

Dans le cadre des projets



EPURVAL 2



ALGAplus Lda Seaweed farm in Portugal

Pereira, RUI
ALGAplus Lda



15 et 16 mai 2019

Associer les espèces pour une aquaculture durable :
l'aquaculture multi trophique intégrée

Avec la participation de :



Breizh'alg

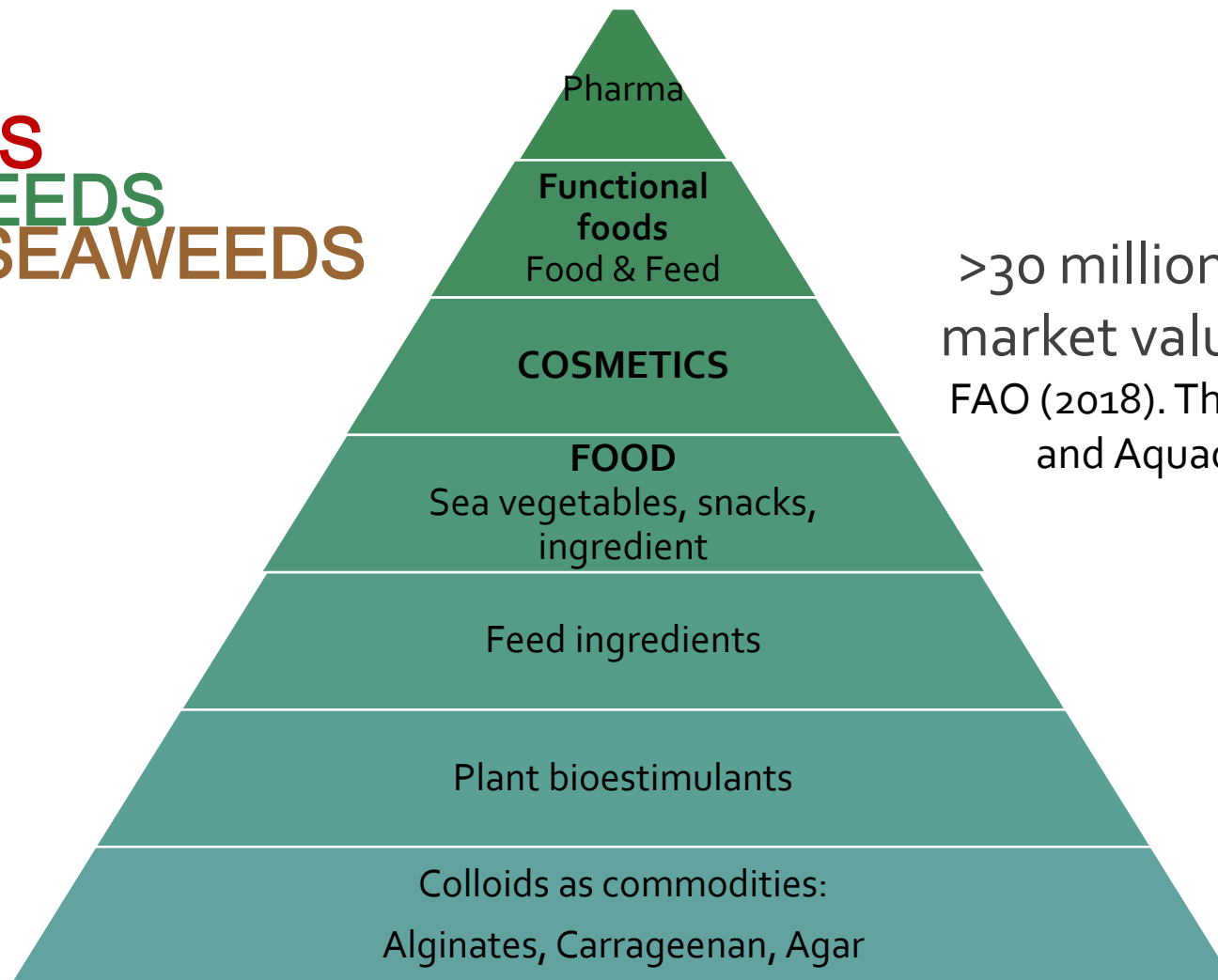


ALGApus Lda Seaweed farm in Portugal – Presentation Overview

- The context
- Origin of the company
- The operational concept
- Current production
- Perspectives for the future



SEAWEEDS SEAWEEDS SEAWEEDS



>30 million tons (fw), average market value 400USD/ton (dw) FAO (2018). The State of World Fisheries and Aquaculture 2018 (SOFIA).



