

## Sustainable Strategies for Euchematoid Aquaculture in Malaysia

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Euchematoids, primarily consist of *Kappaphycus* and *Eucheuma*, are a vital group of tropical red algae, responsible for nearly 90% of the world's carrageenan and ranking as the second-largest farmed species globally by biomass. The demand for carrageenan is projected to reach USD 1.55 billion by 2032, fueled by growth in the food, pharmaceutical, and personal care sectors, as well as a trend towards natural ingredients. While Indonesia, the Philippines, and Malaysia are the leading producers, recent years have seen a decline in production among these key players, emphasizing an urgent need for effective solutions to sustain the industry.

In Malaysia, production has fallen since its peak in 2012, largely due to low genetic diversity among aging cultivars and increasing vulnerability to climate change. To address these challenges, our research teams, supported by local and international funding, are employing molecular markers to evaluate genetic diversity and identify resilient strains from wild populations. Initiatives like HICoE, Innovative Seaweed Aquaculture, and GlobalSeaweed SUPERSTAR research projects aim to create genetically diverse, climate-resilient cultivars while establishing conservation strategies to support local farmers and ensure the future of Malaysia's seaweed aquaculture industry. This talk will explore the strategies and challenges involved in developing new cultivars from natural populations, as well as other approaches to safeguarding Malaysia's seaweed aquaculture sector.