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## SEAWEED CULTIVATION AND IMPORTANCE

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Seaweed is a loose colloquial term encompassing macroscopic, multicellular, benthic marine algae. The term includes some members of the red, brown and green algae. Seaweeds can also be classified by use (as food, medicine, fertilizer, industrial, etc.). Most people know two general categories of seaweeds: wracks (Members of the brown algal order Fucales such as Fucus) and kelps (Members of the brown algal order Laminariales such as Laminaria), and some have heard of Carrageen or Irish moss (A red alga, Chondrus crispus). Seaweeds are particularly important ecologically: they dominate the rocky intertidal in most oceans, and in temperate and Polar Regions cover rock surfaces in the shallow subtidal. Although only penetrating to 8-40 m in most oceans, some are found to depths of 250 m in particularly clear waters.

**Phytomorphology of seaweed** : Seaweeds appearance somewhat resembles non- arboreal terrestrial plants.

**Thallus**: The algal body

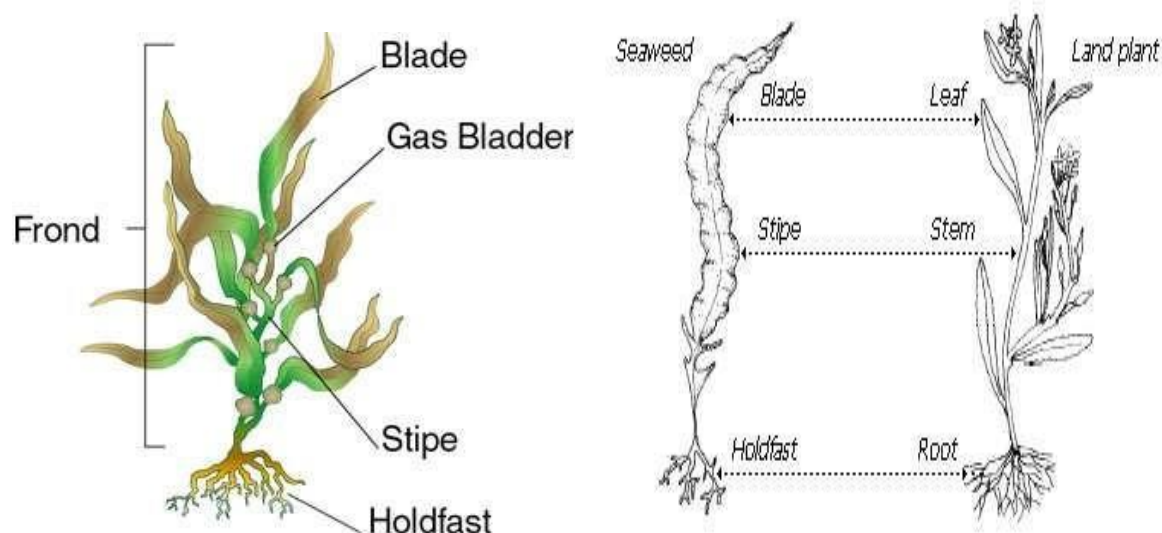
**Lamina**: A flattened structure that is somewhat leaf- like

**Sorus**: Spore cluster know as sorus.

**Fucus, air bladders**: Float-assist organ (on blade)

**Kelp, floats** : Float-assist organ (between lamina and stipe)

**Stipe** : A stem-like structure, may be absent



Structure of Sea weed

**Holdfast** : Specialized basal structure providing attachment to a surface, often a rock or another alga.

**Haptera** : Finger-like extensions of holdfast anchoring to benthic substrate. The stipe and blade are collectively known as the frond.

**Blades** : The leaf-like, flattened portions of the thallus of seaweeds.

**Pneumatocysts** : Gas-filled bladders that sometimes keep the blades close to the sea surface maximizing the exposure of blades to the sunlight gases include carbon monoxide.

### Types of Seaweed

Three types of seaweed are:

- Green seaweed
- Brown seaweed
- Red seaweed

### Green seaweed

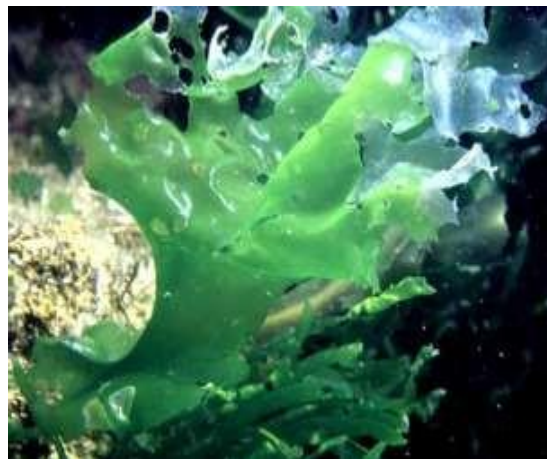
- Green seaweed are belong the chlorophyta group. The green seaweed mostly lives in freshwater and terrestrial environments the group from which embryophytes (higher plants) emerged only 10 percent are marine and most of green seaweed have a simple thallus.
- Pigments and food reserves are the same as terrestrial plants.