SEAWEEDS – a TREND?!

- Food trend in 2016 and 2017, according to The Food Navigator, FORBES, Business Insider, BBC Good Food

“..exponential rise in veggie and vegan cooking in the last few years, with **'vegetarian butchers'** ..vegetables should no longer be consigned to a side order...we expect to see more of is **sea vegetables like healthy dulse (seaweed)**, which can be used as a salt substitute, to add a briny tang to food or for snacking..”



✓ Eaten since pre-historic times....

Dalhaye et al. Science, 2006

SEAWEEDS – a TREND?!

the incredible benefits of SEAWEED

1. CONTAINS MAGNESIUM, ZINC, VITAMIN B12 AND IRON
2. 1 GRAM = AN ENTIRE DAY'S WORTH OF IODINE
3. INCREASES HAIR AND NAIL GROWTH
4. CLEARS SKIN AND ENHANCES EYESIGHT
5. REDUCES ANXIETY AND IMPROVES FOCUS
6. PREVENTS ANEMIA AND FATIGUE
7. CLEANSSES THE DIGESTIVE TRACT
8. ALKALIZES THE BLOOD
9. PREVENTS AND TREATS SUGAR CRAVINGS
10. MAY PREVENT DEPRESSION



ONE GREEN PLANET

Key Nutritional Benefits of SEAWEED

93 Bio-available nutrients have been identified in Seaweed... more than any other class of food!

IODINE	PROTEIN	FUCOIDAN (BROWN)
VITAMIN A	AMINO ACIDS	ALGINATE (BROWN)
VITAMIN C	FATTY ACIDS	LAMINARIN
VITAMIN D	CHLOROPHYLL	GLYCONUTRIENTS
VITAMIN E	ANTIOXIDANTS	LIGNANS
VITAMIN K	MYOSTATIN	SULFATE GALACTANS
B-COMPLEX	ANTIBODIES	PHLOROGLUCINOLS

56 MINERALS AND TRACE ELEMENTS:
Very high in Calcium, Magnesium, Potassium, Iron & Iodine.
Perfect Potassium to Sodium ratio.

ANTIVIRAL, ANTIBACTERIAL, ANTIPARASITIC

MORE VITAMIN C THAN ORANGES
10X THE CALCIUM IN MILK

25X THE IRON IN BEEF

Experts Recommend Eating Seaweed From All Three Colour Groups

GREEN Sea Lettuce, Spongweed, Ulva

BROWN Kelp, Wrack, Bladderwrack, Wakame, Kombu, Fucus

RED Dulse, Nori, Laver, Irish Moss, Carrageen Moss

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WHAT TO EAT



1. **Eggs** Source of protein, vitamins D, A, B2 and B12, folic acid and iodine
2. **Goat's milk (eg feta cheese)** Calcium, protein and vitamin D
3. **Fish** Omega 3 fatty acids
4. **Sweet potato** Vitamins A, B5, B6
5. **Wild greens and herbs** Magnesium and folic acid
6. **Tofu** Eight essential amino acids, iron and calcium
7. **Walnuts** Copper, folic acid and magnesium
8. **Black beans** Fibre, potassium, iron, folic acid and magnesium
9. **Fresh fruit** Vitamins which will vary between fruits
10. **Seaweed** Iron and vitamin B12
11. **Wild rice** Fibre, magnesium and phosphorus
12. **Garlic** Vitamins C and B6, manganese, selenium and other antioxidants
13. **Prawns** Magnesium, zinc, and selenium. Also high in B12
14. **Chillies** Vitamins C and A and antioxidants



Sustainable Diets:

"...low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations...protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources".

Burlingame, B. & S. Dernini. 2010. "Biodiversity and Sustainable Diets United against Hunger", 3-5 11/2010. Rome, FAO and Biodiversity International.



