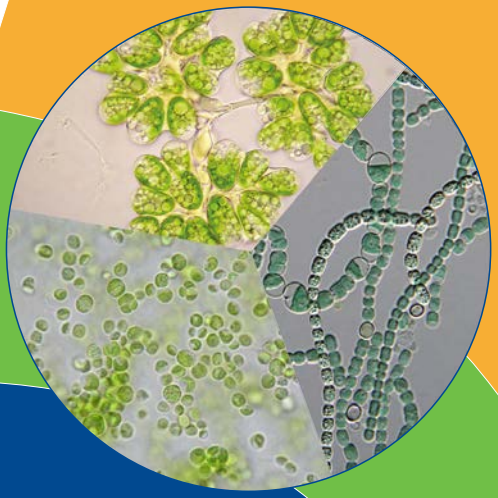
ALGAENERGY



AlgaEnergy is a global leader in the development of microalgae based solutions for agriculture and other industries. AlgaEnergy is the only microalgae producer to use industrial CO_2 emissions in the growing of their microalgae products leading to greater sustainability and contributing to a healthier planet. Microalgae provide a new, more sustainable, more consistent and biodiverse aquatic plant based biofertility product. Microalgae are found everywhere in aquatic environments and have a limitless potential to provide solutions to the many challenges faced by agriculture. By harnessing multiple, diverse microalgae strains in one product, AlgaEnergy is able to provide products that can benefit a wide range of crops in diverse environments facing unique stresses.

AlgaEnergy products are now available to US growers. Incorporate AlgaEnergy microalgae in your crop management programs and see for yourself the power of these tiny biological marvels.

The combination of a unique raw material and the most advanced technology

Raw material

Microalgae

Optimized combination of different microalgae, selected according to their unique compositions.

Production process

UPT® technology

The UPT® technology –developed by AlgaEnergy–, prevents degradation, by keeping all the original properties of the raw materials and its biochemical richness intact.

A unique end-product in the market

Each biofertilizer of the AlgaEnergy biofertilizers range combines the advantages offered by different microalgae to provide specific solutions, depending on the specific needs of the farmer.

more than 8 years of development

The most advanced technology and production processes in the world

Water
Cultivation medium preparation

Nutrients
Cultivation medium preparation

Inoculum
Inoculation: first phase

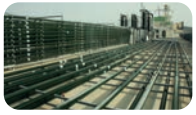
CO_2
Pipeline and supply

Light

Raceways

Flat panel photobioreactors

Tubular photobioreactor



Harvesting: biomass

- Lipids
  - Pigments → Cosmetics
  - Fatty acids → Food & feed, Biofuels
- Carbohydrates
  - Lactic acid → Biomaterials (PLA)
  - Ethanol → Biofuels
- Protein
  - Amino acids → Biofertilizers
  - Peptides → Food & feed
- Others → Aquaculture

These are just a few examples of the potential of microalgae valorization in different sectors

PREPARATION | CULTIVATION | DOWNSTREAM

UPSTREAM

Technology and Facilities

Our ambitious mission to offer unique products for agricultural markets has led to the developmentof advanced technologies that are combined with the knowledge and experience acquired over more than 4 decades of research in microalgae. At AlgaEnergy, we supply innovative, effective and sustainable solutions to help support the demands of todays intensive farming practices.

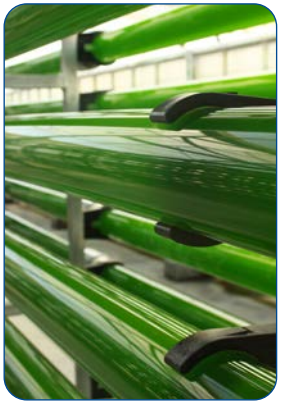
AlgaEnergy utilizes two microalgae cultivation plants. One focused on R&D, the Technological Microalgae Experimentation Platform (PTEM), located at the Adolfo Suárez Madrid–Barajas Airport, was built in collaboration with Aena airport management contractor, and Iberia Airlines. The PTEM is a strength and resource for AlgaEnergy allowing for advanced pilot scale research in microalgae supporting the development of novel new technologies, processes and products.

