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ECONOMIC IMPORTANCE OF ALGAE

Useful activities

1. Food

Algal species are becoming a popular food to the mankind because of its high nutritive value and more yield per unit area than conventional crops.

Algae which are commonly used as food are:

Chlorella, Chondrus, Codium, Porphyra, Rhodymenia, Ulva, etc.

➤ **Chlorella :**

- a) High nutritive value and can be compared with soyabeans.
- b) Contains – Carbohydrate - 30%
Protein – 30%
Lipid – 15%
- a) Vitamin B content is high.
- b) But digestion of cell wall is a problem to human being.

➤ ***Chondrus crispus***:

- a) Commonly known as ***IRISH MOSS***
- b) The alga is cooked with milk and with addition of vanilla, it makes a highly popular dish **BLACKMANGES**.
- c) Gelatinous carbohydrate obtained from this algae is used in pudding.
- d) It is used as stabilizer and cleaning agent in beer industry.

➤ ***Codium*** and ***Ulva*** :used as salad in Japan.

- **Porphyra:** Seaweed belongs to Rhodophyceae.
 - a) It contains Carbohydrate 40 – 45%, Protein 30 – 35%, & vitamin B & C.
- The common name of the food item is **LAVER** or **NORI** in Japan, **tsats'ai** in China, **Sloke** in Britain.
- **Laminaria:** *L. saccharina* is rich in carbohydrate s (57%) and the commonly used food is called **KOMBU**.
- **Rhdemenia palm**
- **ata** : is used to prepare a salty confection, known as **DULSE**.
- **Monostroma** in Japan is used in the preparation of common food known as **ANORI**.

- ***Spirulina*** is rich in protein(60%), vitamins and unsaturated fatty acids. It is used as tablet prepared by CFTRI, Mysore.
- ***Scenedesmus*** is rich in protein and threonine.
- ***Nostoc communae*** is boiled and used as soup in China.
- ***Spirogyra*** and ***Oedogonium*** in South India is used to prepare a food called **Green Laver**.

2. FODDER

- Many algae become popular as fodder due to their vitamin and micronutrient in addition to their carbohydrate and protein content.
- The fat content of milk becomes increased with the addition of sea algae as fodder.
- Algae commonly used **as fodder** are –
Fucus, Laminaria, Sargassum, Alaria, Rhodomenia, Ascophyllum, Macrocystis etc.

3. INDUSTRY

Algae has been used to develop many products of commercial and pharmaceutical importance. These are –

1. Agar agar
2. Carrageenan
3. Alginic acid
4. Diatomite
5. Funori
6. Medicine – Antibiotic, Antihelmenthic drug
7. Biofertiliser

i. **Agar agar**: obtained from ***Gelidium nudiformis*, *G. pusillum*, *G. robustum*, *Gracilaria verrucosa*** and also from different species of *Chondrus*, *Gigartina*, and *Pterocladia*.

USES: **a) Food**: used in processed cheese, jam, jellies, cream and pudding, etc. It is used as **gelling** and thickening agent in the preservation of canning of meat and fish.

b) Pharmaceuticals: used as **Laxative**, pills, different ointments and also used in drug for slow release.

c) Laboratories: used as **gelling agent** and **solidifying agent in culture medium**.

d) Cosmetics: used in cosmetics like lotions.

ii. Carrageenan: obtained from the cell wall of ***Gigartina stellata***, ***Chondrus crispus*** and ***Eucheuma***.

- It is a phycocolloid consists of k-carrageenan & λ-carrageenan.
- Carrageenan acts as a blood coagulant.
- It is used to stabilize emulsions & to cure cough.
- It is also used as a component of deodorants, cosmetics, toothpastes, paints, etc.

iii. Alginic acid: Salts of Alginic acid – alginates are extracted from the cell wall of some brown algae – ***Ascophyllum***, ***Fucus***, ***Macrocystis***, ***Laminaria***, ***Durvillea*** and ***Lessonia***.

Alginic acid Contd.-

Uses:

- As Thickeners in the preparation of Sauce, soup, cream etc.
- In textile industries as printing pastes and cosmetics.
- As Emulsifiers in emulsion paints and polish.
- As Gelling agent in confectionary, powders, paints, ice-creams etc.
- It is used in the production of artificial fibres, plastics, rubber, etc.

iv. Diatomite: After the death of diatom cells the outer silicified wall becomes accumulated at the bottom of water & these deposits are called **Diatomite** or **Diatomaceous earth**.

Uses:

- As filter: used as filter in different industries like sugar (to filter microorganism), oil & chemical industry. Also used as filter for battery boxes.
- As insulator: used as in boilers and blast furnaces. Used with Bakelite for fuse and switch boxes.
- As absorbent of liquid nitroglycerine.
- As abrasive substance for manufacture of metal paints, polish, varnish and toothpaste etc.

v. Funori: it is a type of **glue** obtained from ***Gloiopeltis furcata*** used in cosmetic industry for curling of hairs & dyeing, also used as sizing agent in paper and textile industry.

vi. Medicine:

- **Chlorellin**, an antibiotic is extracted from ***Chlorella***.
- In China , an Antihelmenthic drug '**Tse-ko-Tsoi**' is prepared from ***Digenia simplex***.
- Various alga are rich source of **Iodine**.

4. Biofertiliser:

Nostoc, *Anabaena*, etc can fix atmospheric nitrogen and form nitrogenous compounds.

5. Rich source of **minerals** like Cu, Co, Cr, Fe, Zn, Mn, Br, I, etc.

6. Disposal of sewage.

7. Use in **biological experiments**.

8. Use in production of **H₂ fuel**.