice and snow. E.g. *Chlamydomonas* sp. and *Scottiella* sp. among green algae and *Nostoc* among BGA algae. *Haematococcus nivalis* causes red snow ball in alpine region. *Ancylonema nordenskioldii* impart brown colour.

3- Epiphytes: Some algae which are growing on the surface of other plant parts are called epiphytes e.g. species of *Oedogonium*, *Ulothrix* etc., other examples are *Coleochaete nitellarum* grows on *Nitella* and *Chara*. Some algae, such as *Trentepohlia*, *Rhodochytrium*, grows on the surface of angiosperms leaves, called **epiphylllophytes**. Some algae such as *Pleurococcus* sp. grow on barks called **epiphloeophytes**.

4- Endophytic Algae: Some algae which are growing within the tissue of other plants, e.g. *Nostoc* grows inside thalli of *Anthoceros*.

5- Epizoic Algae Or Epizoophytes: Some algae which are growing on the surface of other animals, e.g. *Cladophora* on snails, *Cyanoderma* (red algae) and *Trichophilus* (Green algae) on the scales or outer hairs of Sloth.

6- Endozoic Algae Or Endozoophyte: Some algae which are growing inside animals, e.g. *Chlorella* within the tissue of Hydra and sponges

7- Lithophytic Algae: Some algae which are growing on rocks e.g. *Polysiphonia*, *Ectocarpus* etc.

8- Halophilic algae- some algae like *Dunaliella*, *Chlamydomonas chrenbergii* grows in water with high salt concentration. *Fritchiella* grows on acidic soil while *Oscillatoria sp* , *Nostoc* etc. grow on

alkaline soil.

Notes: *All contents are taken from various sources and it is prepared only easy to read for students.*