



National Fisheries Development Board

Guidelines for Seaweed Cultivation

1.0 Introduction

Seaweed cultivation, as a diversification activity in mariculture, has tremendous potential all along the Indian coast. Seaweeds are rich in vitamins and minerals and are consumed as food in various parts of the world and used for the production of phytochemicals, viz., agar, carrageenan and alginate, which are widely employed as gelling, stabilizing and thickening agents in several industries of food, confectionery, pharmaceutical, dairy, textile, paper, paint, etc.

In India, seaweeds are used as raw materials for the production of agar, alginate and liquid seaweed fertilizer (LSF). There are about 20 agar industries, 10 algin industries and a few LSF industries situated at different places in the maritime states of Tamil Nadu, Karnataka, Andhra Pradesh and Gujarat. The red algae *Gelidiella acerosa*, *Gracilaria edulis*, *G. crassa*, *G. foliifera* and *G. verrucosa* are used for agar manufacture and brown algae *Sargassum* spp., *Turbinaria* spp. and *Cystoseira trinodis* for the production of alginates and liquid seaweed fertilizer. The quantity of seaweeds exploited is inadequate to meet the raw material requirement of Indian seaweed industries.

Seaweeds such as *Gracilaria edulis*, *Hypnea musciformis*, *Kappaphycus alvarezii*, *Enteromorpha flexuosa* and *Acanthophora spicifera* can be successfully cultivated in long-line ropes and nets by vegetative propagation method. This activity has a potential to provide income and employment to about 200,000 families.

2.0 Components of Assistance

The NFDB will assist the following components to support Seaweed cultivation:

- Training and demonstration
- Establishment of seaweed processing units

2.1 Training and Demonstration

2.1.1 Eligibility criteria

Following criteria will be applied for selection of agencies for conduct of training/demonstration programmes:

- Fisheries Institutes/State Fisheries Departments / Fisheries Colleges / NGOs /SHGs with a background of coastal aquaculture
- Availability of adequate manpower and expertise to conduct frontline demonstration to traditional fishermen/ women

The following criteria shall be applicable for selection of a farmers/ entrepreneurs (preferably fisher women) to receive training:

- Past experience of the farmer in undertaking seaweed cultivation
- Willingness of the farmer to take up sea weed cultivation on scientific lines
- Should be willing to upgrade the existing cultivation practices

2.1.2 Type of Assistance

The NFDB assistance would be towards organization of Training and Demonstration, as detailed below and in Annexure-I and Form-I:

(i) Assistance to farmer: The farmer shall be eligible for a daily allowance of Rs 125/ day and reimbursement of to and fro travel (train/ bus/ auto rickshaw) shall be reimbursed as per actuals, subject to a maximum of Rs 500.

(ii) Honorarium to resource persons: For conduct of training, the implementing agency may engage the services of one resource person per training programme. The resource person may be given an honorarium of up to Rs 1 250 and to and fro travel expenses (train/ bus/ auto rickshaw) shall be reimbursed as per actuals, subject to a maximum of Rs 1 000.

(iii) Assistance to implementing agencies: The implementing agency shall be eligible to receive Rs 75/ trainee/ day for a maximum period of 10 days for organizing the training. This cost shall cover expenses towards identification and mobilization of the trainee and course material/ training kits, etc.

(iv) Development of training/ demonstration site(s):

(a) The Government agencies/NGOs/ Other agencies shall be eligible to receive a one-time grant of a maximum of Rs One lakh only (Rs 1,00,000) for development of demonstration site for undertaking training / demonstration programmes on a regular basis. The Government agencies/NGOs/ Other agencies shall not be eligible for any subsequent grant for the same training site for the same purpose from NFDB or from any other funding agency for a period of five (5) years.

(b) In case the Government agencies/NGOs/ Other agencies does not possess its own facility which can be used for training/ demonstration, it would be eligible to develop the facility by taking a private agencies on lease for undertaking training/ demonstration and for the purpose a one-time grant of Rs Fifty thousand only (Rs 50 000) shall be available for making payment towards lease amount and development of the facility for

imparting training/ demonstration. The lease shall be for a minimum period of five (5) years.

(c) In the absence of (a) and (b) above, the Government agencies/NGOs/ Other agencies may engage the facilities of a private firm for which an amount to Rs 5 000 per training programme shall be made available as fee for hiring the facility.