Enteromorpha



Sea Lettuce



Ulva

### Brown seaweed

- Brown seaweed are belong the phaeophyta group. Brown seaweed color varies from olive green to dark brown.
- Almost brown seaweed 1,500 species are marine almost always the dominant primary producers on temperate and polar rocky coasts.



- Brown seaweed belongs to the group Heterokontophyta, a eukaryotic group distinguished by chloroplasts surrounded by four membranes.
- Play an important role in food supplies and environment development.



**Kelp**



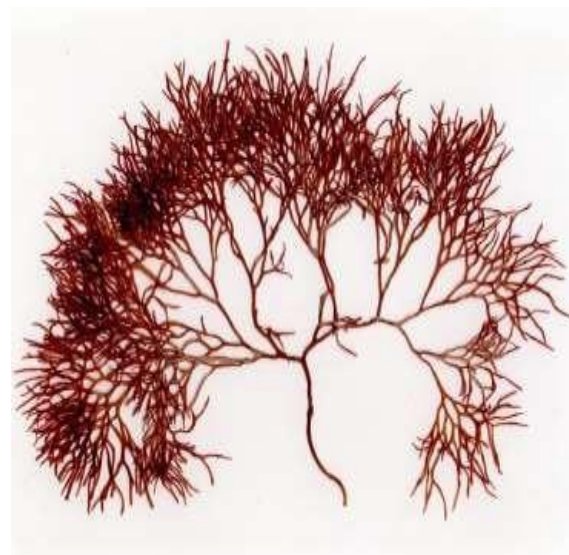
**Sargassum**

### Red algae

- Red algae are belonging to Rhodophyta group.
- Red algae have to more species compared than green and brown algae.
- Red algae have red pigments called phycobillins.
- Red algae have to 4,000 species live in freshwater or soil inhabited most shallow- water marine environments.
- It is harvested for food and for the extraction of various products.
- Most of red algae are filamentous, many branches with intricate patterns, increases light-gathering surface for the seaweed.
- In red algae dense clumps are more common some have lost almost all traces of chlorophyll.



**Palmaria**



**Chondrus**

### Site selection of seaweed farming

- Choose a location where there is a good water movement or where there is a rapid water turnover.

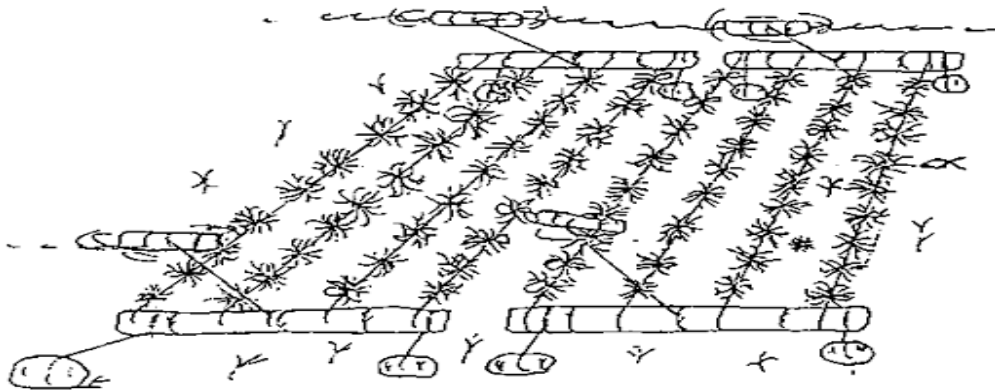
- Hence, water current speed should be between 20 to 40 m/min.
- Area should be sheltered from very strong wave action, current and winds.
- Avoid areas that are near the mouth of rivers or where there is a heavy freshwater runoff.
- The area should have a water temperature range between 25°C and 30°C.
- Water depth in the farm should not be less than 2 feet during the lowest tide and more than 7 feet during high tide.
- The ground should be stable enough to permit easy installation of stakes or bamboos.
- Farm bottom composition should be sandy and rocky depending upon the variety of seaweed.
- Take note of the other marine plants and animals that are associated with seaweed, for they are good indicators of possible site for its farming.
- Consider also the availability of labor, materials, accessibility to transportation and communication as well.

