Concepts and Definitions on Seaweed Production

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Seaweeds area any of a large number of marine benthic algae. They are macroscopic and multicelular, in contrast with most other algae. They are often found in the seashore biome.

Major species:

1. *Eucheuma*
2. *Kappaphycus*
3. *Gracilaria*
4. *Caulerpa*
5. *Codium*
6. *Gelidiela acerosa*
7. *Halymenia*
8. *Porphyra*
9. *Sargassum spp.*

Eucheuma cottonii (guso)

branch showing its cylindrical axis with branches that are commonly enlarged maximally just beyond a basal curvature toward the light.

Division: Rhodophyta (red algae)

Uses: source of carageenan; human food

More than 90% of the commercially planted seaweeds in Sitangkai Tawi-Tawi are of this variety primarily because it has several applications and thereby commands a very high demand in the world market. Moreover, the coastal waters of the islands in the Philippines are suited for growing Eucheuma Cottonii.

In fact , Philippine dominates the world market with this variety.

Eucheuma denticulatum (spinosum)

branch showing the cylindrical axis with rings of spinous primary initially-determinate branches, some of which have become indeterminate but are yet small.

Division: Rhodophyta (red algae)

Uses:

source of carrageenan; human food

Kappaphycus alvarezii var tambalang

- Discovered in 1973 by a Sitangkai farmer and named in honor of Mr. Vicente Alvarez, a biologist of the Bureau of Fisheries and Aquatic Resources who became the first Manager of Marine Colloids and Mr. Tambalang, the true pioneers of cottonii cultivation.

Division: Rhodophyta (red algae)

Description:

Algae tough, fleshy, firm; up to 2 m tall. Thalli coarse, with axes and branches 1 - 2 cm diameter; heavy, with major axes relatively straight, lacking secondary branches near apices. Frequently and irregularly branched, most branches primary, secondary branches intercalated between primary branches or mostly lacking. Shiny green to yellow orange.

Uses:

For commercial cultivation. It is a major producer of kappa-carrageenan, which is used for medicinal purposes and as a homogenizer in milk products, toothpaste and jellies.

Gracilaria spp.

Genus: Gracilaria

Varierty:

G. coronopifolia. - source of agar; human food

G. Eucheumoides - source of agar; human food

G. Gigas - source of agar

G. salicornia - source of agar

G. verrucosa - source of agar; human food

Division: Rhodophyta (red algae)

Description:

- Erect thallus arise from a small discoid holdfast. The thalli are generally cylindrical, depressed or blade-shaped, with lateral, alternate or subdichotomous branches. Sometimes several different branches may be found in one plant. The external appearance of thalli may be used to identify species. The style of the apex and the base of branches are different with species.

Caulerpa lentillifera

Genus: Caulerpa (lato)

Variety:

C. lentillifera - human food

C. peltata - human food

C. racemosa - human food

Division: Chlorophyta (green algae)

- They are unusual because they consist of only one cell with many nuclei, making them among the biggest single cells in the world.
- Also called as sea grapes or green caviar

Description:

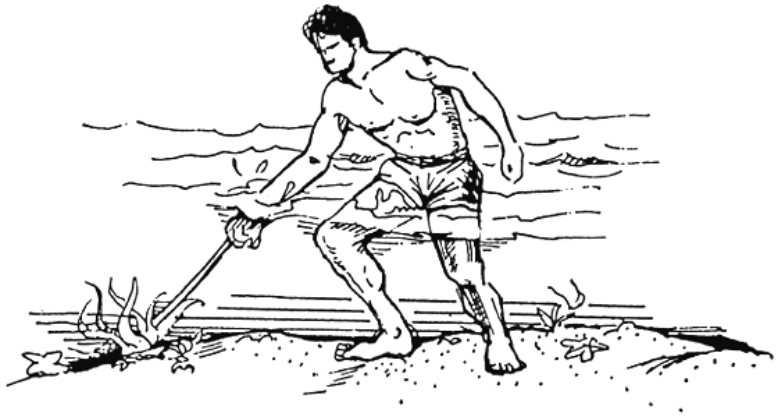
Caulerpa is a fast growing attractive algae of which there are many variations with leaves that look like ferns, grapes, etc. Not surprisingly, the different types are named after the look of their leaves. All grow rapidly by sending out runners which are held in place by root like holdfasts.