Besides the above, the Government agencies/NGOs/ Other agencies shall also abide by the following conditions:

- The facilities developed by the Government agencies/NGOs/ Other agencies shall also be available to other implementing agencies for training of fish farmers under the NFDB programme.
- The training/ demonstration facilities developed by the implementing agency shall not be more than 25 km from the training site. However, if such a facility cannot be developed within 25 km, full justification shall be provided.
- The NFDB shall not fund any other training/ demonstration site over and above the one developed to ensure its optimal utilization.
- Each training batch shall consist of 25 trainees and in no case exceed 30 trainees per batch.
- All State/ Union Territory Governments shall be assisted with the setting up of a maximum of fifteen (15) training/ demonstration sites initially. Additional sites shall only be sanctioned depending upon the performance and optimal utilization of the site(s) already sanctioned. Establishment of additional sites would also be linked to the number of farmers trained, area covered and institutional finance availed by the trained farmers for taking up aquaculture activities.
- All other implementing agencies including Fisheries Institutes under the Indian Council of Agricultural Research and the Colleges of Fisheries under the State Agricultural University shall avail their own facilities for which a lump sum of Rs Five thousand only (Rs 5 000) per training programme shall be provided. However, if such agencies do not have their own facility, they shall make use of the facility developed by the State Government or engage the facility of a private farmer, for which Rs Five thousand only (Rs 5 000) per training programme shall be provided.
- The implementing agency shall maintain the profile of each trainee and provide information on the area farmed by each trained farmer, investments made, employment generated and increase in production and productivity. The consolidated information on the above shall be made available to NFDB at quarterly intervals for a period of five years.
- The implementing agency shall also be responsible for facilitating institutional finance to the fish farmers.

- The implementing agency and the NFDB shall enter into an MOU prior to release of funds for training and demonstration. The conditions stipulated in the Guidelines shall *inter alia* be a part of the MOU.

2.2 Establishment of seaweed processing plants

In view of specialized nature of the processing of seaweeds for specific high value produce like carragenan, specific proposals will be considered, with the NFDB assistance in the form of equity to the tune of 20% of the investment costs.

3.0 Submission of Proposals

All proposals received from the beneficiaries shall be submitted to the NFDB for approval and release of funds. To ensure uniformity in the details provided by the farmers and the implementing Agencies, application shall be submitted in the following forms:

Form- SWC - I : Training and demonstration.

Form- SWC - II : Establishment of seaweed processing plants

The application form for training and demonstration shall be filled up by the Implementing Agency and submitted to the NFDB for consideration of release of funds.

4.0 Release of funds

The subsidy for Training and Demonstration shall be released in a single installment, on approval of the proposal by the NFDB.

5.0 Submission of Utilization Certificate

The Implementing Agencies shall submit utilization certificates in respect of the funds released to them by the Board. Such certificates shall be submitted in **Form SWC- III** on half-yearly basis *i.e.* during July and January of each year. The utilization certificates can also be submitted in between if activities for which funds were released earlier have been completed and the next dose of subsidy is required to complete the remaining works by the farmer.

6.0 Monitoring and Evaluation

A dedicated monitoring and evaluation (M&E) cell shall be set up at NFDB head quarters to periodically monitor and evaluate the progress of activities implemented under NFDB funding. A project monitoring committee comprising of experts in the subject matter as well as finance and representative of financing organizations may be constituted to periodically review the progress of the activities including the achievements related to physical, financial and production targets.

Summary of the Norms for Assistance towards Seaweed cultivation

Sl. No	Item	Activities	Unit Cost	Subsidy	Remarks
1.0	Training and Demonstration	<p>(i) Assistance to farmers for participation in 10 days training programme (batch of 25 – 30).</p> <p>(ii) Honorarium to Resource Persons.</p> <p>(iii) Assistance to implementing agency for training and demonstration.</p>			<p>(i) Daily allowance of Rs 125/ day /trainee and reimbursement of actual to and fro travel, subject to a maximum of Rs 500 per trainee.</p> <p>(ii) Honorarium of Rs 1250 and actual to and fro travel expenses, subject to a maximum of Rs 1000.</p> <p>(iii) Rs 75/ trainee/ day to the Implementing Agency towards identification, mobilization of beneficiaries, supply of training material, etc.</p> <p>(iv) Development of demonstration unit @ Rs 1 00 000/- (one time grant) to the Implementing Agency to conduct regular training/ demonstration activities.</p> <p>(v) In absence of own facility, grant of Rs 50 000/- shall be available to the State Government to lease private unit and its development for conduct of training/ demonstration, etc.</p> <p>(vi) In the absence of (iv) and (v) above, Rs 5 000/- per training program for hiring suitable facility from private farmer.</p> <p>(vii) ICAR Fisheries Institutes/ Colleges of Fisheries under State Agriculture Universities/ Other Agencies using their own facilities will get a lump sum amount of Rs 5,000/- per training programme for this purpose.</p>

