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Popular Article

Seaweeds In India

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Introduction

Seaweeds are macroscopic non flowering marine plants, that live either in marine or brackish water environment. Like the land plants, seaweeds contain photosynthetic pigments and with the help of sunlight and nutrient present in the seawater, they photosynthesize and produce food. All most 10,000 species have been identified marine algae are reported in the world.

Seaweeds are also termed as the 'Medical Food of the 21st Century' as they are being used as laxatives, for making pharmaceutical capsules, in treatment of goiter, cancer, bone-replacement therapy and in cardiovascular surgeries. Seaweeds are wonder plants of the sea.

Seaweeds are found in the coastal region between high tide to low tide and in the sub-tidal region up to a depth where 0.01 % photosynthetic light is available.

Resources

Seaweeds are abundant where rocky or coral formations are there. The luxuriant growth of several species of green, brown and red algae occurs along the southeast coast of Tamil Nadu from Rameswaram to Kanyakumari, Gujarat coast, Lakshadweep and Andaman Nicobar Islands. Fairly rich seaweed beds are present in the vicinity of Mumbai, Karwar, Ratnagiri, Goa, Varkala, Visakhapatnam and in coastal lakes like Pulicat and Chilika.

Some of the commercially important seaweeds of India are as follows:

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1. Agarophytes (Agar yielding Seaweeds):

Gracilaria edulis, G. fergusonii, G. arcuata, G. indica, G. obtusa, G. crassa, G. corticata, G. corticata var. corticata, G. corticata var. cylindrica, Gelidiella acerosa, Gelidium, Pterocladia

2. Alginophytes (Seaweeds which Yield Alginic acid):

Sargassum wightii, S. longifolium, S. ilicifolium, S. myriocystum, Turbinaria conoides, T. ornata, T. decurrens, Acanthophora spicifera

3. Carrageenophytes (Seaweeds which Yield Carrageenan):

Hypnea, musciformis, Hypnea valentiae, Kappaphycus alvarezii (non-native)

Potential:

Of the 10,000 species have been identified marine algae are reported in the world, around 844 species of seaweeds have been reported from Indian seas, their standing stock is estimated to be about 58,715 tons (wet weight). Out of the 844 seaweed species, India possesses around 434 species of Red Algae, 194 species of Brown Algae, and 216 species of Green Algae.

Classification of Seaweeds: -

- Three groups
 - 1) Chlorophyceae (Green algae)
 - 2) Rhodophyceae (Red algae)
 - 3) Phaeophyceae (Brown algae)

1. Chlorophyceae (Green algae):

- b) Green algae are found in the fresh and marine habitats. They range from unicellular to multi-cellular, microscopic to macroscopic forms
- c) cell wall consisting of an inner cellulose and outer pectin layer.
- d) photosynthetic pigments such as Chlorophyll a & b, contained in the special cell structure known as chromatophores.
- e) Photosynthetic product is Starch.
- f) Green algae can produce sexually (by isogamous, anisogamous or oogamous type) and asexually by forming flagellate and sometimes non-flagellate spores. The vegetative propagation is achieved through fragmentation.
- g) Include Ulva, codium, cladophora, spirogyra, chlorella, Caulerpa, Enteromorpha, monostroma etc. are green seaweeds. They are used as fresh cooked foods and soups.



2. Rhodophyceae (Red algae):

- Except for few species they are exclusively marine.
- They inhabit intertidal to subtidal to deeper waters.
- Inner cell wall is of cellulose and outer cell wall with amorphous matrix of mucopolysaccharides (i.e., agar, porphyrin, furcellaran, carrageenan). Cells are uninucleate /multinucleate with a large centric vacuole.
- The colouration of Rhodophyta is due to water-soluble pigments, the red phycoerythrin and blue phycocyanin. Other pigments present are chlorophyll a & b, carotene etc.
- The photosynthetic product of this group is Floridian starch.
- All the members of this group produce one or more kinds of non-flagellated spores that are either sexual or asexual in nature.
- These are agar and carrageenan yielding seaweeds. So, these are called agarophytes and carragenophytes.
- Includes gracilaria, gelidium, hypnaea, eucheuma and chondrus crispus.



Red Seaweeds

3. Pheophyceae (Brown algae): -

- Brown algae are exclusively marine forms.
 - The cell wall is two layered. Outer layer is mucilaginous and sticky due to the presence of alginate, The inner layer is of cellulose (microfibrils).
 - Brown algae vary in coloration from olive –yellow to deep brown. The coloration is due to the accessory carotenoid pigment and fucoxanthin. The amount of fucoxanthin varies in different species of brown algae.
 - other photosynthetic pigments of the brown algae are Chlorophyll a & c, B-carotene and xanthophylls.
- The photosynthetic products of the brown algae are Laminarian and Mannitol. These are called kelps. The product is called alginin or alginic acid. So, these plants are also called as alginophytes.

