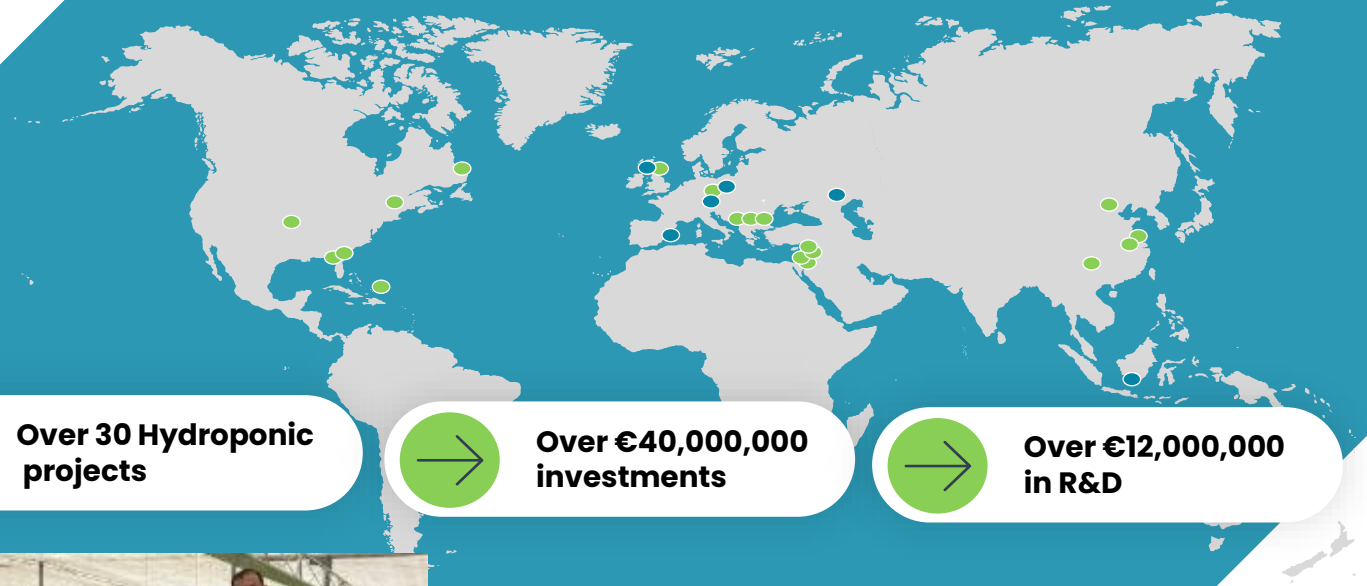
Algaenite Inc. A Delaware cooperation

929 Boston Post Road, Guilford Connecticut 06437 USA

www.Algaenite.com

Technology funded by the EU Horizon 2020

Algaenite Video S2



- **Over 30 Hydroponic projects**
- **Over €40,000,000 investments**
- **Over €12,000,000 in R&D**

Winners of the EU Seal of Excellence 2022
For the Algaenite™ technology

Lior Hessel Founder and CEO
Agricultural Engineer, M.Sc. NYU School of Engineering
liorh@algaenite.com

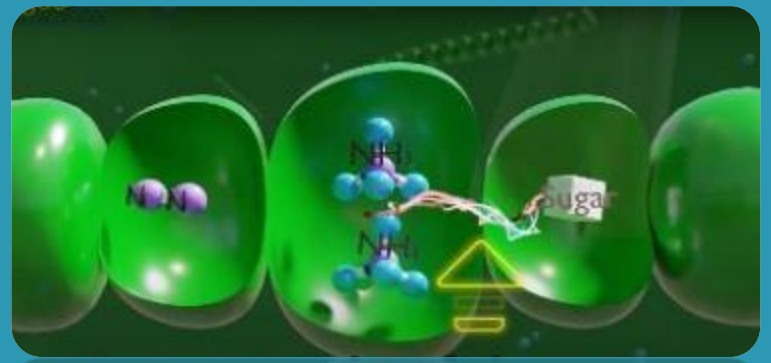
20 years of greenhouse innovation and Hydroponics

algaenite

We make Ammonia from Air

Known as “Nitrogen Fixation”

Using Carbon Capture as the energy source: 1000 tons of CO_2 per Ha per year



Funded by an EIC Accelerator Horizon 2020

Microbiology to Feed the World

Third-Generation Farming

Photobioreactors Technology
***Hybrid*: Bacteria/Microalgae Nitrogen Fixation + Carbon Capture**

- **Biomass fermentation**
- **Alternative Protein Biomass**
- **Molecular farming – In the future**
- **Plant Cell-Culture – In the future**