PTEM: Platform for Technology & Experimentation with Microalgae

Laboratories and inoculum chambers

Bubble columns

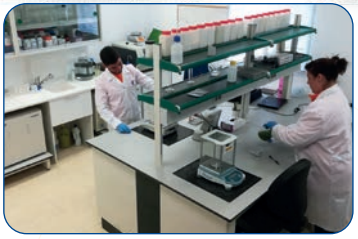
Vertical flat photobioreactors



Tubular PBR

Raceway

Industrial production plant at Arcos de la Frontera (Cádiz)

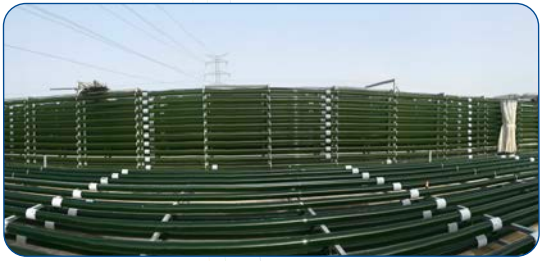


Laboratories and inoculum chambers

Biomass processing warehouse

Optimised next generation raceway

Vertical flat photobioreactors



The largest glass tubular photobioreactor in the world

The other plant is focused on large scale commercial production of microalgae. Located in Arcos de la Frontera (Cádiz), Spain, the plant uses CO_2 emissions from power generation to grow microalgae. This partnership with Iberdrola, a major global power generator, allows AlgaEnergy a huge advantage in producing a high quality, highly sustainable, lower cost product through the capture of CO_2 emissions from a natural gas power plant to grow our microlagae.

Bubble columns

SURETYMA

SURETYMA

1.0-0-0.5
4.9%
Total L-Amino Acids

Surety MA is a microalgae based plant biofertilizer refined through a bioprocess utilizing **UPT® Technology**. It is specially formulated to optimally deliver **Algae Protein Hydrolysate*** to improve soils andcrops by soil and/or foliar applications in combination with traditional crop inputs and practices.

- **Compliment to conventional crop nutrition programs**
- **Natural and sustainable crop input**
- **Improves crop vigor, uniformity and resilience to stresses**
- **Improves crop quality and productivity**
- **Contributes to improved soil physical, chemical and biological properties**

SURETYMA Organic

Coming Soon!

1.0-0-0.5
4.9%
Total L-Amino Acids

Surety MA Organic is a microalgae based plant biofertilizer refined through a bioprocess utilizing **UPT® Technology**. It is specially formulated to optimally deliver Algae Protein Hydrolysate* to improve soils and crops by soil and/or foliar applications in combination with traditional crop inputs and practices.

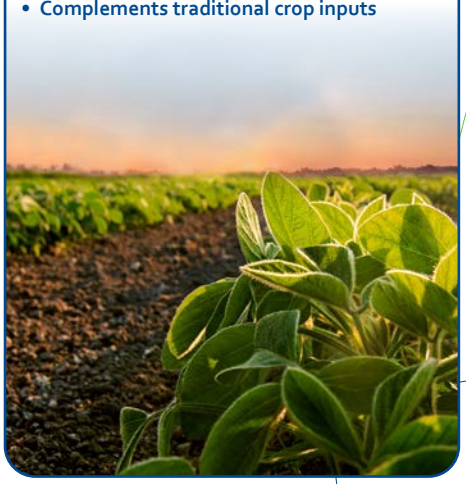
- **Provides potent organic crop biofertility**
- **Natural and sustainable crop input**
- **Improves crop vigor, uniformity and resilience to stresses**
- **Improves crop quality and productivity**
- **Contributes to improved soil physical, chemical and biological properties**
- **Complements organic crop inputs**

SURETY SOIL

3.0-1.5-1.5
5.1%
Total L-Amino Acids

SuretyMA Soil is a microalgae based plant nutrient obtained through a bioprocess utilizing **UPT® Technology.** It is specially formulated to efficiently deliver **Algae Protein Hydrolysate*** with crop irrigation.

- **Natural and sustainable product**
- **Improves crop vigor, uniformity and resilience to stresses**
- **Improves crop quality and productivity**
- **Contributes to improved soil physical, chemical and biological properties**
- **Complements traditional crop inputs**



PhytoMer™

Technology from ALGAENERGY UPT® by AE

PhytoMer™ Fruit

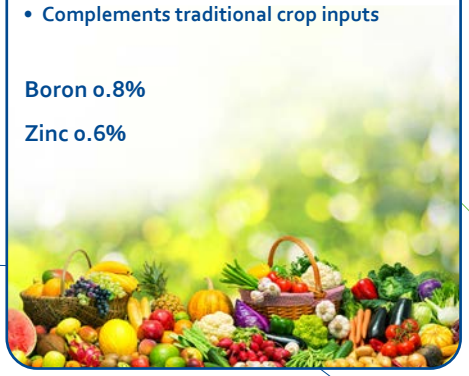
1.5-3.0-2.0
4.8%
Total L-Amino Acids

Phytomer Fruit is a microalgae based plant nutrient obtainedthrough a bioprocess utilizing **UPT® Technology**. It is specially formulatedwith a high concentration of **Algae Protein Hydrolysate*** and micronutrients to support plant developent during flowering and fruiting.

