

2017

Seaweed Kappaphycus farming

Aquaculture Department, Southeast Asian Fisheries Development Center

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Is *Kappaphycus* FARMING profitable?

Technical Assumptions for Multiple longline method

Project duration (years)	5
Culture period (days)	50
Number of crops per year	5
Farm area (m ²)	5,000
Space between lines (m)	1
Length of a cultivation line (m)	30
Number of lines per 1/2 ha	150
Number of knots/line	120
Total number of knots in 1/2 ha	18,000
Initial weight of seedlings/knot (g)	50
Initial total weight (kg) of seedlings	900
Cost of planting materials (PhP/kg)	20
Growth rate (percent/day)	5.0
Expected weight of harvest (kg freshweight/crop)	10,964
Expected weight of harvest (kg freshweight/year)	54,821
Farmgate price of dried seaweeds (PhP/kg)	35
Initial weight of seedlings for four croppings (kg)	3,600
Fresh to dry weight ratio (kg)	7:1

Cost and returns analysis (PhP per year)

Investment cost	72,950
Revenue	328,105
Total variable cost	101,050
Total fixed cost	30,014
Total cost	131,064

Economic indicators

Net income (PhP)	197,041
Return on investment (%)	270
Payback period (years)	0.35
Break-even price (PhP/kg)	16.74
Break-even production (kg/crop)	3,745

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(L-R) AEM 32 The farming of the seaweed *Kappaphycus* (2000), AEM 32 (Filipino Edition) Pag-aalaga ng halamang-dagat na *Kappaphycus* (2007), Seaweeds of Panay (2006, 2nd edition). Check out our online bookstore for more titles: www.seafdec.org.ph/bookstore

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SEAWEED

Kappaphycus Farming



Southeast Asian Fisheries Development Center
 AQUACULTURE DEPARTMENT
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Why *Kappaphycus*?

Kappaphycus, a red seaweed locally known as 'guso' or 'tambalang,' constitutes eighty percent of the Philippines' seaweed export



Two varieties of *Kappaphycus* species: Green (*Kappaphycus striatus*) and brown (*Kappaphycus alvarezii*)

(BAS 2015). It is also one of the top three marine-based export of the country. As an aquaculture enterprise, seaweed farming has been proven to be a top foreign exchange earner. Likewise, it can provide alternative livelihood for coastal farmers. *Kappaphycus* may be eaten but it is predominantly used as source of carrageenan which has a wide range of uses as an emulsifier, binder, gelling and thickening agent in food and non-food products.

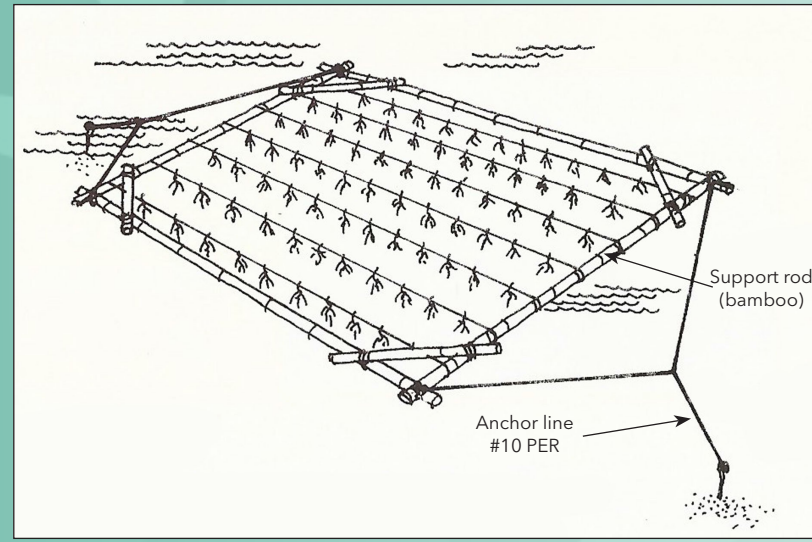
How to culture *Kappaphycus*?

CULTURE METHODS

There are two methods for deep-sea culture of *Kappaphycus*:

Raft method (single) – one unit is composed of four bamboos arranged in a square shape.

1. Install 10 m x 10 m bamboo raft at the farming site.
2. Tie seedlings (50 g/point) to polyethylene rope (PER) #8 using strawlace while at the shore. Distance between seedlings is 25 cm.
3. Tie the rope to the bamboo raft.



Raft long line (single)

Hanging long line – used in exposed deep-water areas (5-10 m deep) with moderate to strong water movement. However, this method needs a good support system by installing concrete anchors.

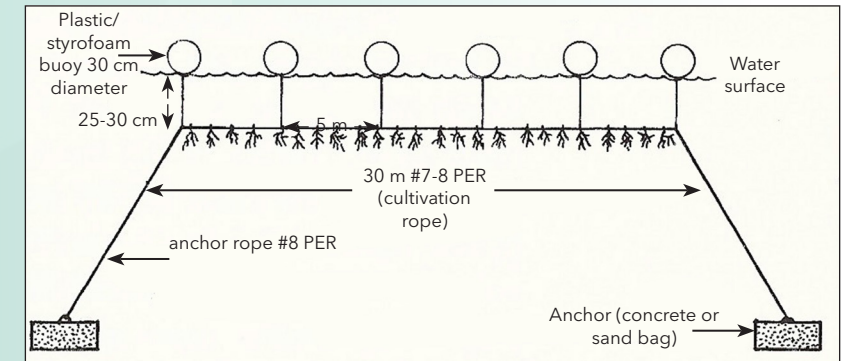
A. Single hanging long line

1. Tie seedlings (50 g/point) to 100 m-long PER (#8). Distance between seedlings is 25 cm.
2. Anchor one cultivation line on both ends with bamboo stake.



B. Multiple hanging long line (1/2 ha = 4,500 m)

1. Follow the same procedure in the preparation of seedlings for single hanging long line.
2. Arrange both ends of several cultivation lines in parallel rows.
3. Tie to PER (#8) and anchor to the bottom with a concrete block.



Hanging long line

HARVESTING

Seaweeds are harvested for drying after 50 days of culture. They can be harvested in two ways:

1. Untie the seaweeds from the cultivation rope.
2. Bring bamboo raft to the shoreline and untie seaweeds.

POST-HARVEST MANAGEMENT

1. Clean the harvested seaweeds and remove:
 - a. non-*Kappaphycus* seaweeds
 - b. silt and sand
 - c. other foreign particles
2. Set aside planting materials for next cropping (e.g. 1/2 ha = 900 kgs).
3. Dry remaining seaweeds in hanging line or spreading out on the ground with drying mats or platforms.
4. Store dried seaweeds in a clean, cool, dry and well-ventilated place. For bigger volume and export purposes, store seaweeds by baling (stocking of seaweeds in sacks).