Wild harvest in Europe

➤ Variability starts at the beginning of the value chain:



- **Problems with:**

- Inconsistent Availability
- ID of the raw material
- Inconsistent Quality

- **Causes:**

- Geographical location, seasonality, biological stress events, reproduction cycle
- Harvest of mixed species (human errors)

Seaweed cultivation *WHY?*

- Consistent Supply and Quality
- Optimized production for target high value compounds
- Knowing exactly what we get and when we get it
 - Safety
 - Traceability
 - Consistency
- Preservation of the wild seaweed stocks
- Exploitation of rare and unique algae & compounds



2006-idea: farm high quality seaweeds in Portugal, to meet the increasing demand from western high-value markets

Helena Abreu and Rui Pereira

PhDs in Biology, specialized in seaweeds

International experience in USA, Chile, Ireland

Knowledge of different seaweed species and production systems



2011

ALGApplus, Produção e comercialização de algas e seus derivados Lda is created

2012

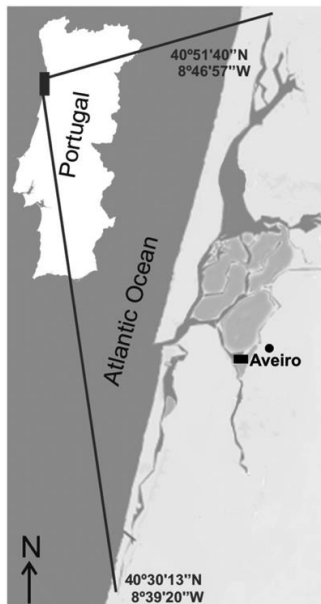
Kick-off in 2012.

2019

Today – team of 21

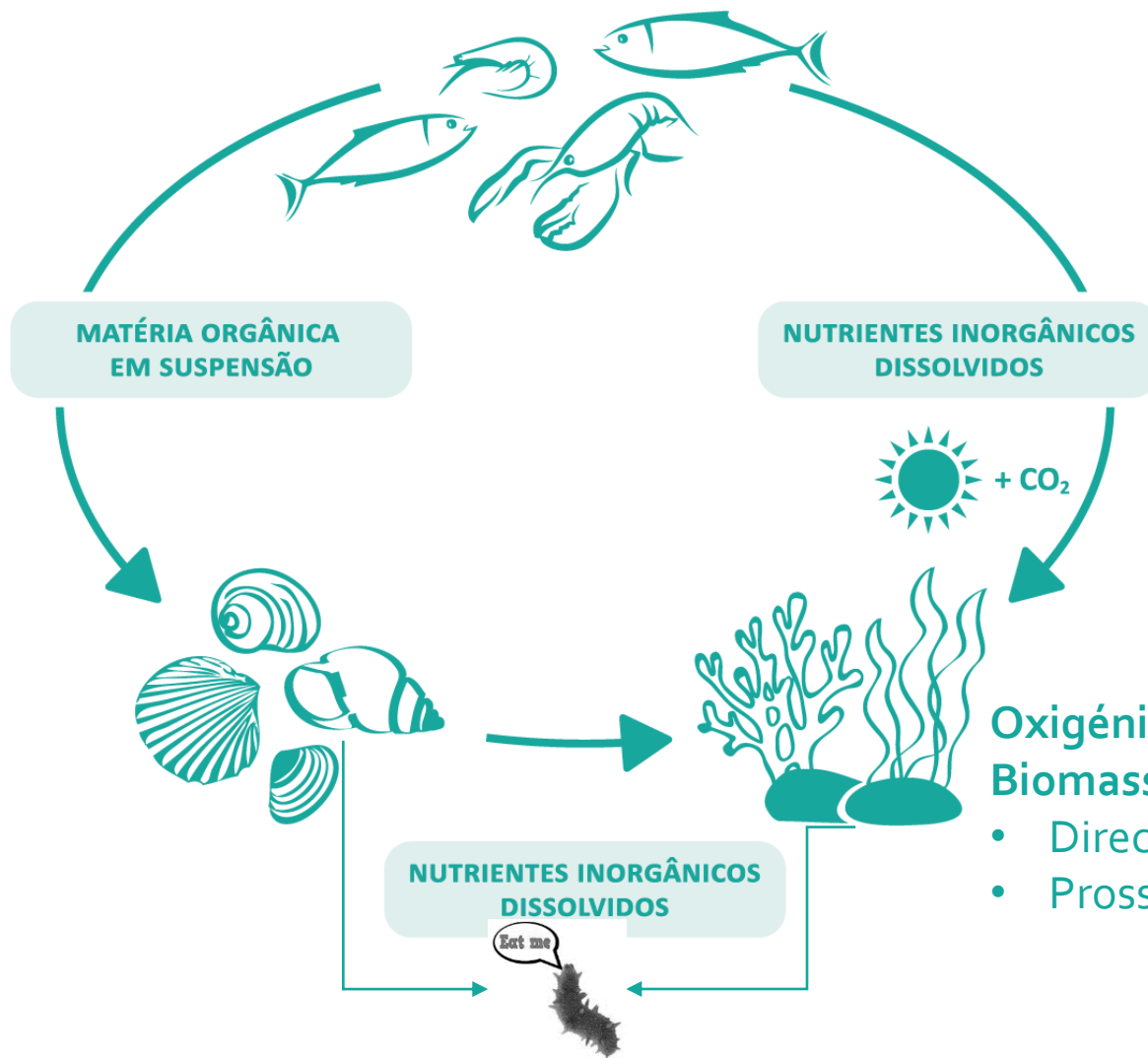
Biologists, marketing, administrative, commercial, engineers, non-specialized production collaborators