Seaweed Production

1. Farm preparation

   a. Cutting of all grasses and removal of all obstacles in the area.

   b. Removal of the rocks, stones, starfishes, sea urchins and other predators.



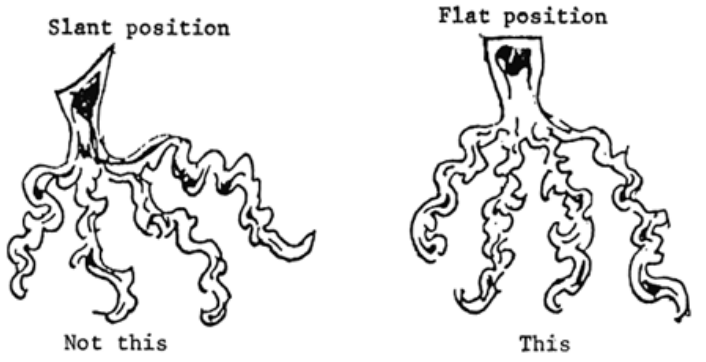
   c. Construction of farm house and drying platform in selected farm site (optional).

2. Seedlings selection and preparation

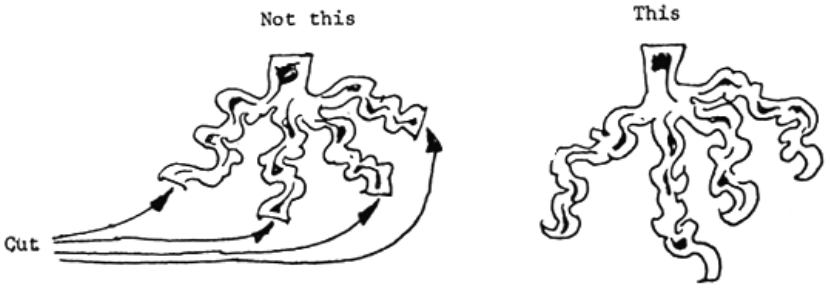
Healthy strong branches should be chosen. Good seedlings are usually found at the center and near the tip of a healthy plant. The ways to prepare the seedlings are:

a. Use a clean and sharp stainless knife to cut the branches in order to leave a smooth surface.

b. Never cut the branch in a slant position



c. Do not produce seedlings with any cuts at its branches

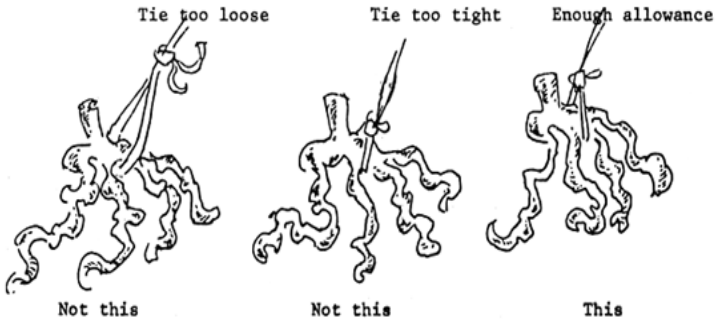


3. Tying of seedlings

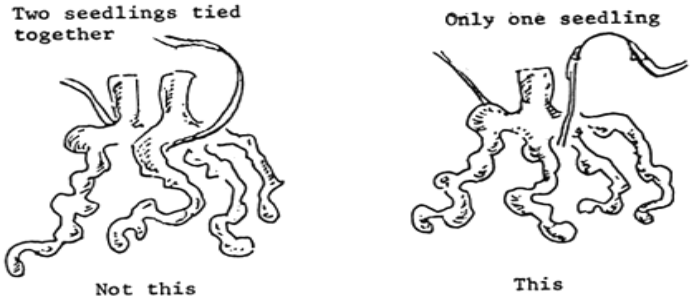
Use of soft, flexible, not easily shredded and medium-sized plastic. Tying length will be 6 inches (15.3 cm). The following are the ways to tie seedlings:

a. Seedlings should be tied at the strongest point where they are well-balanced for free movement. Avoid breakage of the branches.

b. Tie the seedlings properly with enough allowance for growth



c. Do not tie two or more seedlings together.

