



# GENIALG

e-Learning course

Sustainable seaweed farming practices

**Module 1 – Seaweed Cultivation and Monitoring  
Protocols**

**LESSON 3**

*Opportunities and Future Prospects*

©Atlantic Sea Farms



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# Module 1 – Seaweed Cultivation Protocols

## LESSON 3 – Opportunities and Future Prospects

SEAWEED FARMING

OPPORTUNITIES



INDOOR



OUTDOOR



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SEAWEED FARMING

OPPORTUNITIES



### SEAWEED FARMING

INDOOR



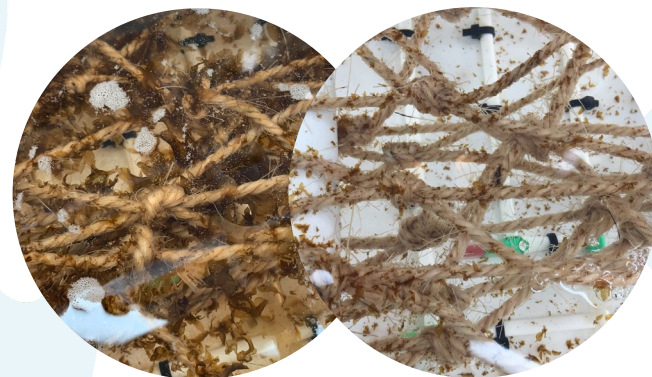
Nursery for the production of strains and plantlets  
No interaction with the general public



Hatchery: strain mass-culture



Plantlets nursery



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SEAWEED FARMING

OPPORTUNITIES



Deployment at sea for ongrowing  
Interaction with the general public:

- **Institutions** - application for a licensed area submitted to the public benefit enquiry
- **Professional** - Space and usage conflicts with farmers, professional and recreational fishermen, environmental associations, recreational yachting



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SEAWEED FARMING

ISSUES



### 1 Obstacles linked to the general public

- Oppositions
- Material damage (deliberate)



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SEAWEED FARMING

ISSUES



### 1 Obstacles linked to the general public:

- Global warming resulting in shortened growing season
- Kelp preferring cold waters : less biomass, more epiphytes, more competition
- Rain and water turbidity
- Poor growth
- Animal predation (grazing)



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## LESSON 3 – Opportunities and Future Prospects

### SEAWEED FARMING

### STRENGTHS & WEAKNESSES



#### STRENGTHS

- A constantly evolving food market
- “Global change” in consumption of food behaviour
- Increased use in cattle and poultry feed
- Biomaterials
- Biorefinery
- Medicine, pharmacy
- IMTA: integrated multi-trophic aquaculture
- Bioremediation



# Module 1 – Seaweed Cultivation Protocols

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SEAWEED FARMING

STRENGTHS & WEAKNESSES



### WEAKNESSES

- Technical/biological limits: not all seaweed can be “cultivated” – increased pressure on seaweed wild stocks
- Wild stocks are not getting any bigger: ongoing biomass study to define harvesting quotas
- Opportunistic actors operating on a large scale and the onset of “industrial organic business vs. locally produced”
- Global warming
- All European efforts to promote seaweed have resulted in creating a large market for cheap Asian products, favoured now by easy distribution



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SEAWEED FARMING

THE FUTURE



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A positive for future generations?

1

FOOD



- Collective awareness: better consumption, less quantity/better quality
- Importance of the good practices in food production: ban over demanding industrial methods, environmentally-friendly, importance of animal safety
- Seaweed is nutritious, it provides a good source of nutraceuticals, it is low fat, and contains essential minerals



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SEAWEED FARMING

THE FUTURE



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### ENVIRONMENTAL CARE

- CO<sub>2</sub> uptake and O<sub>2</sub> production by seaweeds
- Cultivation of seaweed reduces the pressure on wild stocks
- Bioremediation – seaweeds capable of neutralising contaminants



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THE FUTURE



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AGRICULTURE

- Organic fertiliser
- Animal feed and health - improved immunity and reduced use of antibiotics
- Less intensive than traditional tillage crops e.g. space, pesticides
- Improves agricultural emissions when included in animal diets. There is mounting evidence that when cattle feed is supplemented with certain seaweed species it can lead to lower methane emissions.



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COSMETICS

- A major worldwide activity (seaweed extracts)
- Bioactive compounds for skin health
- Benefit of more natural (fewer synthetic ingredients) in products



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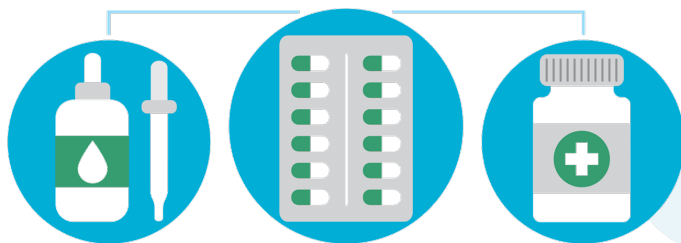


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MEDICINE / PHARMACY

- Fundamental research
- Numerous new topics to be explored
- Bioactive compounds for health