- **Versatile microalgae crop input for soil and foliar application**
- **Natural and sustainable product**
- **Promotes development of reproductive plant tissue**
- **Formulated to improve fruit set, size and weight**
- **Improves fruit quality, uniformity and overall resilience to stresses**
- **Complements traditional crop inputs**

Boron 0.8%

Zinc 0.6%



PhytoMer™ Growth

3.0-1.5-1.5
3.8%
Total L-Amino Acids

Phytomer Growth is a microalgae based plant nutrient obtained through a bioprocess utilizing **UPT® Technology.** It is specially formulated with a high concentration of **Algae Protein Hydrolysate*** and micronutrients to support plant developent during vegetative growth.

- **Versatile microalgae crop input for soil and foliar application**
- **Natural and sustainable product**
- **Improves crop vigor, uniformity and resilience to stresses**
- **Improves crop quality and productivity**
- **Contributes to improved soil physical, chemical and biological properties**
- **Formulated to enhance vegetative growth and support the development of quality fruit**
- **Complements traditional crop inputs**

Ca 1.0%
Mg 0.5%
Fe 0.5%
Mn 0.3%

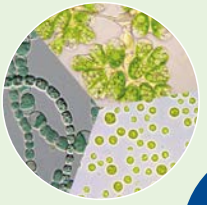
* Protein Hydrolysate is defined as the organic material obtained by the hydrolysis of proteins to their constituent amino acids and short polypeptides.

MICROALGAE are

Origin

Microalgae	VS	Seaweed
Cultivated in photobioreactors		Extraction of maritime coasts
		
Homogeneous raw material. Stable composition		Very heterogeneous raw material
A 100% controlled environment, from the first cell to the final product		Exposed to contaminants
Guaranteed quality		Great variations of content and quality
Absolute control		No control

Raw Material

Microalgae	VS	Seaweed
Homogeneous composition		Very variable biochemical composition
		
Proteins 50-60% depending on the microalgae strain	Up to 15 times greater proteins content!	5-9% depending on the type of seaweed Proteins
In just one cell		Multicellular organisms
Microalgae contain everything that a plant may need to develop its vital functions		It only contains some compounds and in small amounts
Biochemical richness can be guaranteed		The composition will vary depending on the part of the seaweed used

not SEAWEED

Production Process

Microalgae	VS	Seaweed
Soft biological process		Aggressive physical and chemical processes
UPT® For every 5 liters of AgriAlgae®, the emission of 2 kg of CO_2 into the atmosphere has been avoided 100% It assures that the properties of the raw material are intact		Sub-product from other industries Some compounds of interest have been previously extracted for other industries Other compounds have been degraded in extreme physico-chemical processes A degraded raw material, with fewer compounds of interest, is obtained as a result
No environmental impact		Impact on the marine ecosystem
Unlimited production		Limited production

Final Product

Microalgae	VS	Seaweed
Completely homogeneous		Very variable
Composition		
All of them and in L-form Amino acids Glutamic Acid, Leucine, Alanine,Valine, Lysine, Threonine, Isoleucine, Serine, Histidine, Asparagine, Glicine, Phenylalanine, Tryptophan, Methionine Aspartic Acid, Arginine, Tyrosine, Proline, Cysteine and Glutamine.		It does not have relevant content
All of them Phytohormones Auxins, Gibberellins, Cytokinins, Jasmonic acid, Salicylic acid, Brassinosteroids, Etc.		Little variety and in small quantities 10 times less!
Compatible with fertilizers and phytosanitary treatments Micronutrients		Yes, but with a high content of iodine and sodium and arsenic presence
Peptides, Pigments, Antioxidants, Vitamins, Polysaccharides. Other functional molecules		Less richness and biochemical diversity

External studies

With statistical significance support the effectiveness of AlgaEnergy biofertilizers

AlgaEnergy has proven through independent studies that AlgaEnergy biofertilizers comes out on top among solutions farmers can really trust in order to enhance crop yield.

One of these reports was carried out by Madrid's Institute for Rural and Agricultural Research and Development (iMiDRA) and confirms that AlgaEnergy's products provide the best results on crops such as melon –for the second year in a row–, tomato and pepper, compared to other agricultural biofertilizers of reference in the market. In this case, the study compared AlgaEnergy biofertilizers microalgae biofertilizers with other market-leading products based on animal amino acids and biofertilizers made of seaweed.

