



# Improving seaweed production and processing opportunities in Indonesia

## Overview

**Indonesia is the world's second-largest seaweed producer, and seaweed culture is one of few available income-generating opportunities for coastal communities in eastern Indonesia.**

Although production is increasing by about 30% annually, problems with seaweed quality, processing procedures and utilisation of waste streams from processing, have been identified. Also, processors have identified an issue of declining quality in carrageenan-producing seaweeds, particularly reduced gel strength and problems with the colour of the processed product.

The causes of variation in product quality and production between farming sites and across seasons, as well as deterioration in gel strength, are currently unknown.

The Indonesian Government's priorities focus on cultivating species of seaweed with value-add capabilities; for processing to be done as close to the production areas as possible; and for the development of a range of new products to enable greater industry growth.



## KEY FACTS

**ACIAR Project No.** FIS/2015/038

**Duration:** August 2016 to July 2020 (4 years)

**Target areas:** Indonesia

**Budget:** A\$1.6 million

### Project Leader

Associate Professor Nicholas Paul, University of the Sunshine Coast

### Key partners

- Research and Development Centre for Marine and Fisheries Product Processing and Biotechnology, Indonesia
- Centre for Seaweed Culture Research and Development, Indonesia
- Hasanuddin University, Indonesia

**ACIAR Research Program Manager**

Dr Ann Fleming

## Objective

**The project's overall aim is to provide the scientific requirements to transform and modernise the Indonesian seaweed industry by taking a whole-of-value-chain approach to solve key production constraints and develop diverse product opportunities.**

**The project's three main objectives are to:**

- Analyse value chains to identify constraints and knowledge gaps for seaweed production in Indonesia.
- Improve the quality of seaweeds produced at the farm level.
- Create innovative products from seaweeds and their processed waste streams.

## Expected scientific results

- Improved knowledge of the Indonesian seaweed industry and its value chains to enable the relevant agencies to better target specific sections of the value chain to improve industry performance.
- Improved knowledge of different isolates cultures in the main production areas, their propagation and potential uses.
- Increased productivity via improved agronomy practices for seaweed at the farm scale, including isolate maintenance and post-harvest handling.
- Confirmation of the taxonomy of cultured seaweeds to facilitate communication nationally and internationally and allow more accurate and meaningful comparisons of different seaweed strains.
- Improved knowledge of the socioeconomic aspects of seaweed farming, including the role of women in the sector, for better targeting of interventions to develop and support women's groups.
- Greater research and development capacity for the Indonesian seaweed industry.
- Development of new post-harvest and processing technologies to facilitate market expansion and diversify the existing value chains.

## Expected outcomes

- Improved quality of seaweed produced at farm level.
- Increased household income in coastal communities (particularly in eastern Indonesia) due to improved productivity through the farming of better seaweed strains.
- Generation of a new income source for pond farmers through expansion of *Caulerpa* farming in coastal ponds.
- Income generation for women's groups that undertake the processing and marketing of new products, made possible through the development of simple post-harvesting processing techniques.
- Reduced reliance of seaweed farmers on the fluctuating commodities markets for carrageenan and agar gels.
- National economic benefits from increased proportion of seaweed processing in Indonesia, leading to local employment and retention of a greater share of the seaweed's total value.
- Positive environmental effects from the increased growth of seaweeds that utilise dissolved nutrients for growth that would otherwise enter the sea through coastal runoff and contribute to eutrophication of nearshore environments.
- Utilisation of solid and liquid waste streams from seaweed processing.