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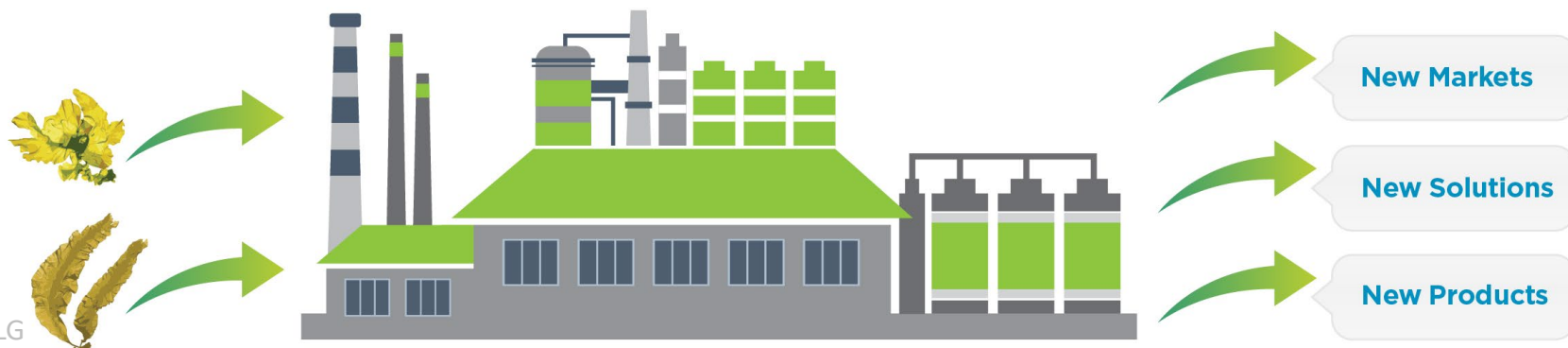
THE FUTURE



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### 6 BIOMATERIALS / BIOREFINERY

- Value-added seaweed by-products
- Developing enzyme biotechnology



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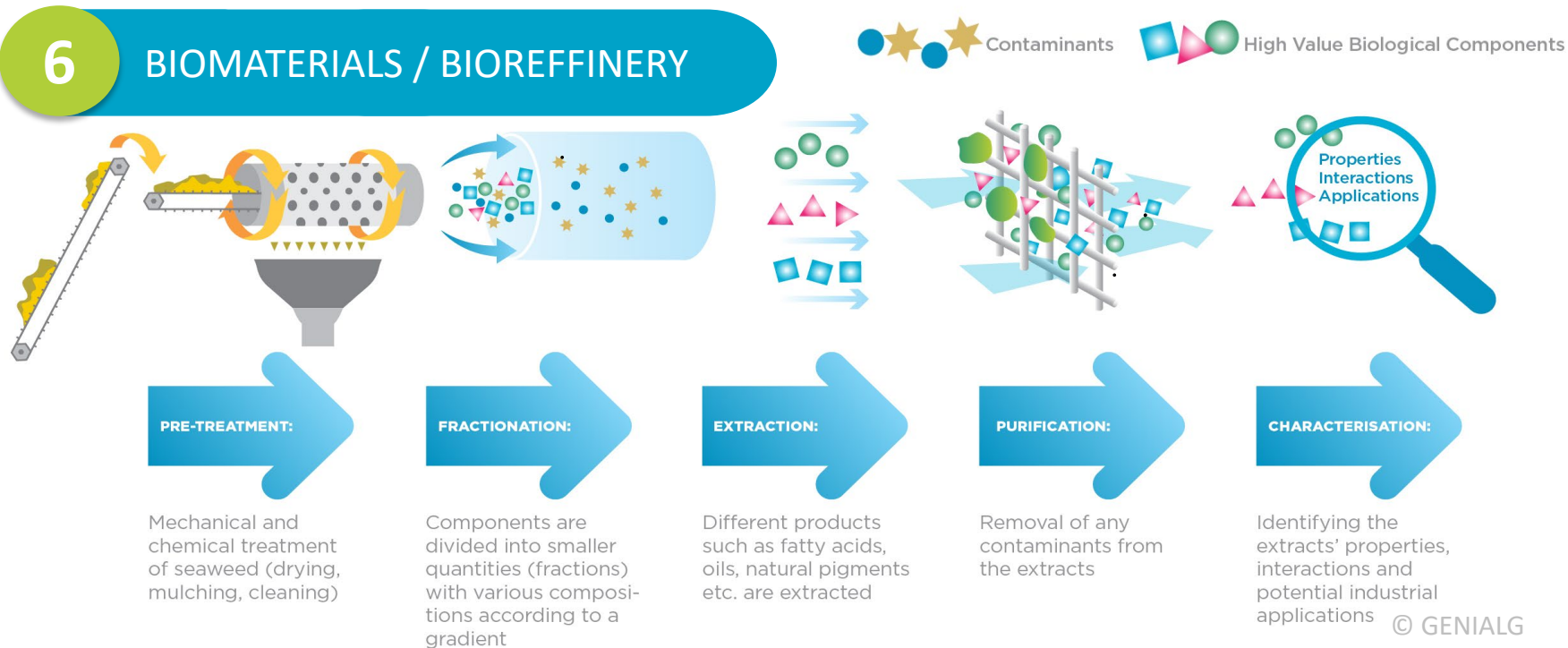
SEAWEED FARMING

THE FUTURE



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A seaweed farm provides a dense canopy in culture. This canopy becomes a natural habitat for many species – e.g. for hiding, hunting and reproducing. Research is ongoing to estimate the impact of these seaweed farm habitats in terms of species diversity, recruitment and their global contribution to biodiversity and natural stock maintenance and/or enhancement





**LESSON 3 OF  
MODULE 1  
FINISHED**

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