1995

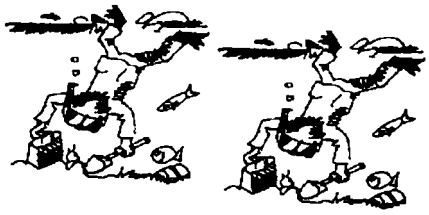
Farming seaweeds at SEAFDEC/AQD

Aquaculture Department, Southeast Asian Fisheries Development Center

Southeast Asian Fisheries Development Center, Aquaculture Department (1995). Farming seaweeds at SEAFDEC/AQD. Aqua Farm News, 13(5), 9-10.

http://hdl.handle.net/10862/2630

STEP 3
SOURCE MATERIALS
Obtain enough material to isolate and characterize active compound(s)



Farming seaweeds at SEAFDEC/AQD

At the SEAFDEC Aquaculture Department in the Philippines, a few practices have been established or documented for seaweeds.

Cage culture of Kappaphycus

The seaweed *Kappaphycus alvarezii* var. *tambalang* can be cultivated in 3 x 3 m bamboo rafts placed inside a floating net cage stocked with sea bass (a carnivore). This type of integrated culture makes better use of marine resources, reduces the impacts of more intensive aquaculture, minimizes grazing, and maximizes production.

Individual cuttings weighing 150-200 grams are tied to a 3-m nylon line (#110) and spaced 20 cm apart. Nine lines are tied 30 cm apart to the raft. The raft is placed inside a 4 x 4 m floating net cage containing sea bass broodstock. It is kept submerged with stone sinkers 25-30 cm below the surface.

Kappaphycus is left to grow for 30 days. In culture trials conducted by SEAFDEC from January to May 1990, seaweed grew at 3-7% per day. Water temperature was about 28-30°C, salinity 33-35 ppt, and pH 8.05-8.35. Epiphytism was limited to the bamboo raft and to the unplanted monoline cord.

Production varied from 500 to 2,000 grams per line meter or a monthly production of 25 tons per hectare (fresh) or 7.5 tons (dry). This is comparable to commercial producion.

Farming Gracilaria

Seaweed growers in Panay island (west central part of the country) use the "rice planting" method. *Gracilaria* is cultivated in brackishwater ponds or in canals. The area cultivated ranged from 0.5 to 5 hectares for ponds and 825 to 7055 m^2 for canals. Farmers use local stocks as seedstocks. For planting, they use thalli that measure 15-20 cm or weigh 15-20 g. A thalli bunch is staked into the pond or canal (substrate is usually sandy-muddy). The bunches are spaced 10-15 cm apart and left to grow for 15-20 days in canals or for 45-60 days in ponds. *Gracilaria* is harvested in 6-12 months. Farmers usually start culture in June-July although some opt to start it in November-December.

Farmers do not harvest all the seaweed. About one-third is left to serve as seedstock for the next cultivation period. Farmers who plant in canals have 16-24 croppings in one farming period; pond growers, 12-16. The harvest is sun-dried for one day using old fish nets and bamboo slats. Dried seaweeds are packed in sacks (1 sack = 25 kilograms) and stored in warehouses for 2-3 months to accumulate a bigger volume and await a higher price.

Fresh harvest is sold to traders or in local public markets at ₱3-4 per kg. Dried ones is sold to traders at ₱7 per kg. Traders in turn sell them to exporters or processors. Canal farming yields 7-14 tons of dried seaweeds per hectare per year or an average of 1.3 tons per ha per crop. Pond farming produces 3-4 tons of dried seaweeds per ha per year or an average 450 kg per ha per crop.

Farmers initially invest ₱4,600 for a 1-ha canal or ₱16,000 for a 1-ha pond. This covers pond development, drying platform, dug-out, non-motorized banca, and working capital for the first cropping. Investment for succeeding crops is about ₱1,450 per hectare per crop for canal culture and ₱1,500 for ponds. This includes family labor, caretaker's salary, hired labor, marketing expenses, land tax, permit, and depreciation.

Farmers get a higher income from canal culture (₱41,800 for 8 croppings) than from ponds (₱24,350). Some of their problems include low ☞

market price, predation, presence of associated algae, theft, no accessible market outlet, and poor farming technology.

