





REVIEW

Exploring, harnessing and conserving marine genetic resources towards a sustainable seaweed aquaculture

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Societal Impact Statement

Seaweed cultivation is the fastest-growing aquaculture sector, with a demonstrable potential to drive development in some of the poorest coastal populations worldwide. However, sustainable exploitation, fair access and equitable benefits from marine genetic resources, such as seaweeds have yet to be fully realised. Patchy fundamental knowledge on the genetic diversity and metabolic potential of algae limits their exploitation; scant practical skills and low investment in breeding restricts germplasm availability and the Nagoya protocol has only partially remediated insufficient governance. Further developments and the addressing of knowledge gaps in relation to biosecurity, breeders' rights and conservation of genetic resources are needed for progress.

Summary

We review how seaweed genetic resources are currently used in aquaculture, in relation to the diversification and rapidly increasing use of marine resources. Using a revealing case-study, we summarise the potential for positive societal change, underpinned by the cultivation of eucheumatoid carrageenophytes (species of the red algal

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