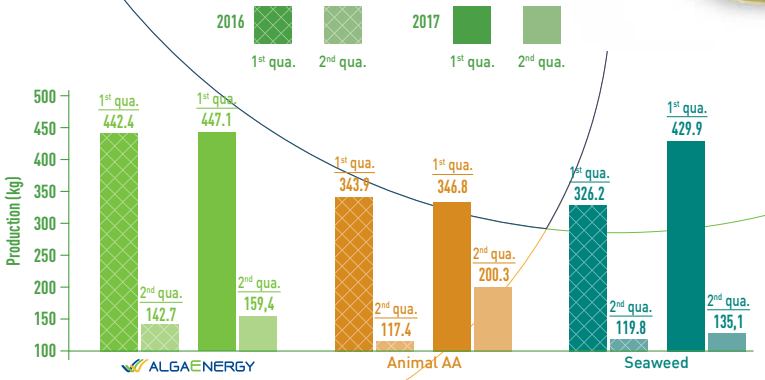
The most significant findings were the following ones:

Comparative Trials

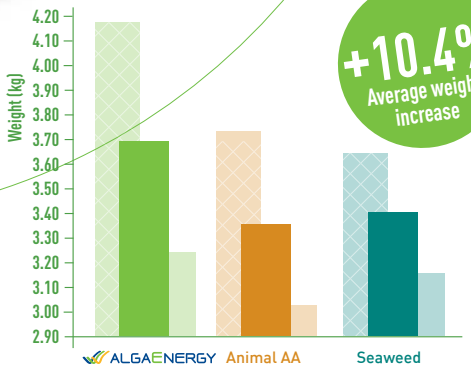
Melon cultivation

AGRIALGAE®
The best results for the second year in a row

1st and 2nd quality production (kg)



Average weight melons (kg)



+10.4%
Average weight increase

Total yield (number of fruits)

2016	2017		
172	190	Treatment	Biofertilizer based on microalgae ALGAENERGY
144	188	Treatment	Biofertilizer based on amino acids from animal origin
146	175	Treatment	Biofertilizer based on seaweed

Organoleptic properties

Global Appreciation

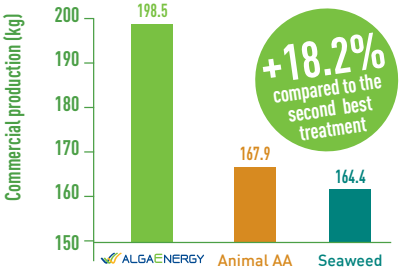
Animal AA	6.6
Seaweed	6.6
ALGAENERGY	7.5

Comparative Trials
Tomato cultivation

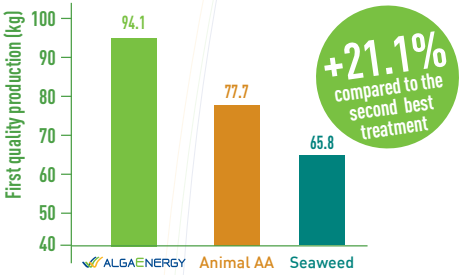
Organoleptic properties

Global Appreciation

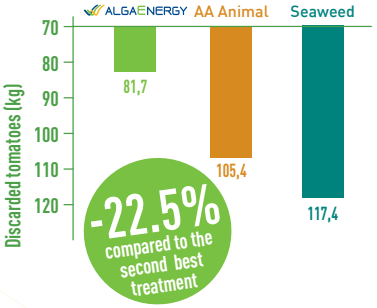
Commercial production (kg)



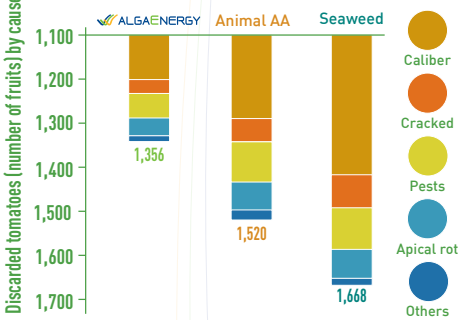
First quality production (kg)



Discarded tomatoes (kg)



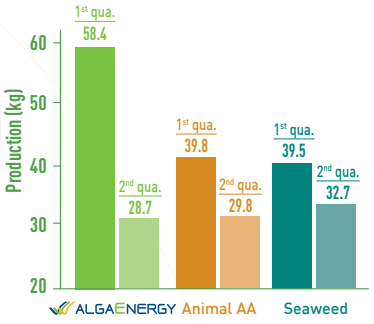
Discarded tomatoes by cause



Comparative Trials
Pepper cultivation

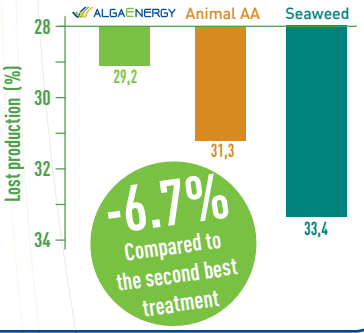
Average weight of the peppers (g)

1st and 2nd quality production (kg)



Lost production

(% on total production in kg)



We collaborate with leading R&D centers and Universities

AlgaEnergy has R&D&I collaboration agreements with more than 130 companies, leading international research centers and some of the most outstanding universities in the world, such as:

For more information:

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