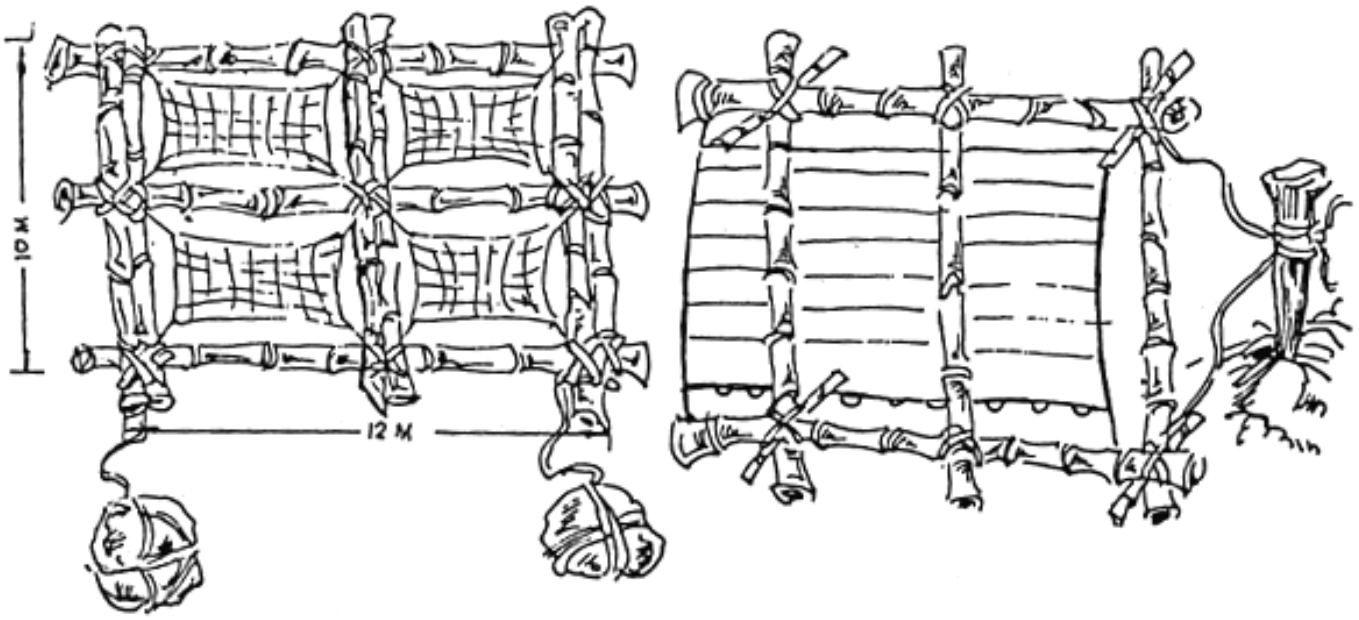


4. Planting

Before planting, clean the seedlings thoroughly by removing dirt, epiphytes and other clinging materials and rinse with sea water. Seedlings are tied to each intersection of the net.

