

**Subject- Botany**

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**Class-B.sc I**

**Paper-II (Diversity of Algae ,Lichens and Bryophyta)**

**Unit-I**

**Topic - Economic Importance Of Algae**

- **Beneficial roles of Algae**
- **Harmful aspects of Algae**

## **• INTRODUCTION**

- Algae constitute an important group of plants which mostly occur in aquatic habitats.**
- They are commonly known as pond scum and sea weeds.**
- Their controlled growth can provide positive help in tackling some present day problems such as disposal of sewage and industrial wastes, conservation of water and soil, and improvement of quality and yield of food products.**

## **Economic importance of Algae**

Since from olden days Algae species are intimately connected with human beings as a source food, medicine and other uses. Algae are taking an active role in human beings.

### **1. Primary Producers:**

Algae are the main Oxygen producers in aquatic areas. They are also useful in decreasing water pollution by realizing Oxygen. 10% of photosynthesis is occurred by the algae in total photosynthesis quantity. With these activity algae forms  $1.6-15.5 \times 10$  to the power of 11 tones of carbonic material like food.

## 2. Algae as Food

- Many freshwater and marine algae have been utilized as a direct source of food.
- Algae are rich ***in proteins, carbohydrates, oils, vitamins A,B,C*** and ***E*** and minerals

### **Example**

Cyanophyceae (or) Blue green algae – Nostoc & Spirullina

*Brown Algae – Sargassum*

*Green Algae – Chlorella*

### **3. Algae as fodder**

Many sea-weeds are directly used as feed for *cattle, poultry* and *aquatic organisms*. Example: *Laminaria* and *Fucus*

Sea-weed meal increases the egg-laying capacity of poultry.

### **4. Algae in Agriculture**

#### **a. Algae as Green Manure**

*Sargassum*, and *Gracilaria* are commonly used as green manures in agriculture.

Sea weed manure increases the yield of barley, potato, coconut palms, citrus, etc.

#### **b. Algae as Nitrogen Fixers (Biofertilizers)**

Many blue-green algae have the ability to fix the atmospheric nitrogen in the soil.

e.g.: *Nostoc*, *Anabaena*, *Spirulina*

#### **c. Algae used for Reclamation of Soils**

Saline and alkaline soils can be converted into productive soil by growing some blue-green algae.

# **ALGAE IN INDUSTRY**

- Many products of commercial and pharmaceutical importance have been derived from algae.
- **Agar-Agar:-**
- Agar is obtained commercially from species of Gelidium, Gracilaria and condrus.
- Japan and South East Asia are the main production centers of Agar.
- The greatest use of agar is in food, Pharmaceutical and cosmetic industry.
- It is used for almost a century as stiffening agent in culture media.

## • ALGINATE

- These are salts of algalinic acid which occur in the cell wall of the brown algae belonging to the order Laminariales.
- Alginate are non-toxic and viscous and readily form gel, useful as thickener, emulsifier and gelling agent.
- Flame proof fabrics are also prepared from alginates.

## **•ALGAE IN MEDICINES**

- Many algae such as chlorella, Polysiphonia, Laminaria synthesis antibiotic substances.
- Antibiotic Chlorellin is extracted from Chlorella Vulgaris, which inhibits the growth of certain bacteria and a few algae.
- Some algae, like Gelidium are used for treatment of Kidney, Bladder and Lung diseases.



## **• ALGAE AS EXPERIMENTAL MATERIAL**

- Algae provide valuable experimental materials for research work in Plant Physiology, Genetics and Bio-chemistry.**
- A lot of researches in genetics and Cytology have been carried out on Acetabularia.**

## • *DISPOSAL OF SEWAGE*

- Waterborne domestic and industrial waste is called sewage.
- It contains material in soluble and suspended form.
- Some species like Chlamydomonas, Scenedesmus, Chlorella, Pongorhina, Euridina, etc. are living in sewage water.

## Harmful aspects of Algae

- Some algae species like Microcystis, Lyngbya are develop water blooms in water areas.
- They secrete toxic materials into water and polluted the water.
- Some algae species are caused for some skin diseases.  
Dianophlagellate is caused for the death of fishes in water.