

Q. ECONOMIC IMPORTANCES OF ALGAE

INTRODUCTION → The algae include an assemblage of holophytic organisms. They include the simplest, unicellular, motile or non-motile forms as well as eukaryotic, multicellular organizations with considerably division of labour. Their reproduction ranges from a primitive vegetative propagation to complex sexual types. Because of their simplicity in form and complexity in function, algae has been widely used for many physiological, biochemical and genetic studies. Further, due to richness in a wide range of organic and inorganic substances they serve as important raw material for food and feed, fodder and a variety in industrial products. Similarly algae under certain condition may prove to be ecological hazards.

Economic Importance of Algae → The algae have got a wide application in the algae several industries. They are excellent sources of Iodine, Potash and trace element. In many countries they are used as human food. Some algae have medicinal property. Their

various uses can be documented under the following headings —

1. INDUSTRIAL USES → The algae provide four major and important products which are being widely used in modern industries. They include fitt aliginate, carageenin, agar-agar and diatomite.

(A) Algininate → It was first discovered by Stanford (1881) from Laminaria. It is carbohydrate polymer of D. manuro-mic acid and is very similar to cellulose. The brown algae are important sources of alginates. Macrocystis, Sargassum, Laminaria, Nereocystis, Acobhyllum, Alaria, Durville, Enteromorpha, Fucus, Turbinaria, Lessonia etc.

Algininate have extensive application is in ~~ess~~ cosmetics, soap and detergent industry, dairy, textile and dental technology.

In cosmetics, soap and detergent industry, they are used as thickening and dispersing agent in ointments, creams, Jellies, Lotions, tooth pastes, bathing preparations and also in adalative hair dyes, hair fixing tonics and shampoos. They are also used (to make) in the production of dairy products, like

milk shakes, chocolates, cheese etc. In dental technology, alginates are used in preparation of denture fixatives and denture moulding. The sodium and Ammonium are used as paints. They are also used for the production of artificial wood, wall panelling, insulating materials, binders for pencils and in textile industry for the rehnement, finishing and sizing of the fabrics.

Alginates find manifold uses in leather industry. In paper industry they are used to increase the gloss and softness of the paper. They are also used in industries involved in photographic goods, fabrics, polishes, lumbricants, pesticides, insecticides and foam rubber.

⑧ **Carageenin** → It is red algae cell wall polysaccharide. The Rhodophyceae algae such as Chondrus, Grigartina etc yield this important compound.

Carageenin is used in food technology in the preparing of baking and codiment products. It is used for as filling for assorted chocolates, jelly and cream production, milk pudding, custard powders, milk shakes, cocoa production, syrups, ice-creams, salads, sattes, soups.

cheese and for clarification of beer, food juices and other beverages.

In pharmaceutical industry the compound is used as an emulsifier and granulating and binding agent. Further it is used in painting, leather, paper and textile industry.

① Agar-agar → The name agar-agar is of Malayan origin. It is dried or jelly like, non nitrogenous extract from Rhodophycan algae. The important agrophytes are Sarcocolla, Phyllophora, Orelidium, Grigartina, Gracilaria, Holymeria, Hypnea, Scleraria chondrus etc.

The first commercial agar-agar was produced in Japan in 1670. The beginning of agar-agar industry in India is around 1905 and today about six plants are in operations.

This compound has a variety of uses. In food industry it is used for jelling and thickening in confectioneries, in the production of puddings, jams, jellies, cheese and in fish and meat industry. It is also used as clarifying agent of beers and liquors. In pharmacy agar-agar is used as a laxative for chronic constipation. In laboratories

it is used for various purposes, ranging from the preparation of culture media to imbedding.

① **Diatomite** → It is rock like deposit of the past diatoms, forming oceanic sediment. It is chemically inert, fire proof, highly absorbant, whitly substance with abrasive qualities. It has been widely used in the filtration of solution in sugar industries, insulation of refrigerators, boilers, sound proof rooms, in corrosive chemicals, in polishes for metals, in the manufacture of dynamites. It is also used as a base in automobile and in silver polishes.