ECONOMIC IMPORTANCE OF ALGAE.

Algae have great economic value. They are both beneficial as well as harmful for mankind. Both the aspects are discussed below -

(A) Beneficial aspects :-

1) Algae as a food :- Algae are used as food in different countries such as - France, Germany, Sweden, Japan, Korea etc. For example -

- **Porphyra :-** This red alga has 25-30% protein value. In Japan the important food prepared is - 'Amanoria' or 'Nori'
- **Laminaria :-** 9 species of Laminaria are edible in Japan eg. 'Kombna' a Japanese food.
- **Ulva lactuca :-** It is used as salad or soups in Scotland and Ireland.
- **Nostoc commune :-** Eaten in China and Japan.
- Chlorella, a fresh water alga is a food supplement of modern world.
- **Spirulina** - Tops the list of edible forms. It has 80% protein & Vit. B12. It is called Single Cell Protein (SCP).

(2) Algae as Fodder :-

- Laminaria, Fucus and Sargassum are freely used as fodder in Scotland and Island.
- Macrocystis spp are rich in Vit A & E and are the best cattle food.
- Pelvetia canaliculata enhances 10% milk in Cattle.
- Gracilaria verrucosa, Enteromorpha & Ulva are best fodder used in many countries.

(B) As Nitrogen Converter :-

Anabaena ; Nostoc etc Convert atmospheric nitrogen to molecular nitrogen.

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(2) In paddy crops per hectare 25-30 kg. nitrogen fixation can be done per season by them.

(4) Industrial importance of Algae :-

a) Agar - Agar - is produced from the red alga Gelidium which is used in preparation of solid culture medium for microorganisms. It is also used in food bakery, cosmetics, textile industry, meat packing etc.

b) Antibiotics -

- Chlorellin, an antibiotic for intestinal bacteria is obtained from Chlorella.
- Microcystis exibit properties of similar to Penicillin
- Cladophora and Lyngbya are used as antibacterial for Mycobacterium & Pseudomonas.

c) Algin :- It is produced by boiling algae (Dictyota, Sargassum, Turbinaria etc) in washing soda and is used in rollers of typewriting machine. Alginic acid derivatives are extracted from the members of Phaeophyceae such as Laminaria, Macrocystis, Ecktonia etc.

d) Carrageenin :- It is a gelatinous carbohydrate obtained from red alga Chondrus crispus. It acts as blood coagulant.

e) Diatomite — Diatoms and their large sedimentary deposits "diatoma ceous earth" are quite useful in industry. Diatomite is used in industrial filtration process, sugar refining and brewing industries. It is also used as a cleaning agent in soap, toothpaste and metal polish industry.

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(5) Reclamation of Usar Land :-

Algae such as Nostoc, Scytonema, Aulosira and Anabaena grow as thick stratum on surface of saline usar soil. The pH of alkaline soil in presence of such algae is reduced from 9.7 to 7.6 and water holding capacity is increased by 40%.

6) Sewage treatment :-

The presence of algae like Chlamydomonas, Anacystis, Chlorella, Oscillatoria, Pandorina Microactinum etc. facilitates oxygenation of sewage to a great extent. Algae form a surface film on sewage disposal which supplies oxygen and utilises nutrients to break down sewage.

7) Algae and Space Research :-

'Chlorella' is employed as tool of space research for a long time. It is important for - CO_2 assimilation
- O_2 liberation &
- as a food.

HARMFUL ASPECT OF ALGAE —

1) Water Blooms / Algal Blooms —

It is a rapid increase in the population of algae in freshwater or marine water system. It is often recognized by the discoloration in the water. It is caused due to multicellular seaweeds and cyanobacteria like - Nostoc, Lyngbya, Anabaena, Nodularia etc. An algal bloom affects the whole ecosystem by blocking sunlight, depleting oxygen levels in water and by producing harmful toxins.

(2) Problem of Water Purification, Supply and Pollution.

Water reservoirs are badly affected by algae in two ways —

- firstly their growth & decomposition products produce a bad odour and secondly, they cause interference in water filtration.

(3) Damage to buildings —

The growth of blue green algae on moist wall during rainy season (which later becomes permanent) spoil the walls of building. It is caused by - Scytonema, Tolypothrix, Chroococcum etc.

(4) Damage to salt —

B. Green Algae (such as Arthrospira) produce an offensive smell, impart pink, rust red colour to the salt and affects its quality in Sambhar lake in Rajasthan.

(5) Disease producing ability -

- Blue green algae such as Microcystis, Anabaena, Nodularia, Gloeotrichia etc produce exo and endotoxin causing death of animals, horses, cattle, sheep etc.
- Cephaleuros caused — "Red Rust of Tea".

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