European Commission

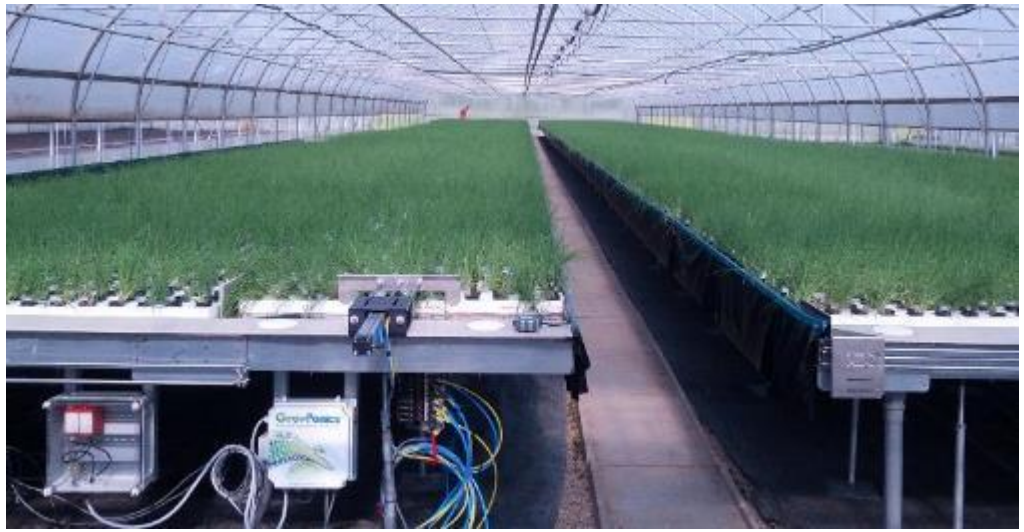
Introduction

We need fertilizer to grow food.

Ammonia is essential to make fertilizer and protein.

Ammonia is the building block, the most important raw material in food production.

Ammonia production is known as: “ Nitrogen Fixation” – connecting nitrogen from the air to hydrogen.



Problem

Ammonia production is an energy-intensive process.

Ammonia / Fertilizer Production: Two bad options

Organic Fertilizer

From waste: With bacteria, (since creation)
'Nitrogen cycle"

When industrialized:
Inefficient

Doesn't work for fertigation

Pathogens, hormones, antibiotics

25% of global Production

Chemical Fertilizer

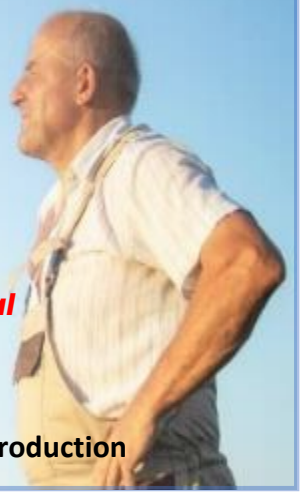
Petrochemical: Haber Bosch Process (100 years)
Bunning fossil fuels

Polluting

Not Organic Not Sustainable

Environmental Hazzard, Dangerous

75% of global Production



Protein Production:

Animal slaughtering:

Not Sustainable

Growing carbohydrates (carbs) using fertilizer - feeding animals

27% of CO_2 emissions

Solution – We use bacteria in a bioreactor to make ammonia.

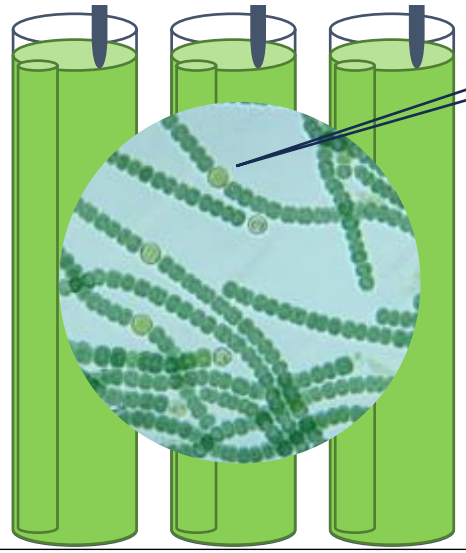
78% of the air is Nitrogen. Our **bacteria** "fixes nitrogen" and produces bio ammonia.

A solar factory that makes ammonia from the air

In a 2-micron cell

Inputs:

- SUN
- WATER
- AIR (N)
- Carbon Capture (CO_2)



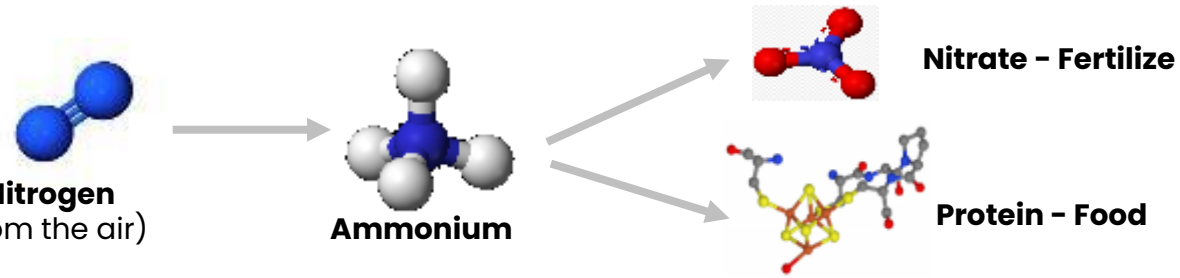
Photobioreactor(PBR)

NH_3 → Liquid Bio-Fertilizers → Bio Ammonia

2.6 years ROI – Going Organic

Protein → Protein Concentrates → Protein for food,

$8 per KG of Top Quality Protein



Results

Bio Fertilizer :

- Organic certified
- Negative CO_2 emission
- Carbon capture
- Clean from residues of: Pathogens, Hormones, Antibiotics
- Low Sodium
- 35% additional yield
- Competitive cost
- Fully soluble in water (Suitable for fertigation)

Algaenite vs. Competition

	algaenite	BIOTA NUTRI	AgroThrive
Available Nitrogen	5.5%	0.4%	0.16%
Nitrogen source	Air	Plant residue	Organic wastes

Protein:

Highest Quality Protein for the Lowest Production Cost:

$9 per KG (Selling Price: $25)

Automated remote-controlled PBR :

EU quality label for excellent ideas worthy of funding

CERTIFIED ISO 9001:2015 COMPANY

Business Model

Bio Fertilizer :

On-Farm / On-Line Business Model

- The **Algaenite™** systems are installed on farms. Connected to the fertigation system.
- Produces nitrogen fertilizer, from the air on the farm.
- **Licencing / Leasing -** Recurring revenues for the company.
- Sales of the PBR equipment and services.