#### **Culture Techniques for Seaweed:**

1. Short stake and line method
2. Long stake and longline with float method
3. Suspended rope and line with rope
4. Bamboo raft method
5. Raft method
6. Spider web method
7. Lantay method

#### **Short stake and line method**

1. Short stake and line method are used in short stakes (60cm long) erected on seabed and arranged in rows.
2. In the short stake and line method seeded line has no floats.
3. It is used in very shallow area at spring low tide.



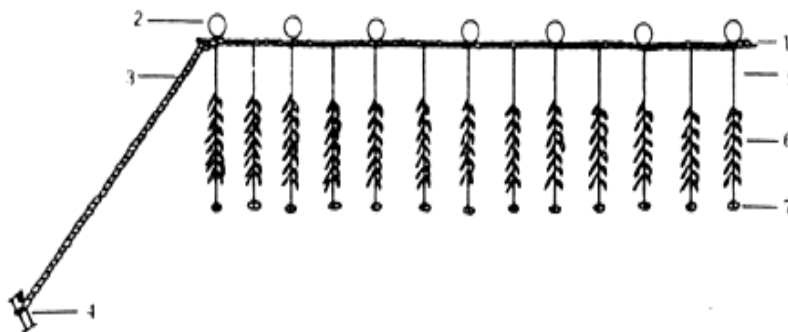
#### **Long stake and longline with float method**

1. Long stake and longline with float method are uses long stakes (1-1.5m long) erected on seabed and arranged wide distance between rows.
2. In the long stake and longline with float method uses long seeded lines with floats.



### Suspended rope and line with rope

1. Suspended rope and line with rope are mainly uses ropes suspended by floats and anchored by weights.
2. In this method seeded lines have floats.

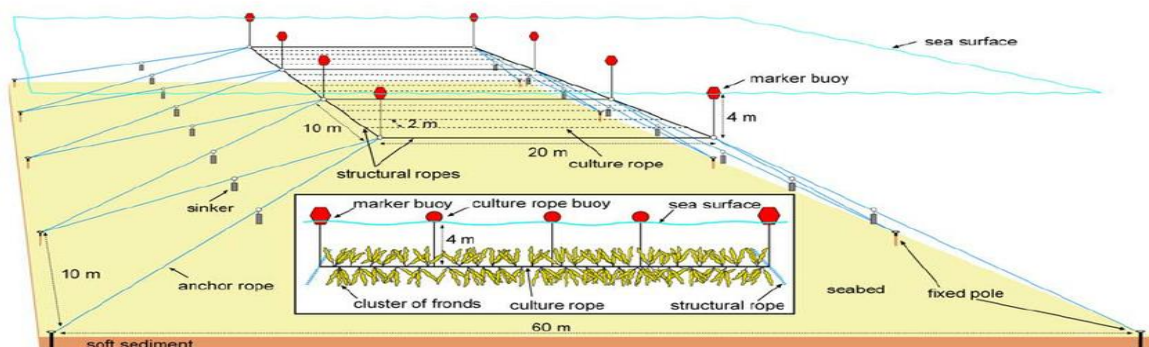


### Bamboo raft method

1. Bamboo raft method are used in bamboo poles as floats and weights as anchors.
2. In this method seeded lines may or may not have floats.

### Raft method

1. In the raft method uses bamboo poles as floats and iron stakes as anchors.
2. Styrofoam balls to keep seaweeds at desired level.
3. In the raft method water depth of 10-20m.
4. It is used in wide channels and open bodies of water.
5. Apply in moderately strong waves and water current