- Knowledge based company
- Focus in **local seaweed species** with **demand in high-value**
- **Sustainable** production system maximizing **existent & available coastal infra-structures**
- **Year-round** cultivation
- **Organic** certification
- **Quality, Safety, Traceability**





Sustainable technology to increase fish production! (EC 494/2012)

- Oxigênio Biomassa:
- Direct consumption
 - Processing



Production System – Tank system



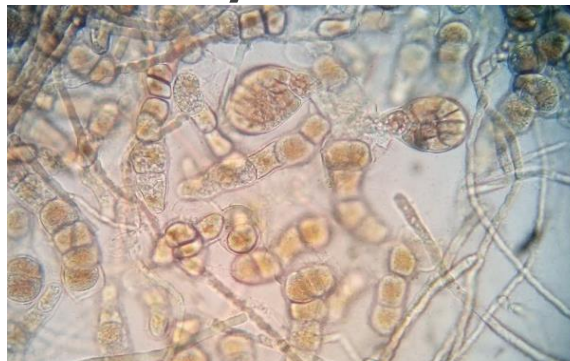
PT-BIO-03 Agricultura da UE



➤ 600 m² - 40 tons of fresh seaweeds



Production System - *The Nursery*



- Production of seedlings
- Maintenance of selected varieties-Seed bank
- Domestication of "novel" species



- A focus of ALGApplus in these last 5 years was to identify species of great interest for the markets but with low abundance or quality of wild biomass and domesticate them.
- The ones below are in the INCI and IECI list. Wild biomass is available only during 1-2 months per year. Besides Ulva and Gracilaria, we expect these species our main focus for the next years:

ALGApplus is the only commercial farmer in Europe



Codium tomentosum



Porphyra umbilicalis



Porphyra dioica

Year-round supply with consistent quality (composition and free of contaminants)

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Ulva rigida. Main production – year round



Gracilaria gracilis. Year round



Porphyra dioica – Conchocelis (nursery/lab) & blades (outdoor) year round, from selected varieties



Porphyra umbilicalis – Conchocelis (nursery/lab) & blades (outdoor) year round, from selected varieties



Codium tomentosum – year round (nursery and outdoor)



Processing



B2B: ALGA+™, main target

I. "Sea vegetable" companies/Food Processors

- Nutrition: Fiber, Protein, I/Fe/Vitamin A/Mg/Ca/K...
- Bioactivity: mostly in R&D sphere
- Salt reduction, Texture/Thickening, Color
- Bakery, Snacks, Ready-meals,



II. Feed additives:

- Seaweed meal: protein, pigments, trace elements, bioactive compounds
- Fish, Shrimp, Cows, Poultry