Gathering seaweeds

A survey was conducted by SEAFDEC in 12 coastal municipalities of western Visayas to determine the seaweed gathering practices of fishermen. There were 83 gatherers involved in this small-scale industry, who live below the poverty line and who consider it as the number one minor source of income. Only seaweeds of value are gathered in big volume.

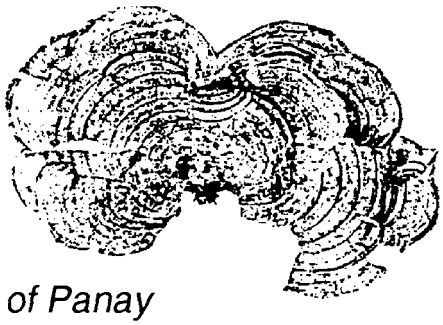
The seaweeds are gathered mostly in sandy-muddy, rocky, and sandy-rocky substrates. Most gatherers use their bare hands although some use tools. There were approximately 114 tons per year of seaweeds harvested from natural stock with a market value of ₱415,000. The harvest are as follows:

- 99.5 tons of the agarophytes *Gelidiella, Gracilaria,* and *Graciliariopsis*
- 10 tons of the carrageenophytes *Eucheuma* and *Kappaphycus*
- 10 tons of the table vegetable *Caulerpa*

Seaweeds gathered measure <50 to 200 cm in length. Gatherers pick the seaweeds in March, November, and April. Collection is daily, 3x, 2x, and once a week during low tide. Collection lasts 3-4 hours a day. Harvest seaweeds are sun-dried by spreading on the ground or sand, cement, bamboo slats, old fish nets, and dry leaves. Drying time is 1-2 days for *Gracilaria* and *Gelidiella* and three days for *Kappaphycus* and *Eucheuma*.

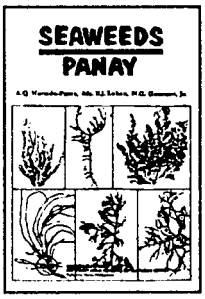
An average maximum income of ₱5,600 per gatherer per season is derived from seaweed gathering.

Excerpted from recently published SEAFDEC studies: (1) AQ Hurtado-Ponce, GPB Samonte, MR Luhan, N Guanzon Jr. 1992. *Gracilaria (Rhodophyta) farming in Panay, Western Visayas, Philippines.* **Aquaculture** 105: 233-240. (2) AQ Hurtado-Ponce. 1992. *Cage culture of Kappaphycus alvarezii var. tambalang (Gigartinales, Rhodophyceae).* **Journal of Applied Phycology** 4: 311-313. (3) AQ Hurtado-Ponce, MR Luhan, N Guanzon Jr. 1992. *Gathering of economically important seaweeds in western Visayas, Philippines.* **The Philippine Scientist** 29: 40-47.



Seaweeds of Panay

The monograph published by SEAFDEC/AQD in1992 lists the species of seaweeds found in Panay and Guimaras Islands in April 1988 to February 1989. Common names, descriptions, habitats, economic importance, and collection sites are given for 100 species of green, brown, and red algae, 41 of which are new records for Panay. (The *Padina minor* illustrated above, for instance, is a good source of algin and is used as fertilizer and fodder.)



Write the Sales/Circulation for a copy of this book. A copy costs ₱40.

Seaweeds in medicine and dentistry

The agar from seaweeds is a good **laxative** and an important component of **hydrogel wound dressing**.

Alginates and alginic compounds can treat **heartburns**, prevent **gastroesophageal reflux**, control **bleeding**, act as **demulcent**, and are used in **obstetrics-gynecology**.

Agar and alginate are used as impression materials in **dentistry** or to fabricate cast inlays, onlays, and crowns.

To follow developments in seaweed research and the seaweed industry, subscribe to **SICEN Newsletter** published twice yearly by the Seaweed Information Center (SICEN) based at the University of the Philippines - Marine Science Institute. SICEN was established through a grant from the International Development Research Centre (IDRC) of Canada. The newsletter on seaweeds was first issued in February 1990; it is edited by Edna G. Fortes. Subscription is free. Write to: SICEN, College of Science, UP Diliman, Quezon City 1101.