ROI - 2 Years

Protein:

Build and Operate Protein Farms (BOT Business Model)

- B2B Sales of protein concentrates.
- B2B Sales of functional protein powders.
- Phase 2: Sales of protein consumer products B2B and B2C.

$9 per Kg

	2025	2026	2027	2028	2029
Bio Fertilizer	4	10	37	88	228
Protein		4	13	43	132
Total Sales	4	14	50	131	360

USP - Differentiators

Bio Fertilizer :

- *The best organic nitrogen-rich liquid fertilizer (**available nitrogen**)*
- ***"On-Farm"** – 2.6 Years ROI organic fertigation system*
- *35% higher yield than competing organic fertilizers*

Protein:

*Highest quality protein for the **lowest production cost**:*
$9 per KG (selling price: $25)

- Complete Protein
- Super Food
- Organic
- Net Zero Emissions

Product Yield from a 25,000 m² PBR Farm

Bio Fertilizer :

- Bio Liquid Fertilizer Composition:
  - 3-0-0+6CaO+Me (856 m3/Y)
  - 5-0-0+10CaO+Me (545 m3/Y)
  - 3/5-0-Hold + Hold + Me (Hold)

B2C

B2B

Protein:

(*) Biomass: 374 Tons of Biomass Annual Production (52% Protein 8.2% Nitrogen)

- Feed Stock for Biofertilizers Production
- Plant Based Protein (Bio) - Meat/Fish Analogs
- Food and Feed Additives
- Feed Stock for Bio Cosmetics Industry

75 Ton/Ha

Protein Concentrates

Ice Cream

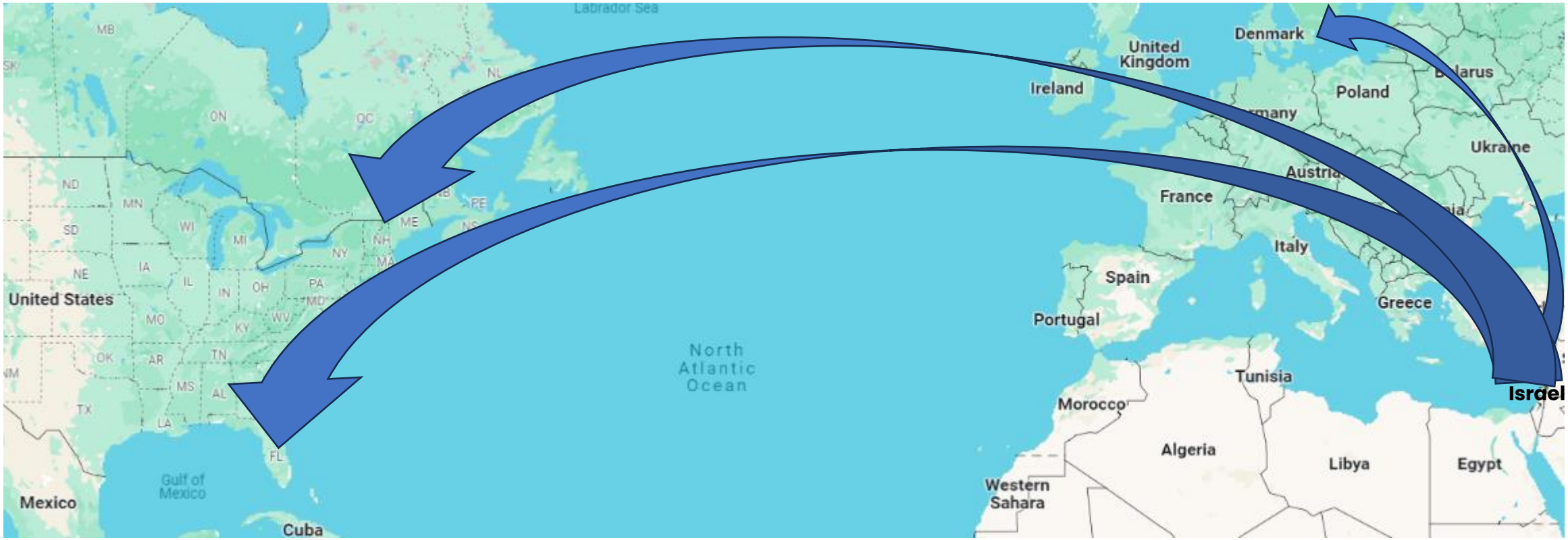
(***) Beauty Industry
15% Ammonium Solution
250 ton annual production

Phycocyanin
Fase Mask
Antioxidant

Functional Protein

Vegan Meat

Beta Sites in Connecticut, Florida and Denmark



Lior Hessel

Founder

Entrepreneur with vast know-how and experience in Ag-Tech. Founder and CEO of Growponics

Liat Hessel

CRO

Food scientist with over 15 years of experience in alternative portion R&D. Adv, Food Law Consultant.