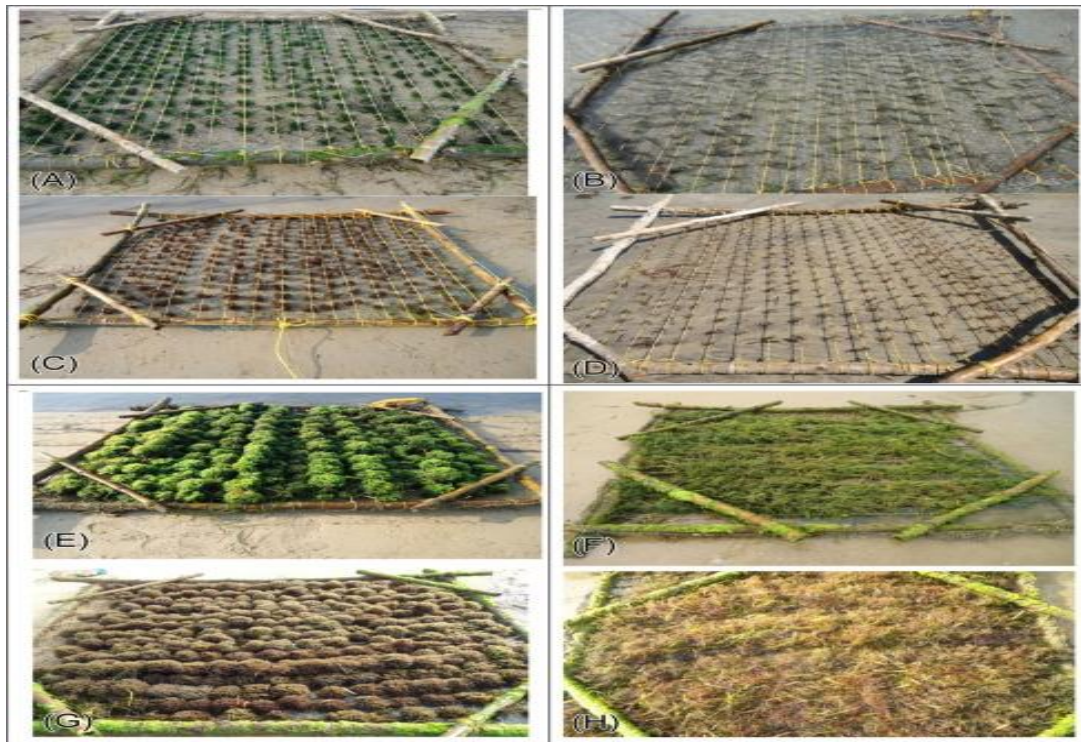


### Spider web method

1. Spider web method similiar to raft method without bamboo.

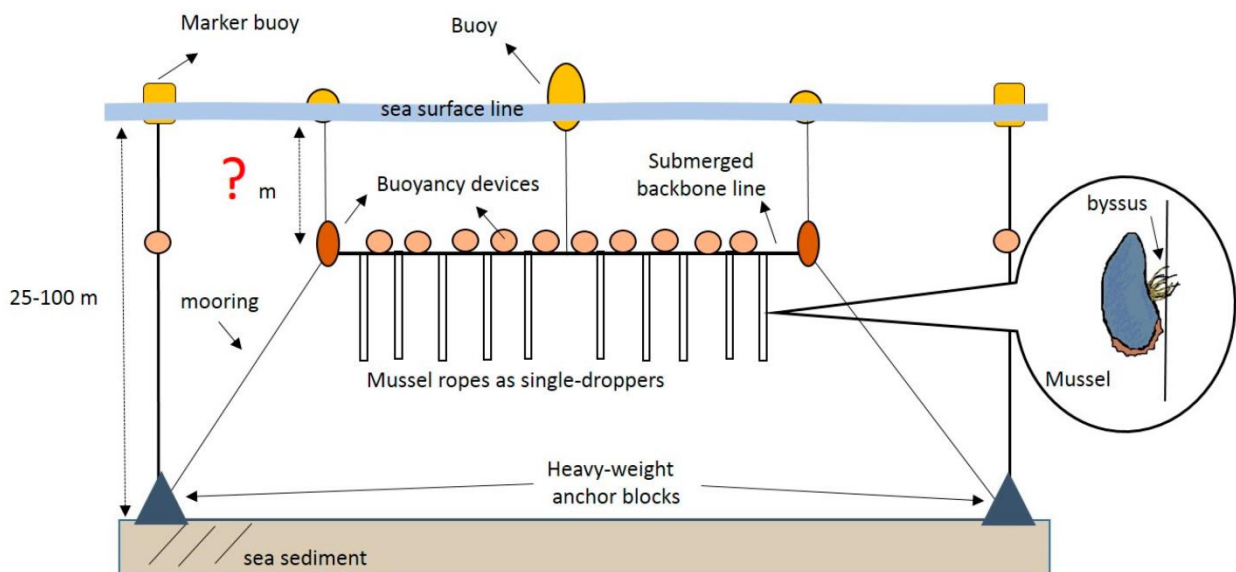


2. It is used in open bodies of water with depth of 10-20 meter.
3. It is mainly used in moderately strong waves and water current.
4. It is having to high yield and greater flexibility.



### Lantay method

1. The lantay method used bamboo as a frames.
2. In this method used net to cover the whole structure.
3. It is used in nursery and seed holding purposes.
4. It is not used in commercial purposes.



### Benefits of seaweed:

1. Seaweed has to contain iodine and tyrosine, which support thyroid function.
2. Seaweeds are good source of vitamins and minerals.

3. Seaweeds are also act antioxidant.
4. Seaweed provides fiber and polysaccharides that can support gut health.
5. It may help lose weight by delaying hunger and reducing weight.
6. It may help with diabetes by reducing blood sugar.
7. Phycocolloids: gelatinous chemicals produced by seaweeds that are used in food production and product manufacturing.
8. Seaweed acts as stabilizer and emulsifier.
9. Seaweed have to medical use many people swear by the efficacy of seaweed baths in the treatment of rheumatism and arthritis.

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