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Aquaculture Department, Southeast Asian Fisheries Development Center

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Aquaculture Department
SOUTHEAST ASIAN FISHERIES
DEVELOPMENT CENTER

The Farming of *Kappaphycus*

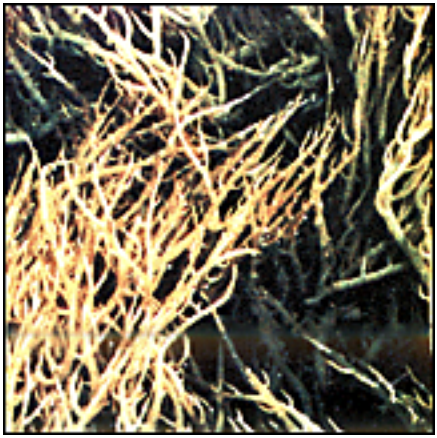
What is a *Kappaphycus*?

Kappaphycus is a red seaweed commonly called 'guzo' or 'tambalang.' There are three common strains which are appropriate for farming. These are brown, green and red strains. *Kappaphycus* is naturally found below 0 tide line on sandy-rocky to corally substrate in the tropical intertidal and subtidal waters. Farming of this seaweed started in southern Mindanao in the mid '60s, and has expanded to other parts of the Philippines and to other countries like Indonesia, Fiji, Micronesia, Vietnam, China, and South Africa.

Kappaphycus forms 80% of the Philippine seaweed export and is one of the three marine-based export winners of the country. It is the raw material for the manufacture of kappa carrageenan which is an important food (e.g., jellies, ice cream, sauce, ham, sausage, chocolate drinks, etc.) and non-food (e.g., personal care, cosmetics and pharmaceuticals) additive.

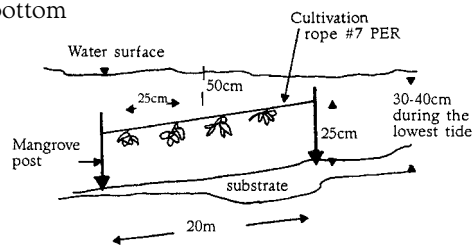
The following environmental factors are required:

Substrate	– sand-rocky to corally
Light	– full sunlight
Temperature	– 29-34°C
Salinity	– >32 ppt
Nutrients	– nitrogen & phosphorus
pH	– 7-9
Quality of water	– clean. clear & pollution-free
Water current	– 20-40 m/min

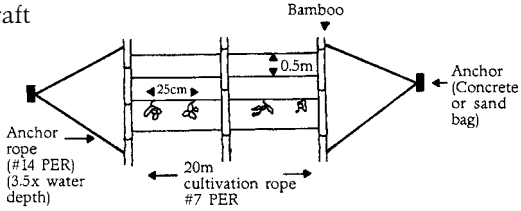


Culture Techniques

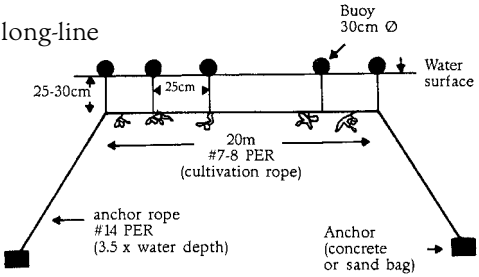
1. Fixed off-bottom



2. Floating raft



3. Hanging long-line



Initial Investment (PhP/ha)

The planter is assumed to own a boat (either motorized or sailboat) and labor for the preparation and planting comes from the family. One cultivation line is 20 m long. If fund is insufficient, a fisherman may start ¼ to ½ ha and may expand later.

