Cost-effective IMTA: a comparison of the production efficiencies of mussels and seaweed

Holdt, Susan Løvstad; Edwards, M. D.

Publication date:
2013

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Holdt, S. L., & Edwards, M. D. (2013). *Cost-effective IMTA: a comparison of the production efficiencies of mussels and seaweed*. Abstract from Danish Macro Algae Conference 2013, Grenaa, Denmark.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Cost-effective IMTA: a comparison of the production efficiencies of mussels and seaweed

Holdt SL¹ and Edwards MD²

¹Technical University of Denmark, DTU Environment, Department of Environmental Engineering, Miljoevej 113, DK-2800 Kgs. Lyngby, Denmark

²Carna Research Station and the Irish Seaweed Research Group, The Ryan Institute, NUI Galway, Galway, Ireland

Corresponding author: Susan L. Holdt, email: suho@env.dtu.dk; telephone number: +4526272707

This paper compares the biofilter capacity and cost-effectiveness of blue mussels (*Mytilus edulis*) and seaweed for use in integrated multi-trophic aquaculture (IMTA) based on experiences in Ireland and Denmark. This comparison shows that weight for weight, mussels are a better biofilter than seaweed with regard to the amount of nitrogen assimilated. Furthermore, in optimised systems, areal requirement for mussels is similar to the cultivation of the same tonnage (1,000 t) of seaweed (approx. 8 ha). The cost-effectiveness of a mussel biofilter is €11.4-19.2 kg⁻¹ N removed based on modeled results compared to production cost of €209-672 kg⁻¹ N removed and €1,013 kg⁻¹ N removed for respectively *Laminaria digitata* and *Alaria esculenta* from extrapolated laboratory and field trials. However, a commercial seaweed (*Saccharina latissima*) producer claims that production costs are less than €10 kg⁻¹ N removed. This up-scaled and commercial figure makes the seaweed cost competitive to mussels for removal of nitrogen.

Disadvantages such as predators (e.g. eider ducks) and bio-fouling should also be taken into account before choice of biofilter is made. These drawbacks can reduce overall biofilter capacity and biomass value as a consequence of biomass spoilage or loss. However, disadvantages may be mitigated by seasonal choice of cultivation and harvest times.

Cultivation technologies and harvesting methods may be improved together with breeding to improve the cost-efficiency of the biofilter, especially in the “newer” European seaweed cultivation. Furthermore, upscaling of IMTA to commercial proportions, other than the Danish example, would allow more real data on production costs and revenues.