



BIM

Ireland's
Seafood
Development
Agency



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine



EUROPEAN UNION
This measure is part-financed
by the European Maritime
and Fisheries Fund

Seaweed Aquaculture – Ireland’s Perspective

Lucy Watson

STSBU



IATiP Inaugural Meeting April 2019



IATiP –listening to its members

- To develop, support and promote Irish aquaculture and, especially and specifically, technology and innovation in aquaculture in the areas of diet, health/survival, technology/systems, additives, genetics, climate change, sustainability, economics and regulation

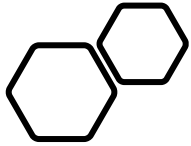
(finfish/shellfish/algae)

Scoping a biorefinery concept for Ireland

A New Report for BIM



- By Dr Sarah Hotchkiss, CyberColloids Ltd.
- Launched at a BIM Webinar October 23 2020 Bio-economy week.
- <https://www.youtube.com/watch?v=cgC1GvEY-XI>



Findings

- >2,600 new products containing seaweed into the European market 2008-2018
- Most innovation in France, UK, Germany, Spain
- Food, Health and well being, plant and animal health, platform chemicals



2014 European Market Opportunity for sea-vegetables

- European Market according to 'Organic Monitor 2014 Report' growing at 7-10% pa. 2013 worth €24M – 472T sold.
- Extrapolated on that basis to circa 830T worth €42M in 2020
- 2020 *Palmaria* EU total market extrapolated circa. €6.3m and *Porphyra* €25.5m. *Porphyra* (Nori) currently imported from Asia.
- Raised sea temps and poor light penetration (global warming) have caused a reduction in the Nori harvest in main producing areas, China and Japan in 2019. US importer in contact with BIM for supply.
- Ireland doing well in developing farming techniques, though it is no easy victory.

This Opportunity is focussing our minds

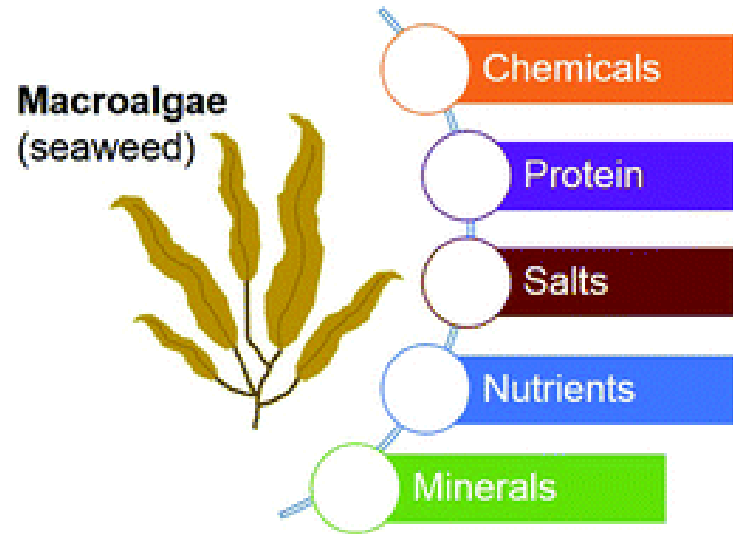
- Irish seaweed industry currently valued at €37M, comparatively low value high volume product.
- Where we want to be is -> biotech and high value add clusters.
- As an example, the French market uses many of the same seaweeds that are harvested in Ireland. There may be a template that we can reproduce at a smaller scale with more limited goals.
- 2021 proposed BIM Seaweed Strategy, to investigate high value niche or specialised products. This approach should ideally target B2B opportunities such as Food, Pharma, Cosmetics etc. rather than consumer products.

Marine Plant Ingredients Identified

- The Biorefinery Report feeds into the BIM Category Development Planning for 2021 including Marine and Freshwater derived ingredients.
- Key marine ingredients of interest: mannitol, laminarin, fucoidan, alginate, cellulose, phlorotannins, protein, lipids, fucoxanthin, minerals..
- Lower volume opportunities: Food ingredients, natural flavours, textures, cosmetics and personal care, supplements and functional ingredients, plant health, animal health.
- Larger volume opportunities: Biofuels, chemicals and biomaterials

Massive marine potential

- More than 70% of world seaweed is used to make food.
- Alginate, carrageenan and agar use 15-20% world seaweed production.
- Oceans cover 70% of the earth but yield only 120million mt (1.5% of our food) (Chen Jiabin)
- Pharma/cosmetics > €100/kg
- This is where we want to be.



Irish Wild Seaweed Harvest

Species	Annual Harvest (tonnes)
<i>Ascophyllum nodosum</i>	25,000
<i>Fucus serratus</i>	200
<i>Palmaria palmata</i>	<100
<i>Chondrus crispus/Mastocarpus stellatus</i>	<100
<i>Laminaria digitata</i>	<150
<i>H. elongata, S. latissima, L. hyperborea,</i> <i>Ulva rigida, Porphyra spp, F. vesiculosus, A. esculenta</i>	<10 each
Total	25,000 t

www.bim.ie

BIM Programme of work on Farmed Irish seaweed

DOMMRS renamed Bantry Marine Research Station in 2016



Freddie O' Mahony, Cartron Point Shellfish Ltd working with BIM since 2004 under contract. Capable of producing up to 20KMS seeded collector string PA in hatchery = 140T product fresh

Status of Seaweed Cultivation

Alaria and *Saccharina* in Ireland

Brown weed grow-out at sea



- Feasibility?
- TRL 8
- 180 HA licensed sea site grow out capacity
- +50Ha coming on stream
- With new licenses/technologies estimate capability 5K-10KT PA 2025
- Yield 10:1
- €20K /T dry cosmetics proven market

Most pressing commercial need now is a Seaweed Hatchery

- As the sector develops there is a requirement for a commercial licensed seaweed hatchery in Ireland to produce 200KMS seeded collector string for brown weeds *Alaria* and *Saccharina* and to continue work on red weeds.



Finally, *Asparagopsis armata*

- Agriculture contributing 33% GHG emissions in Ireland
- Ireland in breach of legally binding targets
- Fed at 2% inclusion in diet reduces methane production produced by enteric fermentation in cattle by 98%
- Proposed *Asparagopsis* growth trials in tanks and at sea 2021
- TRL 3 / 4
- Market → 7M cattle Ireland. 1.4BN WW FAO
- There are competitive products under development in the market place..



Thanks to the BIM 'Seaweed Team'

- David Millard
- Mairtin Walsh
- Pete Donlon
- Mary Hannan
- Catherine Butler
- Louise Collins