Materials	Fixed off-bottom*		Hanging long line**	
seedlings (150g each)	12t	24,000	12t	24,000
polyethylene rope, #7	100 rolls	8,500	100 rolls	8,500
polyethylene rope, #4	–	–	2 rolls	80
soft 'tie-tie'	20 rolls	700	20 rolls	700
mangrove post (½m long)	3,000 pcs	1,500	1,000 pcs	500
styrofoam float (8" diam)	–	–	3,000 pcs	24,000
bull hammer	2 pcs	700	2 pcs	700
Total		**35,400**		**58,480**

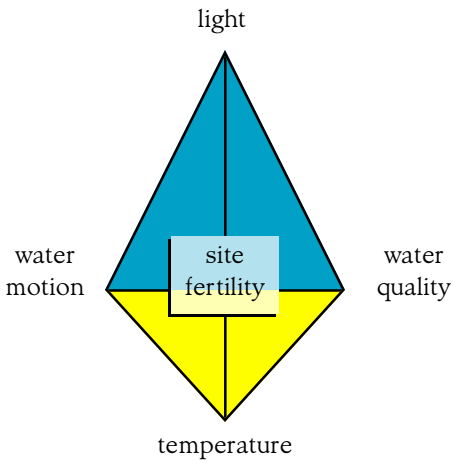
* at 0.5m interval between 2 lines (1000 lines at 20m each = 1ha)
** at 1.0m interval between 2 lines (500 lines at 20m each = 1ha)

Crop Quality Management

growth period	– 60 days
harvesting*	– total
drying time	– 2-3 sunny days
drying technique	– hanging, spreading
drying device	– fish net, bamboo slats
moisture content	– 37-39%
impurities	– 5%
storage	– well ventilated place, stored in sacks

*¼ of the total harvest is allotted to seeding preparation for the next culture period

Physical determinants:



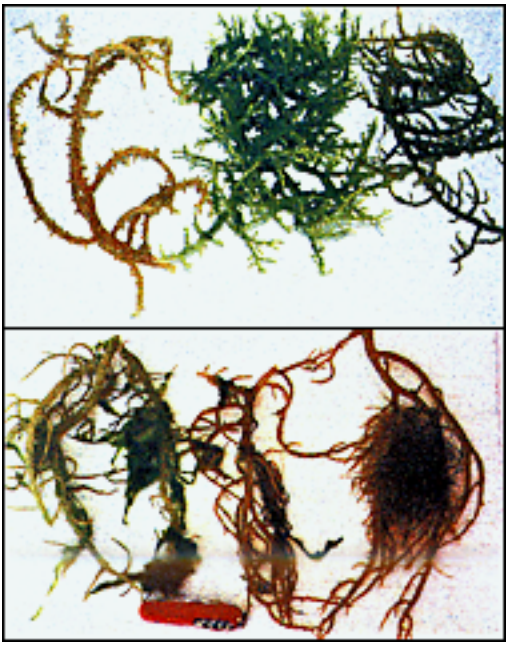
The interrelationship of light, water quality, water motion, and temperature determines the fertility of the farm site. However, water motion becomes the most critical factor in farm productivity as farming progresses.

Human and other biological determinants for farming:

- dedication of the fisherfolk
- application of sound agronomic practices
- biological factors – control of pests as in:

grazing – is the nibbling of herbivores like siganid, acanthurid, sea urchin and starfish on tips of branches; this is common in reef areas, limestone substrate and seagrass beds.

epiphytism – is the attachment of undesirable seaweeds to the cultured species which are common among tropical seaweeds which usually occurs at the onset of monsoon brought by change in water temperature, tradewind and water motion; drift seaweeds caused by limited substrate contribute also to epiphytism which compete for space, nutrient and sunlight.



Health conditions of the seaweed:

pitting – occurs at the cortical layer, a cavity is formed mainly due to mechanical wound; regenerative

tip darkening – is due to senescence (old age) and cold water which result to loss of color and consequently disintegration. However, it has regenerative capacity

tip discoloration – is due to aerial exposure and warm water; tip softening usually follows

slowing of growth – this is mainly due to (1) appearance of epiphytes, (2) pigment loss, (3) tissue softening, (4) general decay, (5) poor season, (6) poor place of farming

die-off – is initially manifested by discoloration which is mainly brought by freshwater run-off

ice-ice – is a phenomenon caused by low salinity, temperature, and light intensity. When the plant is under stress, it exudes an organic substance which is mucilaginous in nature, and the presence of opportunistic bacteria in the water column aggravates the whitening of the branches or the so-called 'ice-ice' disease.

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