4.1 Method Planting

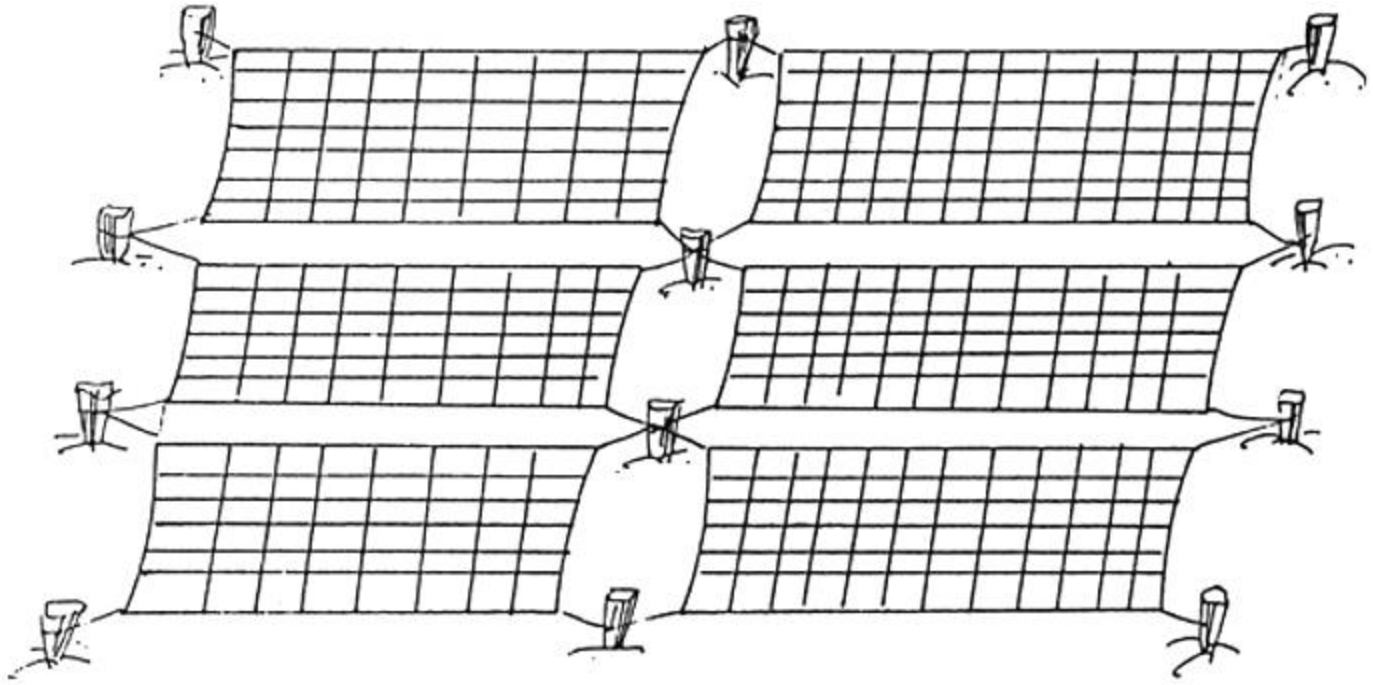
4.1.1 Floating bamboo method



Tie each corner of a 2.5 × 5 m net to a large coral with an evelon cord so that the net is stretched tightly

Method Planting (contn…)

4.1.2 Mangrove stakes and nets



Install mangrove stake bipod and tripod. Attach net to the bipods and tripods. Make sure all nets are stretched tightly and are at least 2 feet above the bottom but below the lowest tide level.

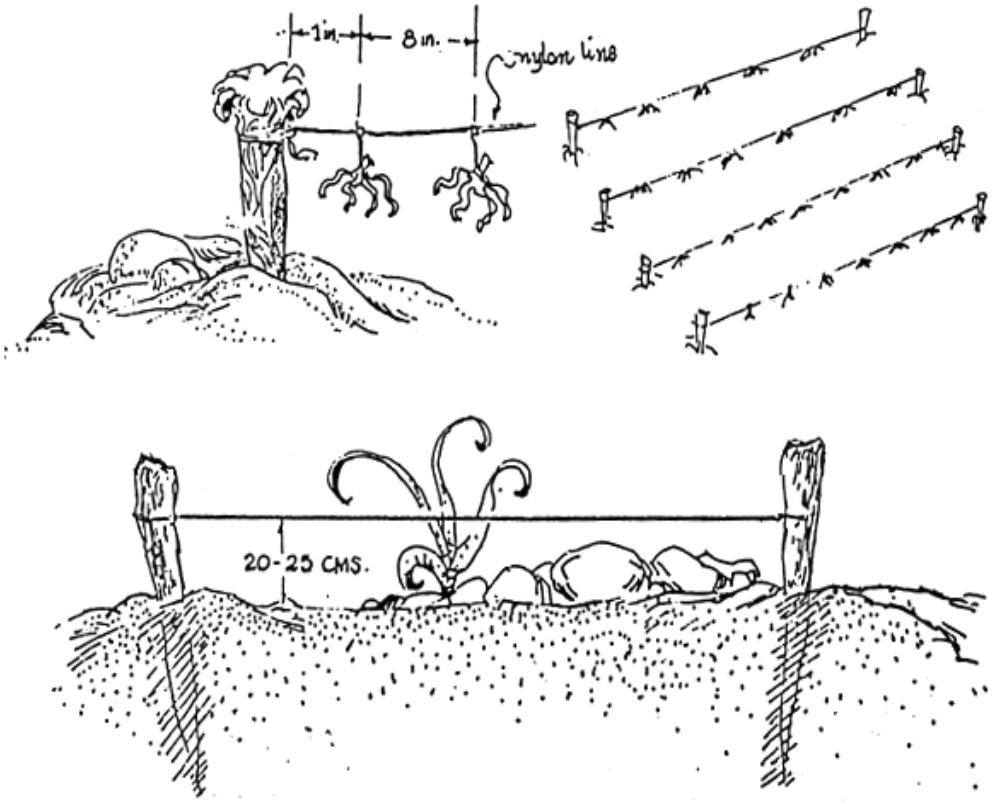
Method Planting (contn…)

4.2.1 Bottom monoline method

a. Using a mallet, drive wooden posts to the bottom one meter apart in rows and 10 meters between rows.

b. Tie nylon monolines at both ends of the posts, parallel to each other.

