

Introduction

Seaweeds are macrobenthic (large and attached) forms of marine algae. They have a simplified, primitive structure compared to higher plants. The vegetative plant body, generally called “thallus”, has no true roots, stems and leaves. They vary in forms. Some are branching, leaf-like or bushy type, club like and featherlike, while some form sponge-like encrustations on hard substrates like rocks, corals and boulders. Seaweeds are generally photosynthetic plants. The three major groups of economic importance are Chlorophyta (green seaweeds), Phaeophyta (brown seaweeds) and Rhodophyta (red seaweeds).

In the Philippines, the different species cultured and collected are *Eucheuma*, *Gracilaria* and *Caulerpa*. The most popular and commercially cultured species is the *Eucheuma cottonii* because it is easy to cultivate and due to its fast growing characteristics and high market price.

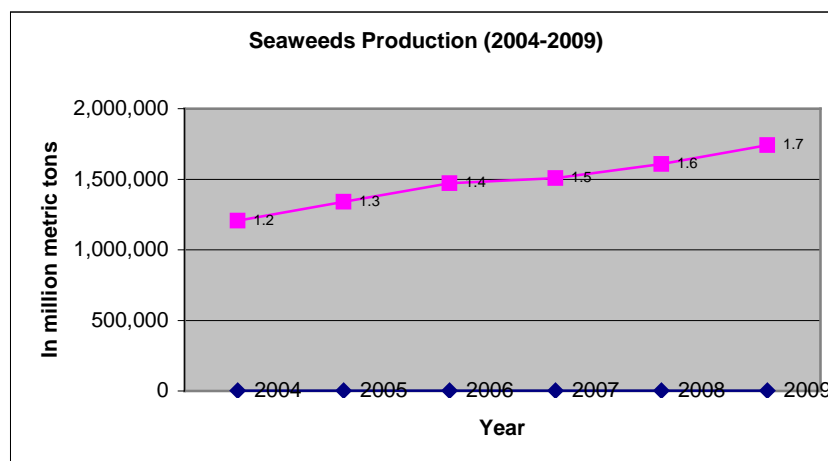
Sixty five percent (65%) of the total production are processed into semi-refined chips/carrageenan, (22%) are processed into refined carrageenan and the remaining (13%) are exported raw (dried)

The economic importance of seaweeds lies on its utilization in food industry, pharmacy and medicine. *Eucheuma* is a source of carrageenan, a natural gum used as additive, binder and emulsifier on food, pharmaceuticals, beverages and cosmetics. The major products derived from seaweeds are agar, algin or sodium alginate and carrageenan.

Market Opportunity

Production

- Remarkable increase in 2004-2009 attributed to high market demand, better price, good weather condition
- Produced 10.1% of the total world production of 14.86 million metric tons in 2007 making the Philippines the world’s 3rd largest producer of seaweeds and aquatic plants (FAO website)
- Contributed about 70.23% to the total 2009 Philippine aquaculture fisheries production



Exports

- Exported either in raw forms (fresh or dried seaweeds) or processed forms (semi refined chips/carrageenan and refined carrageenan)
- Second on export value with 33% less from US\$122.03 million in 2008 to US\$99.44 in 2009 with carrageenan comprising 87% of the total seaweed export value

Increasing Demand

- Growing world demand for carrageenan products at a rate of seven to eight percent yearly with the Philippines, in 2007, producing the largest carrageenan at 34,500 metric tons or 41% of total world production of 84,700 metric tons
- Bright export market with the huge increasing demand from China

Investment Opportunity

- Seaweeds farming or culture
- Seaweeds nurseries and processing

Philippine Advantage**Natural Resources**

- Philippine seaweeds highly diversified among the flora in Asia-Pacific regions with more than 800 species recorded in the Philippines
- Major commercial seaweeds are Eucheuma, Kappaphycus, Gracilaria spp. and Caulerpa lentillifera. Other seaweeds with economic importance include Codium, Gelidiella acerosa, Halymenia, Porphyra and Sargassum spp.

Ideal locations

- Autonomous Region for Muslim Mindanao (ARMM) which registered the highest production among all regions with 683,084.33 metric tons, followed by Region IV-B (MIMAROPA) with 450,937.17 metric tons and Region IX with 225,057.24 metric tons
- Availability of large marine areas potential for seaweed farming in said locations

Industry Potentials

Seaweed farming emerging as an important and major livelihood in the coastal areas, specifically in the Southern Philippines

Major species cultivated where two major culture methods are being used by farmers: Kappaphycus alvarezii and Eucheuma denticulatum

High profit and fast return on investments for seaweed culture

Employment of 100,000 to 200,000 people of which, 90% are seaweed farmers and the rest seaweed processors and traders

Government Support

The Bureau of Fisheries and Aquatic Resources, of the Department of Agriculture provides strategies and interventions to help address the prevailing problems and constraints of the seaweed industry.

These interventions are as follows:

- a) Expand seaweeds farming in traditional areas
- b) Introduce seaweed farming in non-traditional areas
- c) Adopt appropriate technologies to increase productivity
- d) Conduct of R & D
- e) Establish/Rehab and maintain seaweeds nurseries
- f) Improve Post-Harvest techniques
- g) Establish semi-processing plants in strategic areas
- h) Promote seaweed and seaweed products
- i) Facilitate credit availment
- j) Monitor seaweed price

A ¼ hectare seaweed nursery can serve 1½ hectares of raw seaweeds grow-out every cropping. There are 3 croppings per nursery in 12 months. The establishment of 863 seaweeds nurseries can serve 2,232 hectares of grow out farms. The estimated additional production from this intervention would be 144,984 MT (wet) or 20,712 MT (dry), valued at P1.2 billion at P60.00 per kilogram of dried seaweeds.

Existing Industry Players

BOI-registered firms:

Name of Firm	Activity/Product	Plant Location
GLC United Int'l. Inds., Inc.	Processed Seaweeds	Tawi-Tawi
Kerry Food Ingredients (Cebu), Inc.	Processed Seaweeds	Tabok, Mandaue City, Cebu
Marcel Trading Corp.	Processed Seaweeds	San Jose, Gusu, Zamboanga City
Mioka Biosystems Corp.	Carrageenan (Processed Seaweed)	Canlubang Industrial Estate, Calamba City
Philippine Bio Industries, Inc.	Refined Carrageenan	Carmelray Industrial Park, Canlubang, Laguna
Polysaccharide Corporation	Semi-refined Carrageenan	Maasin, Zamboanga City
Rico Philippines Industrial Corp.	Refined Carrageenan	People's Technology Complex, Carmona, Cavite
Shemberg Biotech Corp.	Highly Refined Carrageenan	Carmen, Cebu
Shemberg Marketing Corp.	Processed Seaweeds	Pakna-An, Mandaue City, Cebu
TBK Manufacturing Corp.	Carrageenan Powder	Brgy. Nula-Tula, Hollywood, Tacloban City
Zamboanga Carrageenan Manufacturing Corp.	Semi-refined Carrageenan and Chips	Calle La Virgen De Fatima, Dumagsa, Brgy. Ayala, Zamboanga City
Zamkobe Agro-Industrial Co.	Processed Seaweeds	Labangan, Zamboanga Del Sur

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