Dr. Hani Shkolnikov Lozober

Biotechnologist

Ph.D. on Cyanobacteria protein at the Faculty of Biotechnology and Food Engineering, Technion, under Prof. Avi Shpigelman

Dr Yuri Belilovsky

CTO

35 years engineering experience
Energy and thermodynamics expert

Anders Thomsen

CEO Algaenite ApS Denmark

Marketing

Professor Yoram Gerchman

Research and development

Full Professor at Oranim Academic College. Researcher at the University of Haifa. Vast experience in biotechnology including nitrogen-fixing cyanobacteria and biochemistry.

Tal Amsalem

CEO

An experienced food industry executive. Vast knowledge in food-Teck marketing

Kobi Cohen

CFO

25 years experience in global innovation financial management

Ohad Hessel

COO

25 years of engineering experience.

Marketing and project management

Dr Stefan Leu

Biotechnologist

Experienced Biochemist, Environmental Scientist and Sustainability Expert

Assaf Shemesh

Biotechnology Engineer / Software Developer

THE TEAM COMBINES

Global business development, microbiology, food science, control, automation, sensor technology and artificial intelligence (AI) software.
Ag-Tech R&D and business development for more than 24 years.

We are raising $5m

THREE YEAR R&D PROGRAM:

$1m

Accelerate program

MARKETING AND HEADQUARTERS:

$1m

Management and marketing team

β SITES AND COMMERCIAL INSTALLATIONS:

$3m

Fund matching

Wrap up

- Transforming sustainable agriculture and protein production.
- Market-ready technology providing **organic fertilizers**, primed for rapid expansion.
- Patents have been applied for the proprietary technology.
- 15% of funds raised will be directed toward fuelling the **protein business** growth.
- In 2026: Spin-off of the protein business.
- Licensing the technology to the spin-off, generating royalty income.
- Beyond the royalty stream, investors will have the opportunity to invest in the spinoff.

Join us in shaping the future of sustainability.

algaenite

Thank You

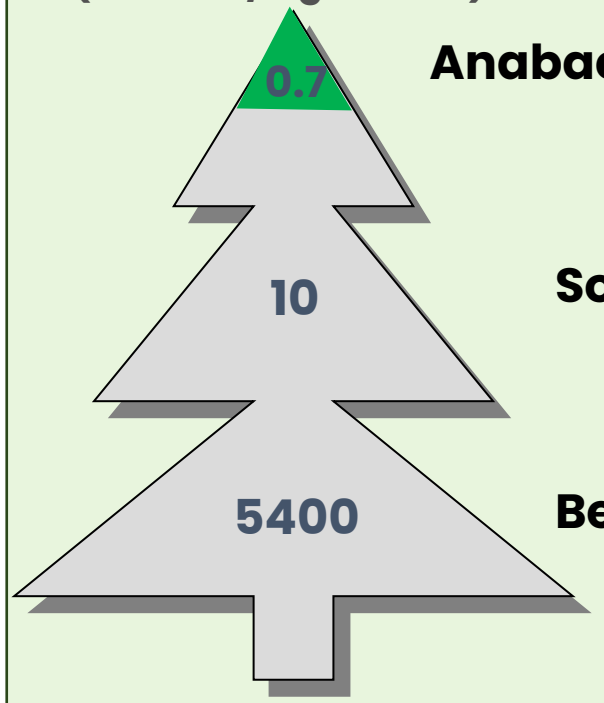
More slides to follow

[Algaenite Video S2]

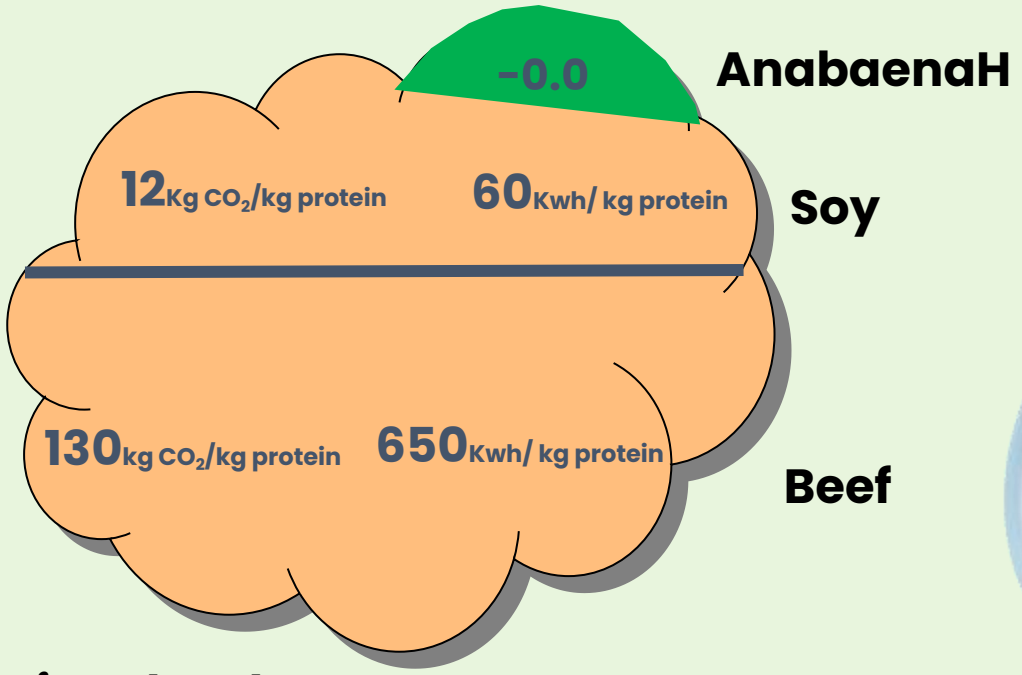
Dec 2024

Our Planet's Future Depends On Microalgae for Efficient Use of Natural Resources.