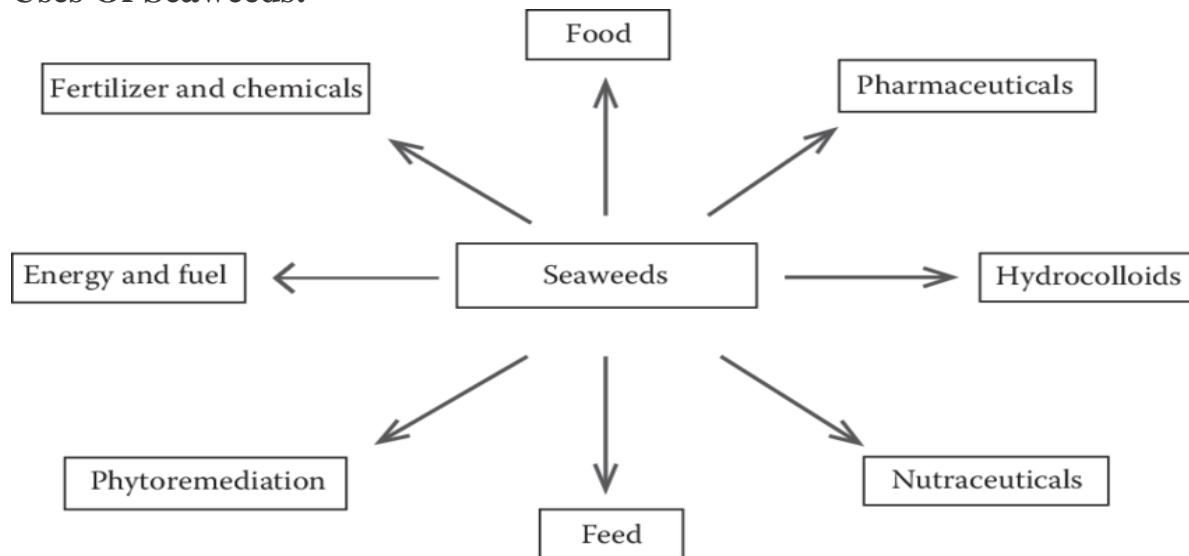


- Includes Laminaria, Undaria, Turbinaria, Sargassum, Macrocystis



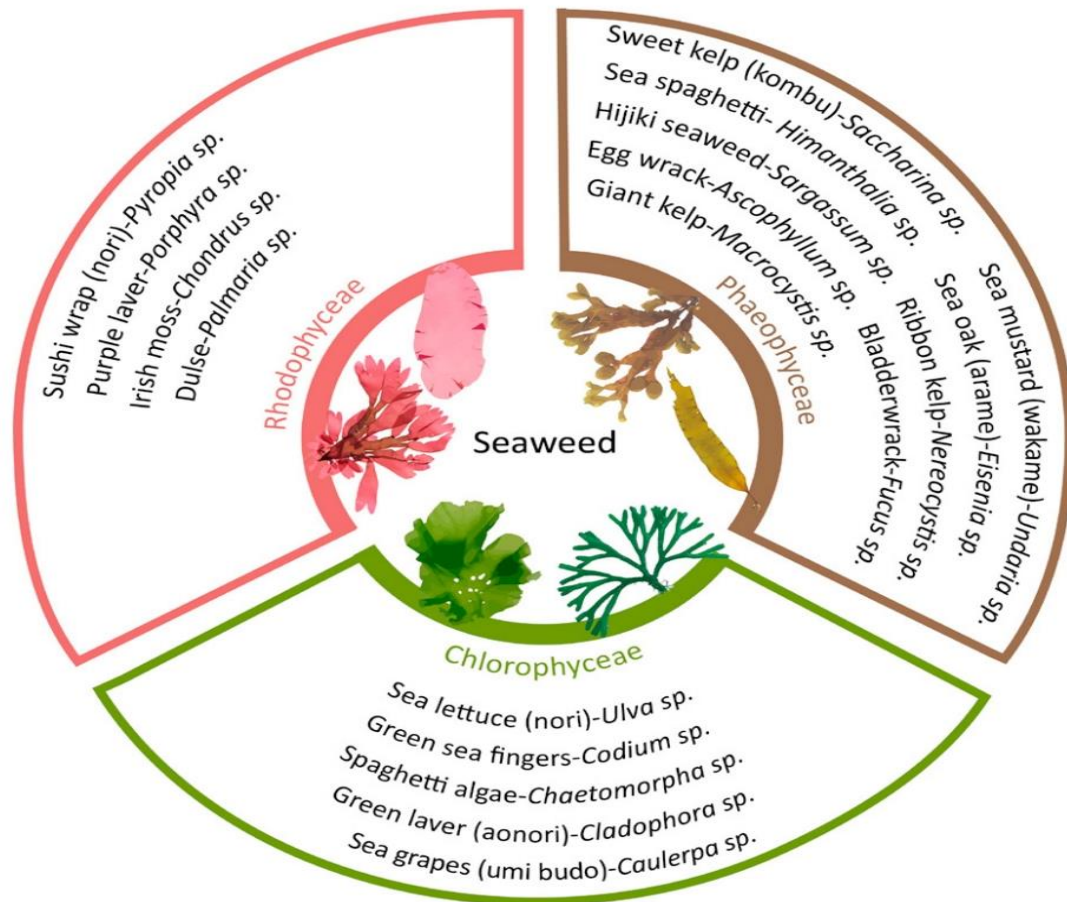
Brown Seaweeds

Uses Of Seaweeds:



List of seaweeds used for Direct Consumption:





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