Proposal for Training and Demonstration in seaweed farming

Sl. No	Particulars sought from the Implementing Agency	Information furnished by the Implementing Agency		
(1)	(2)	(3)		
1.0	Name and address of the Implementing Agency:			
2.0	Location of the Training Facility:	District	Block	Village
3.0	Facilities available or proposed for imparting training:			
4.0	Details of the Training Programme:			
	a) Number of persons to be trained in seaweed farming (to be given separately):			
	b) Of which ,the number of existing seaweed farmers:			
	c) Details of demo farms proposed, number of frames, area, depth, location etc			
	d) Species to be farmed			
	e) marketing tie-ups			
	f) Indicative economics			
5.0	Financial Implications:			
	Item	Number	Amount	
	a) Training			
	(i) Assistance to farmer @ Rs 125/ day for 10 days:			
	(ii) Reimbursement of to and fro travel expenses to farmer:			
	(iv) Honorarium to resource persons and reimbursement of to and fro travel expenses:			
	(iii) Assistance to implementing agency @ Rs 75/ trainee/ day:			
	Total of (a)			
	b) Demonstration Unit			
	Grand Total (a + b)			
10.0	Technical capabilities of resource persons to be engaged in training:			
11.0	Any other details in support of the proposal			

Date:

Place:

**Signature and seal of the authorized
representative of the Implementing Agency**

Proposal for establishing Sea weed Processing Plants

Sl. No	Particulars sought from the applicant	Information furnished by the applicant
(1)	(2)	(3)
1.0	Name and address of the applicant/ firm/ institutes/ departments/ cooperatives/Self Help Group/NGO (IN BLOCK LETTERS):	
2.0	Address for communication (telephone/ mobile number):	
3.0	Details of land where processing activity is proposed to be taken up:	
	a) State:	
	b) District:	
	c) Taluk/ Mandal:	
	d) Revenue Village:	
	e) Survey Number(s):	
	f) Ownership (whether freehold or on lease):	
	g) If on lease, duration of lease:	
	h) Total land area (in ha):	
	i) Total built up area (in ha):	
4.0	j) Details of the proposed activity (Design details/engineering works to be certified by the Department of Fisheries/ CIFT/ IFP/ Developmental Institutes under central and state governments):	
5.0	Estimates regarding input costs:	
	a) Products to be developed and species to be processed:	
	b) Processing capacity:	
	c) Recurring Cost Raw material Sub material Packing material Utilities	
	d) Source of procurement:	

(1)	(2)	(3)
6.0	Experience of the applicant/Agency in the field and details of training undergone so far:	
7.0	Whether any financial tie up has been made for availing Bank loan, if so please provide the details:	
8.0	Expected date of operation of the processing activity:	
9.0	Marketing tie up:	
10.0	Source and number of labour employed for renovation as well as day-today culture operations:	

Declaration by the Applicant

I/We son/daughter/wife
of Residing
at hereby declare that the
information furnished above is true to the best of my/ our knowledge and belief. I am/ we are
fully aware that if it is found that the information furnished by me/ we/ us is false or there is any
kind of deviation/ violation of the conditions under which assistance is provided to me by the
NFDB, any action as deemed fit for violation of this condition may be taken against me/ us.

Date:

Place:

Signature of the applicant (s)

Countersigned by the implementing Agency

Date:

Place:

Signature and seal of the authorized
representative of the Implementing Agency

National Fisheries Development Board

Form for Submission of Utilization Certificate

Sl. No	Letter No and date	Amount

Certified that out of Rs. _____ sanctioned during the year _____ in favour of _____ under the National Fisheries Development Board's Letter No given in the margin and Rs. _____ on account of unspent balance of the previous sanction, a sum of Rs. _____ has been utilized for the purpose of _____ for which it was sanctioned and that the balance of Rs. _____ remains unutilized. The same will be adjusted towards the next installment payable during the period _____.

Physical progress:

Certified that I have satisfied myself that the conditions on which the funds were sanctioned by the National Fisheries Development Board have been duly fulfilled/ are being fulfilled and that I have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned.

Date:

Place:

Signature and seal of the authorized representative of the Implementing Agency