

Practical training on seaweed culture in Indonesia

*A practical training for technical staff involved in *Kappaphycus alvarezii* seaweed aquaculture was held from 8–15 October 2012, at the National Seaweed Centre on Lombok in Indonesia. Two main lessons were learned in Indonesia that are useful for Pacific Island countries to help adapt aquaculture industries to climate change: 1) improved seaweed varieties that can tolerate warmer and more brackish water conditions are now available; and 2) floating rope rafts deployed in deeper water provide greater protection during rough weather, and more choice in seaweed farm site selection. The training was supported by SPC through its Fisheries, Aquaculture and Marine Ecosystems Division and the European Union-funded “Increasing Agriculture Commodity Trade” project. Eight extension officers and technical staff from Fiji, Kiribati, Papua New Guinea (PNG) and Solomon Islands attended the practical training.*

Seaweed culture

The seaweed *Kappaphycus alvarezii*, traditionally known as “cottonii”, has been identified by SPC and several governments of Pacific Island countries and territories (PICTs) as a priority for low-tech, household-scale aquaculture in rural areas.

The benefits of seaweed farming is that it: 1) is environmentally friendly; 2) requires low-level technology, low investment, and minimal post-harvest processing; 3) can be conducted at the household level; and 4) the seaweed itself can be stored for up to six months. All of these factors make seaweed farming an attractive livelihood activity in remote locations where there are few alternative income-earning possibilities. The need for alternative livelihoods in isolated coastal communities, and the increased demand for seaweed-based products globally have accelerated the intentional introduction of *Kappaphycus* seaweed to over 20 countries, including 11 in the Pacific.

Cottonii seaweed, however, like coral, bleaches when seawater is too warm or too brackish. Increased rough sea conditions that uproot staked lines can cause setbacks for cottonii seaweed aquaculture.

Why a training in Indonesia?

Although cottonii aquaculture is well established in Southeast Asia, it has produced mixed results in the Pacific Islands region. In Indonesia, the National Seaweed Centre has focused on developing higher-performing strains of *K. alvarezii* that are faster growing and more tolerant to environmental stresses such as increased water temperature and salinity fluctuations. Learning about these new strains and being trained on the techniques used for their aquaculture was a real opportunity.

Compared with Asian countries, the Pacific Islands face constraints such as remoteness from markets, small volume of production, and a relative lack of seaweed culture expertise. Nonetheless, seaweed farming continues in Fiji, Kiribati, PNG and Solomon Islands, and there are plans to increase production.



Two improved varieties of cottonii seaweed cultivated at the National Seaweed Centre on Lombok in Indonesia (image: Ruth Garcia Gomez).

Practical training

In order to improve cottonii seaweed production in PICTs, and to discover how to use the new strains developed in Southeast Asia, theoretical and hands-on skills focusing on production, harvesting and processing need to be acquired by extension officers and project staff from producer countries.

Increased production and competitiveness can be achieved through capacity-building in technical skills for:

- site selection to avoid fish-grazing and environmental stresses leading to disease;

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- farm layout and construction;
- supply of quality propagules for planting;
- post-harvest techniques to maintain quality; and
- adaptation to the effects of climate change.

Project extension officers and field personnel need a good grounding in these production issues so that they can impart them to seaweed farmers. Our Indonesian hosts demonstrated that floating rope rafts in deeper water are now the preferred system for large-scale seaweed culture, replacing the previous system of rope lines held by wooden stakes on sandy substrate in shallow water. Participants learned how to construct and deploy these rope grids, which give farmers a wider choice of suitable planting sites. They also ride the waves much better, compared with the wooden-stakes method of planting seaweed.

The hands-on training was conducted at the Gerupuk Seaweed Station in Gerupuk village, which is one of the main seaweed production areas in Indonesia. A one-day

theoretical session, focused on seaweed cultivation, strain selection for growth enhancement, production of seedlings by using tissue culture techniques, management strategies and seaweed culture methods. This session was followed by a five-day hands-on training, where different improved farming, harvest and processing strategies were presented in a very practical way.

For more information:

Ruth Garcia Gomez
Aquaculture Officer, SPC
(ruthgg@spc.int)

Tim Pickering
Inland Aquaculture Specialist, SPC
(Timp@spc.int)

Avinash Singh
IACT – Aquaculture Component Coordinator
(avinashs@spc.int)



Building the bamboo frame that will then be used as a floating raft to hang cottonii lines over deep waters (images: Ruth Garcia Gomez).

