



Seaweed Cultivation



Alternate Livelihood for Coastal Fisher Population

Introduction

Seaweeds are macroscopic algae growing in the marine and shallow coastal waters and brackish water habitats. Seaweeds (macro algae) are wonder plants of the sea, the new renewable source of food, energy, chemicals and medicines with manifold nutritional, industrial, biomedical, agriculture and personal care applications. Seaweeds are also termed as the 'Medical Food of the 21st Century' due to usage as laxatives, for making pharmaceutical capsules, in treatment of goiter, cancer, bone-replacement therapy and in cardiovascular surgeries.

The major industrial applications of seaweeds in India are as a source of agar, agarose and carrageenan used in laboratories, pharmaceuticals, cosmetics, cardboard, paper, paint and processed foods. There are 46 seaweed-based industries, 21 for Agar and 25 for Alginate production, but they are not functioning up to their rated capacity, due to short-supply of raw materials.

Seaweed Resources of India

Some 844 species of seaweeds have been reported from Indian seas, their standing stock is estimated to be about 58,715 tonnes (wet weight). Among them, 221 species are commercially important and abundant along the Tamil Nadu and Gujarat coasts and around Lakshadweep and Andaman & Nicobar Islands. Rich seaweed beds occur around Mumbai, Ratnagiri, Goa, Karwar, Varkala, Vizhinjam and Pulicat in Tamil Nadu & Andhra Pradesh and Chilka in Orissa.

Cultivable Species of Seaweed

Red Seaweeds: *Gelidiella acerosa*, *Gracilaria edulis* and *G. dura* are farmed for manufacturing Agar, while *Kappaphycus alvarezii* is farmed for manufacturing Carrageenan; Brown Seaweeds: *Sargassum wightii* and *Turbinaria conoides* are farmed for manufacturing Alginates. Seaweed cultivation is a highly remunerative activity involving simple, low cost, low maintenance technology with short grow-out cycle.



Seed Material

Seed stock of seaweeds is traditionally collected from natural waters along the southeastern coast of Tamil Nadu. But, continuous, indiscriminate, and unorganized harvesting has resulted in depletion of natural resources.

Aim & Objectives

- Creation of livelihood opportunities for coastal populations under Blue Revolution Scheme.
- Provide alternate income source for fishers, especially during fishing ban period.
- Meet the ever increasing industrial demand for manufacture of Agar, Agarose, Carrageenan and Alginates from Seaweeds.
- Mass production of seed material for commercialization of the seaweed culture and conserving natural resources.

Beneficiaries

Coastal fisher-families, especially fisher-women, their societies/ SHGs, and farmers/ entrepreneurs.

Project Location & Implementation

- Seaweed cultivation would be undertaken in shallow coastal waters of maritime States, wherein Bamboo-rafts or Tube-nets would be held in clusters.
- CSIR-Central Salt Marine and Chemicals Research Institute (CSMCRI), Gujarat & Mandapam Regional Centre, Tamil Nadu would be the Technology Partner.
- Department of Fisheries of coastal States/ UTs would be the Implementing Agency.
- National Fisheries Development Board, Hyderabad, would provide financial assistance.

Probable Unit Cost & Pattern of Assistance

Component	Cost/ Unit
Cost of Bamboo-Raft (3 m × 3 m) or Tube-Net, each, and Inputs	Rs. 1000
No. of Bamboo-Rafts or Tube-Nets per Cluster (for 3 beneficiaries)	40 nos.
Crop Duration per Cycle	45 days
Training & Skill Development: 3 days, 50 persons per batch	Rs. 1.25 lakh

Category	NFDB Share	State/UT & Beneficiary Share
Central Govt. Institution	100%	---
State Govt. Institution	50%	50%
SC/ST/Woman (UT)	60%	40%
SC/ST/Woman (State)	36%	64%
General Category (UT)	40%	60%
General Category (State)	24%	76%

Estimated Project Costs & Returns

Item	Amount/ Quantity
Setup Cost: Bamboo Raft (3 x 3 m) & Inputs per Raft	Rs. 1,000
Setup Cost per Cluster of 40 Rafts	Rs. 40,000
Crop Duration (one Cycle)	45 days
Seaweed Yield/Cluster/45 days	8,000 kg
Estimated Returns/Cluster/Cycle (@ Rs. 10/kg Seaweed)	Rs. 80,000
Estimated Costs/Cluster/Cycle	Rs. 40,000
Net Returns/Cluster/Cycle	Rs. 40,000

Expected Outcome

- Mass production of Spores: An approach to vigorous seed development for commercial farming of *Gracilaria edulis* by CSIR-CSMCRI MARS, Mandapam, Tamil Nadu.
- Farming of red seaweed *Gracilaria dura* on Gujarat Coast for promoting inclusive economic growth in coastal rural settings by CSIR-CSMCRI, Gujarat through participation of coastal fisher population.
- Large-scale cultivation of commercially important seaweeds in the coastal waters of maritime States would fill the demand-supply gap of Agar and Alginate producing industry in the country.



Contact for further information:

National Fisheries Development Board (NFDB)

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