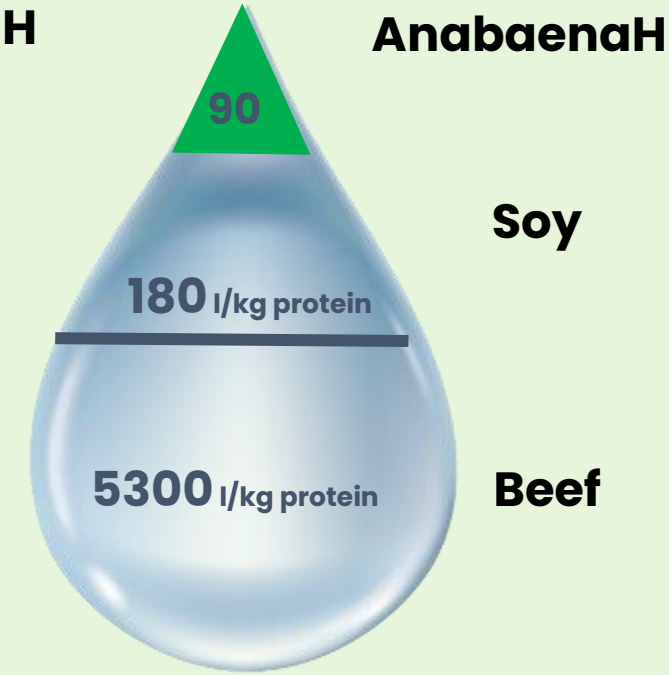
Land Use
(1000m2 / Kg Protein)



CO_2 Emissions / Energy



Water Consumption
(Liter of water/kg protein)



Saving the Planet's Resources

The PBR - Protein production system - Technology for future Protein farms

Next-generation farming

A columns system that enables the efficient growth of cell biomass, from which protein is subsequently extracted.
The columns are transparent to allow light to penetrate, for the benefit of the photosynthesis process carried out by the microalgae. At the bottom is the manifold, a system of pipes that hold the columns with a seal, which channels air enriched with carbon dioxide essential for algae growth. The airflow creates gas exchange and allows for the mixing of the biomass generated within the PBR.
To enable good control of the system (from a distance over the cloud), the PBR has a control and monitoring system that also optimizes the growth process. The development includes an algorithm for growing a culture called NightKeep^{TM}.

Our IP – Two Patent Applications where filed, in 2018 and in 2024

Provisional patents

62/724,457

August 2018

63/588,724

October 2023

PCT

IB2019/057284

Aug 2019

PCT

18/357,188

October 2024

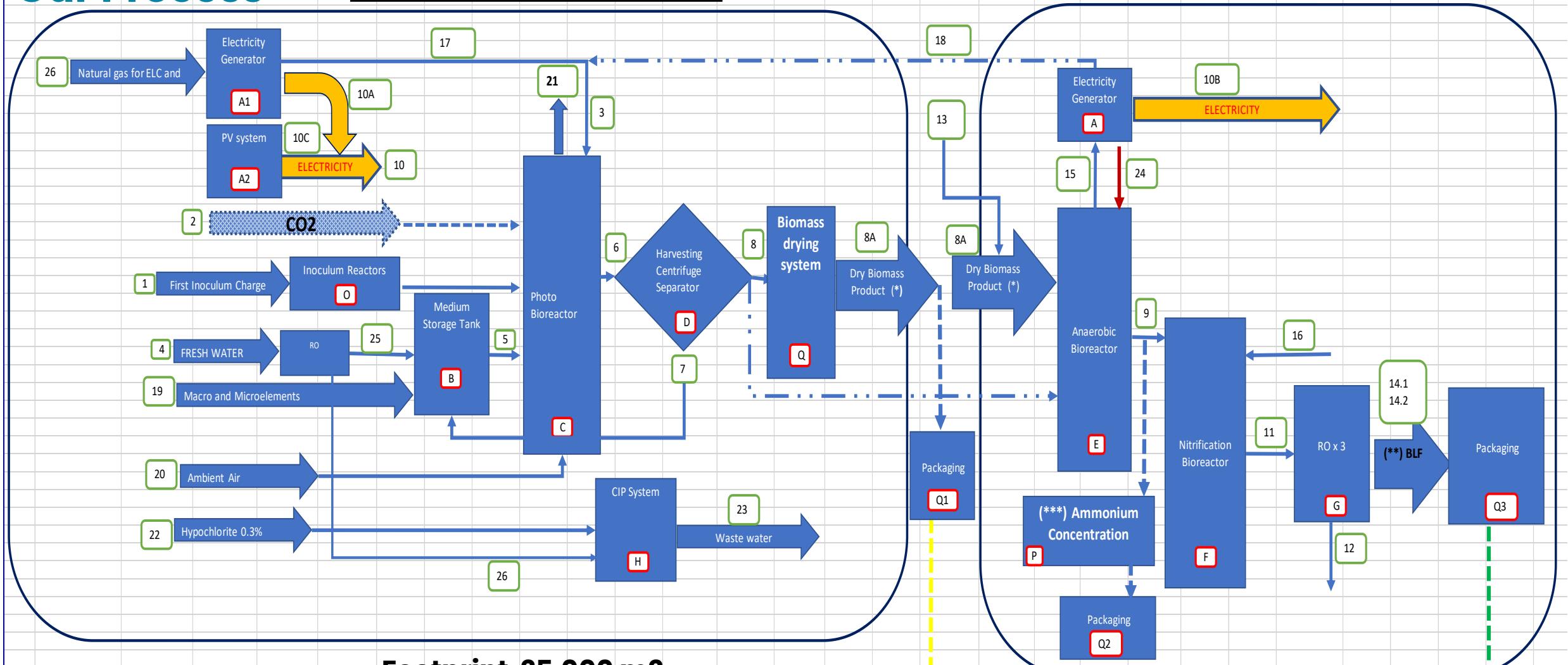
Applications in **Europe** and in the **US**