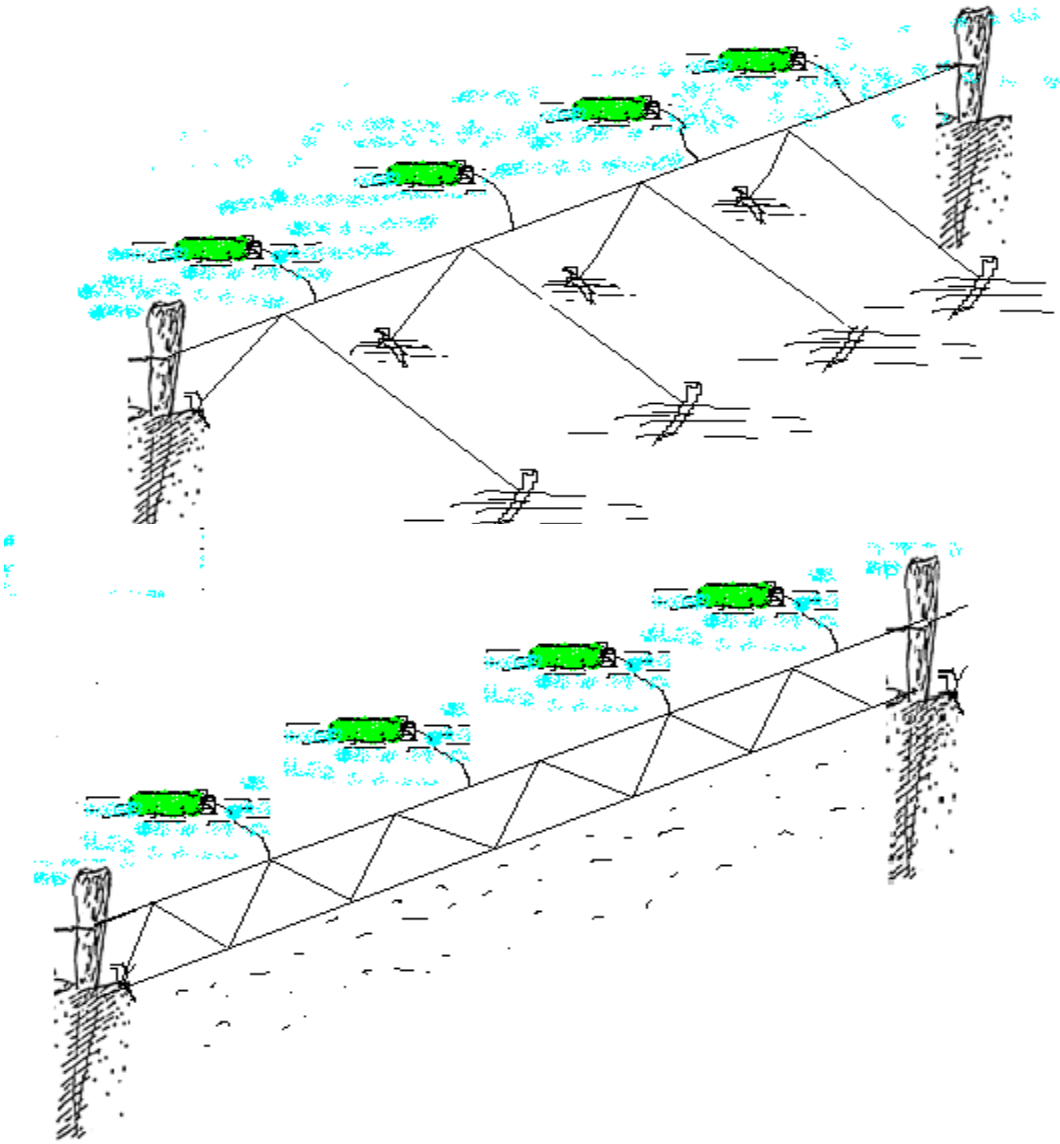
c. The distance of the line from the bottom should be about 20–25 cm (8–10 inches).