III. Cosmetics:

- Ingredient companies: seaweed extracts

Present production is not enough to meet demand



Goals for 2019

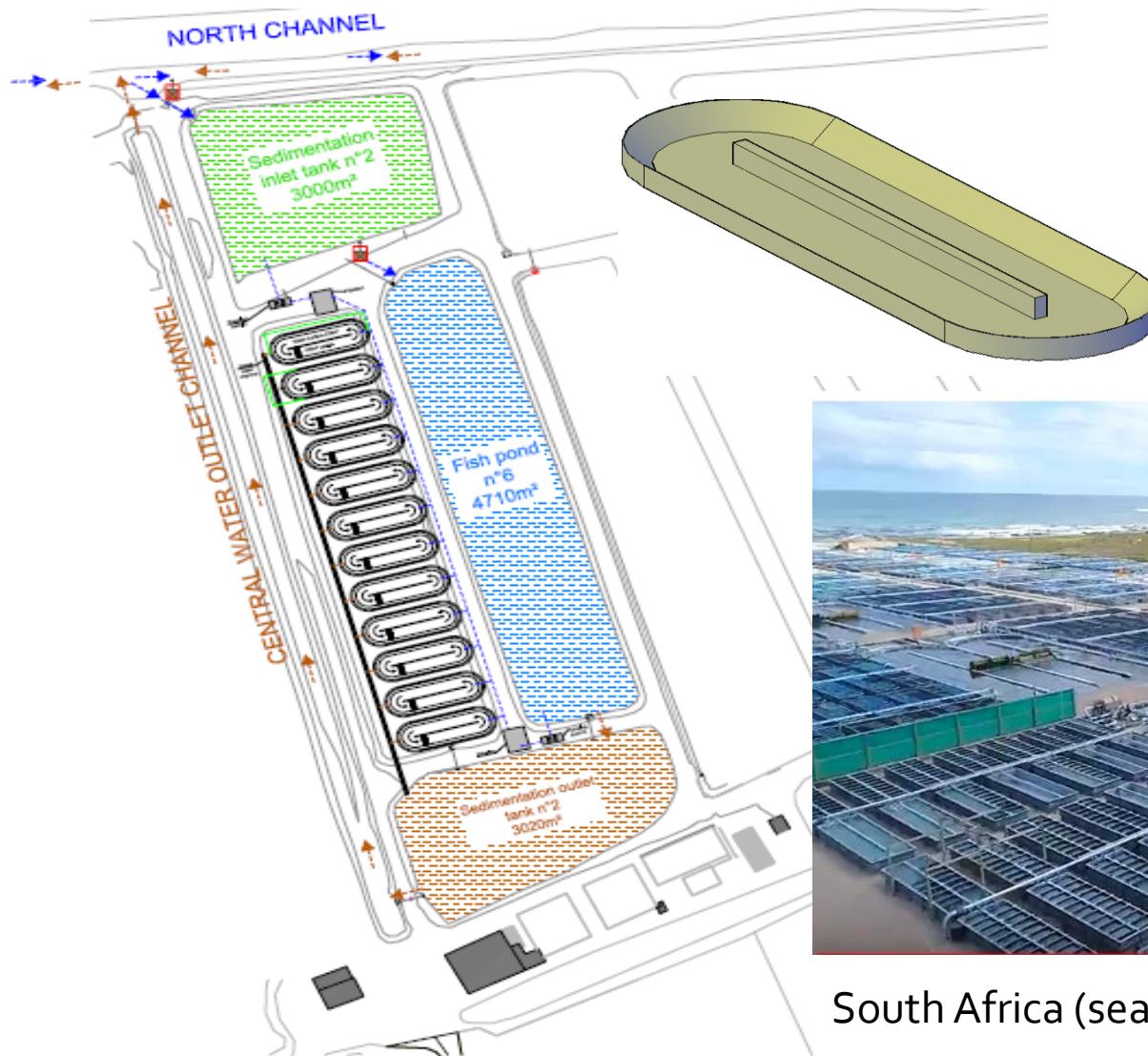
- Increase biomass production to meet customers demand
- Reduction of OPEX
- Optimized production system + renewable energies
- Valorize the available surface of 14ha



613m²: 40-50 tons/year (fw)



Available pond area-14ha



South Africa (sea lettuce + abalone)



ALGApus Lda Seaweed farm in Portugal



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