Covering process engineering, algorithms, and machine learning
Over $35,000 invested in IP protection (Leading Israeli IP Law Firm)

Our Process

Biomass Photo Bioreactor (BPB) Plant

Bio Liquid Fertilizer (BLF) Plant



Footprint 25,000 m2

75 Ton/Ha Of Protein

(*) Biomass: 374 Tons of Biomass Annual Production (52% Protein 8.2% Nitrogen)

- Feed Stock for Biofertilizers Production
- Plant Based Protein (Bio) - Meat/Fish Analogs
- Food and Feed Additives
- Feed Stock for Bio Cosmetics Industry

(***) Beauty Industry
15% Ammonium Solution
250 ton annual production

(**) BLF - Bio Liquid Fertilizer Composition:

- 3-0-0+6CaO+Me (856 m3/Y)
- 5-0-0+10CaO+Me (545 m3/Y)
- 3/5-0-Hold + Hold + Me (Hold)

algaenite

Meets EU Green Deal Objectives

The European Green Deal will improve the well-being and health of citizens and future generations

Cleaner air, water and soil	High yield organic farming	Local production
Zero CO_2 emissions	Less pesticides and fertilizers	Sustainable approach
Pathogen free	Cleaner energy	High quality fruits and vegetables
In line fertilizer production No packing materials	Healthier Food	More environmentally-friendly products in our shops

Addressing 6 of the 17 United Nations Sustainable Development Goals:

UNITED NATIONS

https://sdgs.un.org/goals

Competing Organic Fertilizers:

	algaenite	BIOTA NUTRI	AgroThrive ORGANIC BIO-FERTILIZERS
Available Nitrogen	**5.5%**	**O.4%**	**0.16%**
Nitrogen source	**Air**	**Plant residue**	**Organic wastes**

And we have:

- ✓ **30% Additional yield**
- ✓ **Competitive cost**
- ✓ **Suitable for fertigation: Fully dissolved in water**
- ✓ **Free of pathogens, hormones, antibiotics**

Competing Nitrogen Bio Fixation Technologies

	algaenite	PIVOT BIO	azotic TECHNOLOGIES
Bacteria Species	**Anabaena**	**Klebsiella Variicola**	**Gluconacetobacter Diazotrophicus**
Energy source	**Sun**	Sugar	Sugar
Application	On site fertigation or hydroponics	In furrow.	In furrow or foliar
Applicable in fertigation	Yes	Yes	Yes
Applicable in hydroponics	Yes	NO	Only foliar application
Crops	**All**	Maize, wheat, sorghum	rice, wheat, maize, soybean and others
% of N supply	**100%**	20-30%	Up to 50% w/o yield increase
Organic input certified	Not yet	No	Not yet
Enables organic certification of the farm	**Yes – in the US**	No	Requires additional organic fertilizers
Time to market	Six months	Commercial	Commercial
Funding raised	€2.5M from the EU	€430M series D	N/A. From angels and Virya LLC