Method Planting (contn…)

4.2.2 Triagular method

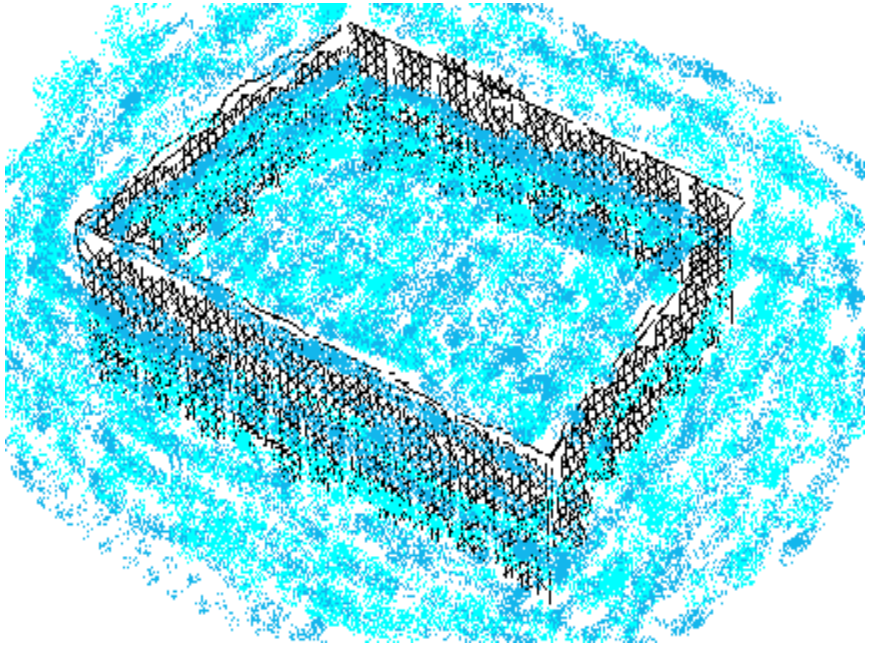
This method withstand strong winds, big waves and other negative condition. As new technology in seaweed farming, it is most efficient in terms of net profit compared with other methods.



Method Planting (contn…)

4.3 Lantay method or floating cage

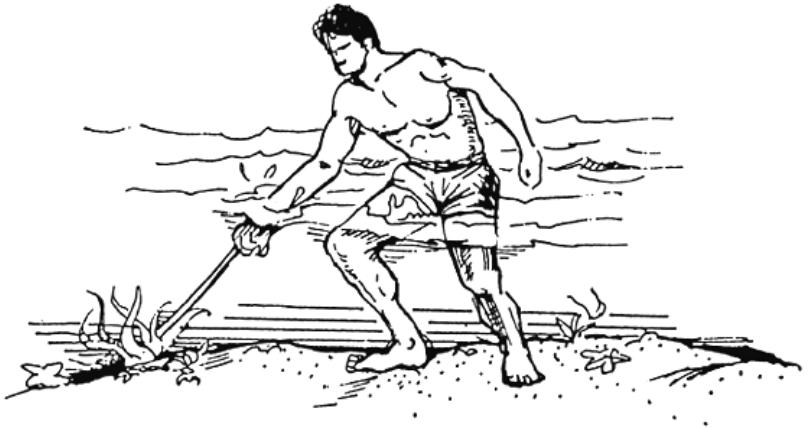
It uses a square floating bed enclosed in a net where seaweed plantlets or propagules are scattered freely to grow. The net protects the plant against the strong waves and siganids.



Seaweed Production

5. Care of crops or maintenance

Includes removal of sea urchins, obstacles and other predators;



Removal of loose and unhealthy plants and replanting

6. Harvesting

Seaweeds are harvestable when they reach the weight between 750–850 g. Harvesting can also be made a part of the maintenance procedure by pruning the harvestable plants and allowing them to regenerate.