good restriction drawback

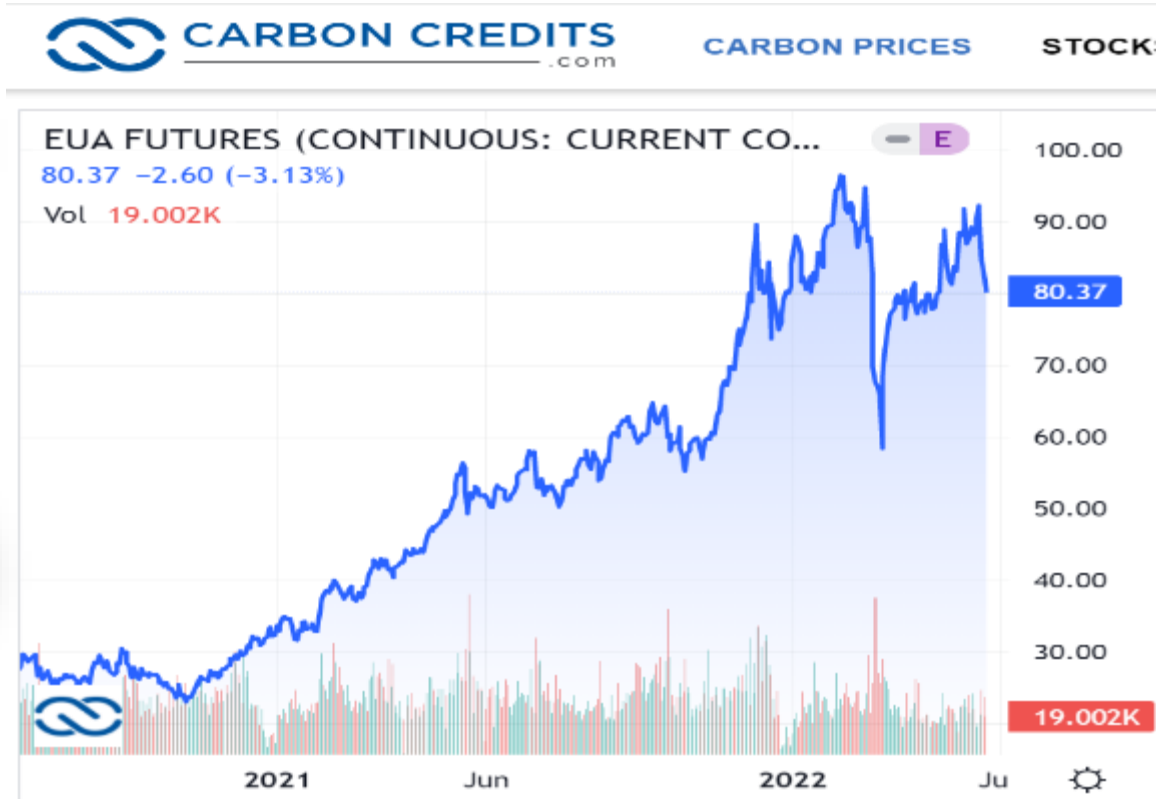
Environmental Benefits

Produces Renewable Energy

Methane is a by-product of the reactor and is used for generating 1/3 of the electricity needed to run the factory

Negative CO2 Emission

Carbon Dioxide Removal (CDR)
337 Tons per year per 3ha production unit
Current price - €80.37 per Ton



1.5 tons of CO_2 absorbed per 1 ton of Biomass

The Organic Fertilizer Market

- **Global organic fertilizer market will reach $15.8 billion by 2026 with a CAGR of 13.7% from 2020 to 2026**
- Retail sales for organic products have increased by over 128% in the last 10 years, from approximately $18b in 2009 to $41b in 2019.
  - Organic food sales have grown +36% in Germany between 2018 and 2020**.
  - 344,000 organic food producers in Europe in 2019, +5.1% more than in 2018 (IFOAM Organics Europe).
  - European Green deal target: 25% of all land under organic farming by 2030 from 8.5% in 2018

Current Market Prices for Organic Fertilizer (275 Gallon Totes - 1m³)
$5,000 (low quality) – $13,000 (premium fertilizer)

*Source: ReportLinker 2021 - ** Statista

THE MARKET – GERMANY: LARGEST BIO MARKET IN EUROPE

Growing demand for organic produce

The German Government Strategy for the Future of Organic Farming

"20 percent organic farming in Germany by 2030" is the Federal Government's target, as set out in the Sustainable Development Strategy, because organic farming is a particularly resource-efficient, environmentally sound and sustainable form of agriculture.

Federal Ministry of Food and Agriculture

2018	2019	2030
8.2% farmland[2]	9.7% farmland[1]	20% farmland

In 2020, the organic market in Germany grew by 22% to €14.99 billion[1].

About 20% of the organic produce is imported.

Every day, on average five farms convert to organic – roughly 500 football fields[2].

(1) https://www.bmel.de/EN/topics/farming/organic-farming/strategy-future-organic-farming.html
(2) https://www.deutschland.de/en/topic/environment/how-germany-is-promoting-organic-farming

Algaenite In Europe

Anders Thomsen
CEO Algaenite ApS Denmark

1. Establishment of Algaenite ApS in Denmark, with Anders Thomsen as CEO.
2. Establish Algaenite demonstration site (beta sites) at Legro A/S, DTI/Nordic Greens is in Denmark (**LOI**), and TECNOVA Technology Center is in Spain. (**LOI**)
3. Documentation and Validation from the beta sites.
4. Certification of Algaenite products in Denmark and Europe. (**Novel Food**)
5. Business plan, financial projections, marketing & sales strategy for the European market.
6. Hiring and scaling up the Algaenite ApS company in Denmark for sale, marketing & technical support.
7. *Alternative protein* 2 year R&D (*from TRL6 to TRL8).* **Product A** – Protein powder AnabaenaH Consecrates. **Product B** – Phycocyanin – Functional, high-value protein.

Algaenite ApS – three-year work plan in Europe :

The go-to-market plan for the BLF PBR systems is based on a phased approach: Demonstrate – Validate- Expand – Scale (BOT).

1. The Algaenite ApS company establishment with Anders Thomsen as CEO.
2. Establish Algaenite demonstration site (beta sites) for liquid bio-fertilizers at
   - Legro A/S
   - Danish Technological Institute in Denmark
   - TECNOVA Technology Center in Spain.
3. Documentation and Validation from the three beta sites.
4. Certification of Algaenite products in Denmark and Europe.
5. *Alternative protein (from TRL6 to TRL8).*

   Product A – Protein powder Anabaena Consecrates.

   Product B – Phycocyanin – Functional, high-value protein.

Alternative Protein: Two Product Line

1. AnabaenaH - new natural stain developed
   Requires Regulation (Novel Food, GRAS)
   Can not be marketed yet

2. Spirulina BLF - Produced in the Algaenite PBR
   Fed by the Algaenite BLF
   Marketing has started
   Approved Food

AnabaenaH - Regulation (GRAS)

Target Date	GRAS Certification Milestones
4 weeks	Feasibility Assessment
4 – 8 weeks	Gap Analysis
6 -12 weeks	GRAS Dossier Preparation
12 - 48 weeks	FDA GRAS Submission
24 - 56 weeks	FDA GRAS Approval

More products that we experimented with their development

An Energy drink with Blueberry flavor - Based on Natural Organic Ingredients

Blew Marshmallow with Phycocyanin

Blueberry Ice Cream with Phycocyanin

Cosmetics

Phycocyanin
Fase Mask
Antioxidant

Phycocyanin
Fase Cream
Antioxidant

AnabaenaH / Spirulina BLF Beer

Prepared by Dr. Charles Harward

A small amount of freeze/thaw anabaena was added to the left glass of Heineken with no additive. also, anabaena after 6-7 cycles of freeze/thaw under microscope. the cells are sill distinguishable but virtually no chains of cells and beer appears transparent (dark but transparent)

Environmental Benefits

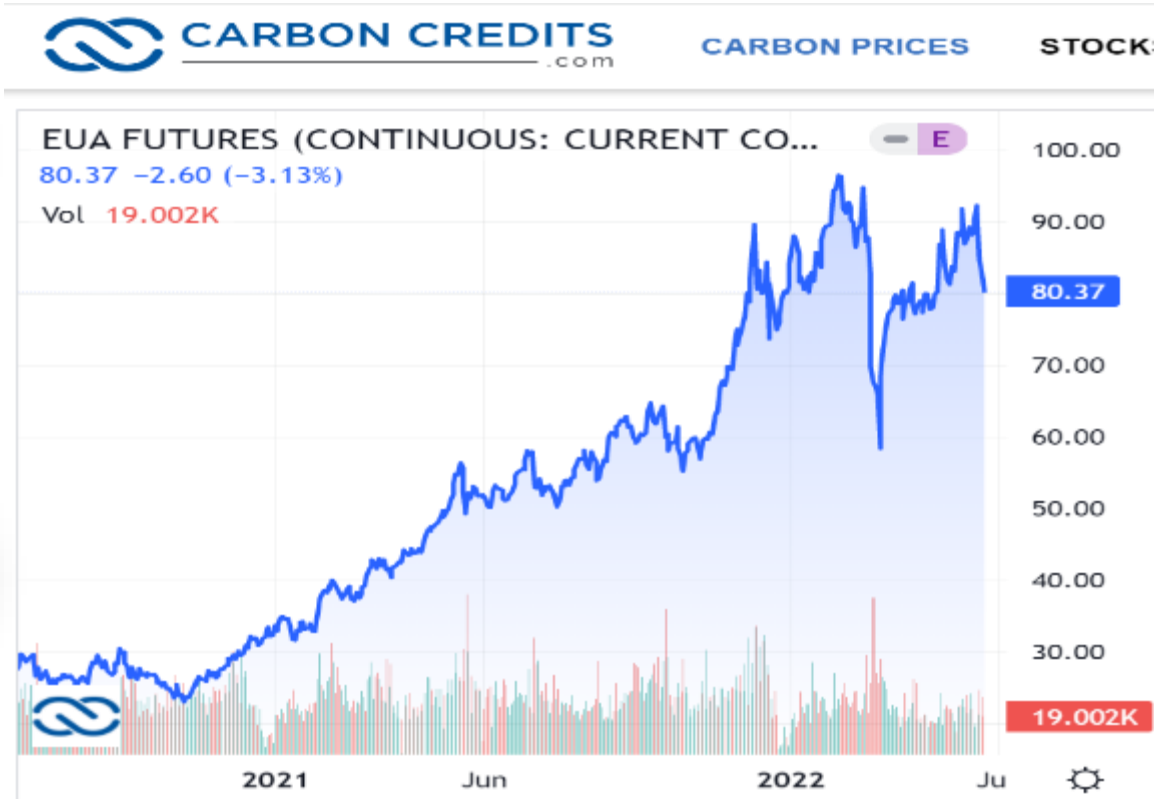
The system contributes to the quality of the environment since it is produced based on solar energy only, and the innovative development allows for 0 GHG emissions. The ISO 9001 certified

Produces Renewable Energy

Methane is a by-product of the reactor and is used for generating 1/3 of the electricity needed to run the factory

Negative CO2 Emission

Carbon Dioxide Removal (CDR)
337 Tons per year per 3ha production unit
Current price - €80.37 per Ton



1.5 tons of CO_2 absorbed per 1 ton of Biomass

Global Algae Protein Market (Alternative Protein)

52% of our AnabaenaH is protein

https://www.alliedmarketresearch.com/algae-protein-market-A12704

The Global Phycocyanin Market (Functional Protein)

50% of Our Anabaena H protein is Phycocyanin