Kappaphycus alvarezii (cottonii)

Eucheuma denticulatum (spinosum)

Seaweed Production

7. Hauling

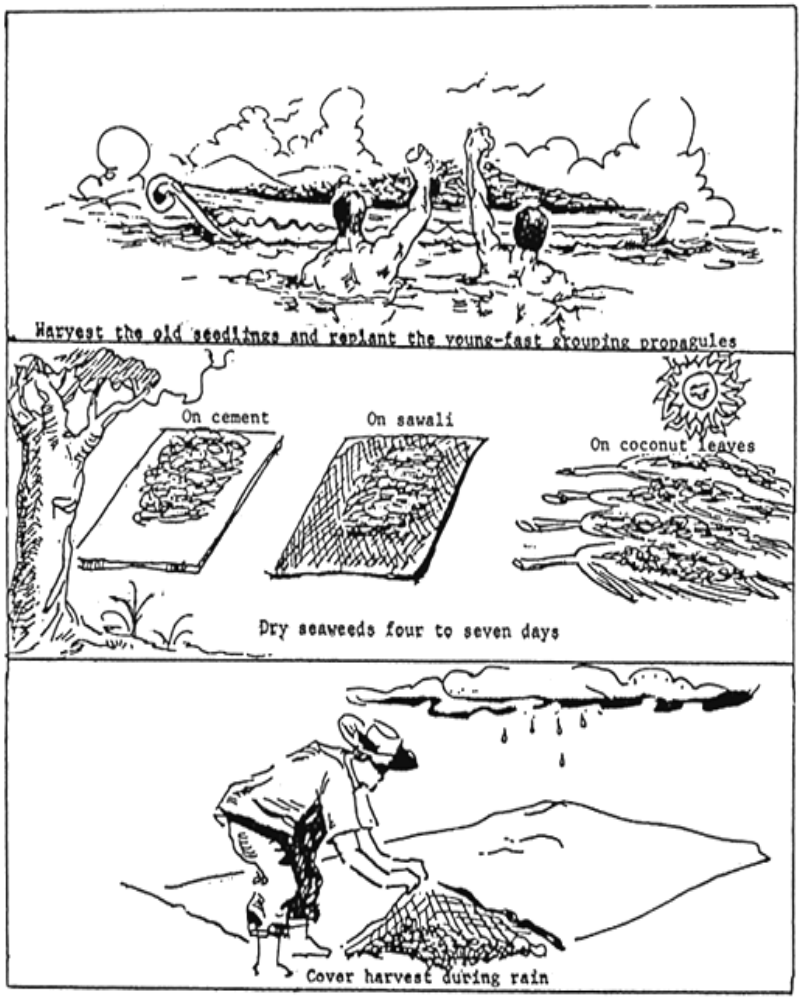
hauling of seaweed from farm to drying area.

8. Drying

Spread the harvested seaweed thinly over the prepared drying site of platform.

Use coconut palm as flooring when drying in land. Never dry the seaweed directly on and or soil to avoid contamination.

In a drying platform, the approximate amount of wet seaweed should be about 2 1bs/sq ft.



DATA ITEM FOR SEAWEED PRODUCTION			
ITEM	TOTAL		
	Quantity	Unit	Value (P)
Total Area		ha	
Total Production			
All Species		kg	
Major Species		kg	
Other Species		kg	
Number of samples			

DATA ITEM FOR SEAWEED PRODUCTION			
ITEM	TOTAL		
	Quantity	Unit	Value (P)
CASH COSTS			
Stocking materials			
Seedlings/propagules			
Hired Labor		manday	
Land tax			
Rentals:			
Machine			
Tools and equipment			
Other rentals b/			
Salaries of permanent employees			
Wage of caretaker			
Fuel and oil			
Transport cost of inputs			
License/permit			
Electricity			
Interest payment on loan			
Food expense			
Repairs/improvements			
Others c/			

DATA ITEM FOR SEAWEED PRODUCTION			
ITEM	TOTAL		
	Quantity	Unit	Value (P)
NON-CASH COSTS			
Harvesters' share		kg	
Caretakers' share		kg	
Other laborers' share		kg	
Administrator's share		kg	
Lease rental		kg	
Rice allowance of overseer		kg	
IMPUTED COSTS			
Operator labor		manday	
Family labor		manday	
Exchange labor		manday	
Depreciation			
Interest on operating capital			
TOTAL COSTS			

Packing/packaging and marketing

Start of the Marketing Cost Structure

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