FUTURECO bioscience

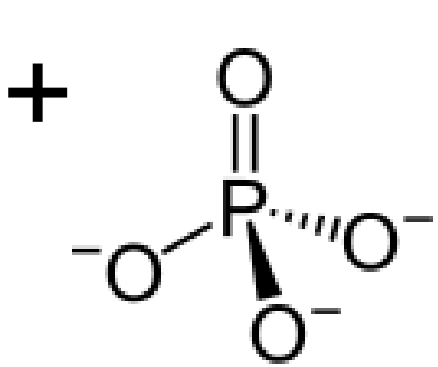
# ALGALIV

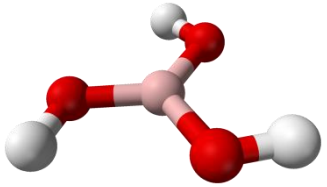
## SEAWEED EXTRACT BIOSTIMULANT

***100% ASCOPHYLLUM NODOSUM***

# What is ALGALIV?

**ALGALIV is a biostimulant** based on the mixture of a **purified extract of seaweed *(Ascophyllum nodosum)*** with added **Phosphorous**, **Potassium** (0-7-10) and a complete range of **EDTA microelements + Boron.**





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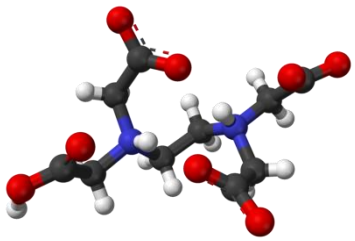


EDTA

Cu

Fe

Mn

Zn

$K^+$

# What is ALGALIV?

## Certified contents

| Richness | % w/w | % w/v |
|---|---|---|
| Organic Matter (exclusive from the seaweed extract) | 15,0 | 20,0 |
| Phosphorous ($P_2O_5$) | 7,0 | 9,3 |
| Potassium ($K_2O$) | 10,0 | 13,8 |
| Boron | 0,13 | 0,17 |
| Copper (EDTA-Cu) | 0,10 | 0,13 |
| Iron (EDTA-Fe) | 0,20 | 0,27 |
| Manganese (EDTA-Mn) | 0,20 | 0,25 |
| Molybdenum (EDTA-Mo) | 0,05 | 0,06 |
| Zinc (EDTA-Zn) | 0,20 | 0,3 |

# Seaweeds – High variability of commercial extract composition

- Species of seaweed (raw material)
- Location and season of the harvested seaweed (raw material)
- Extraction process  of the pure seaweed extract (alkaline, acid, fermentation, cold/pressure)
- Volume of pure seaweed used in the end formulation

# ASCOPHYLLUM NODOSUM

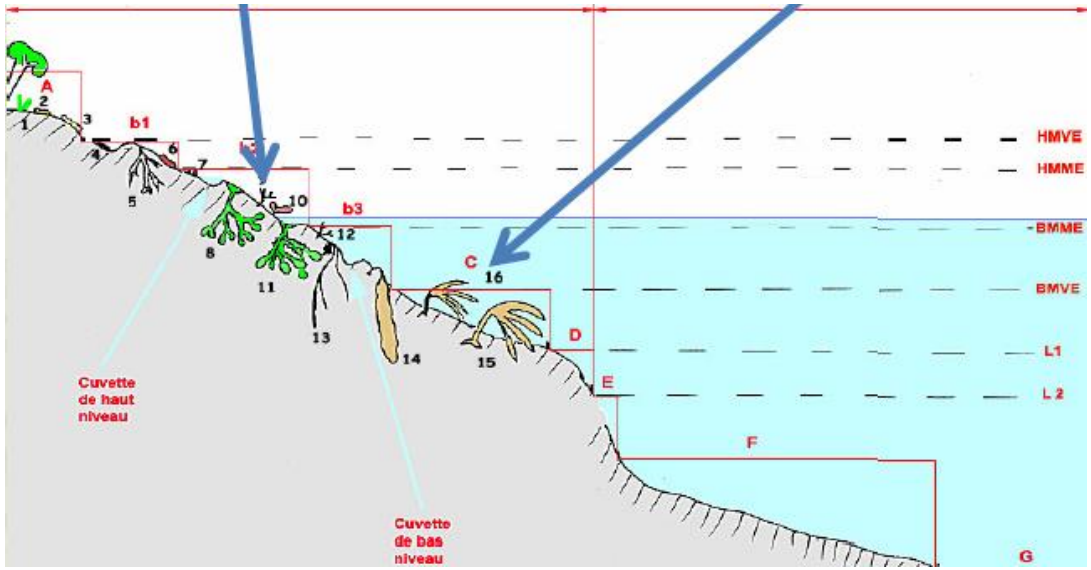
*Ascophyllum nodosum*

*Fucus sp.*

*Laminaria digitata*

*Ecklonia maxima*

*Fucales* *Laminariales*




Every 6 hours
Low/high tide

# ASCOPHYLLUM NODOSUM

Intact rhizoids

Intact rhizoids

# *ASCOPHYLLUM NODOSUM*
## BC® purification method

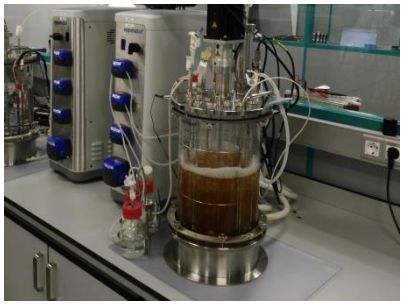
Salty water cleaning

BC method characteristics (buffering-centrifugation)

- Avoids osmotic inbalance: cleaning with salty water
- Avoids loss of activity of bioactive molecules
  1. Ultrarapid freezing: keeps structure
  2. Buffering: exclusive TKE buffer
- Centrifugation: elminates solid particles, visibles and invisibles (extracts contaminated with suspension particles tend to be non-transparent; cell membranes and other insoluble lipids that decrease activity of the bioactive molecules)

Ultrarapid freezing/ground

Buffering



Centrifugation


# What is ALGALIV?

| AMINOGRAMA ESTÁNDAR (ppm) | |
|---|---|
| Ácido aspártico | ~550 |
| Ácido glutámico | ~36 |
| Cisteina | ~30 |
| Serina | ~375 |
| Glicina | ~200 |
| Treonina | ~290 |
| Arginina | ~126 |
| Alanina | ~435 |
| Tirosina | ~500 |
| Valina | ~270 |
| Metionina | ~128 |
| Fenilalanina | ~39 |
| Isoleucina | ~146 |
| Leucina | ~321 |
| Lisina | ~416 |
| Hidroxiprolina | ~79 |
| Prolina | ~559 |

*Esta es la composición típica y es variable lote a lote como en todos los extractos de origen natural*

| FITOHORMONAS (ppm[1]) | |
|---|---|
| Citoquininas | |
| Zeatina | ~11 |
| Dihidrozeatina | ~10 |
| Isopenteniladenina | ~6 |
| Isopenteniladenosina | ~2 |
| Auxinas | |
| Ácido 3-indol acético | ~35 |
| Acido – 3- indol carboxylico | ~22 |
| Indol – 3 aldehido | ~13 |

[1] *Concentración estimada a partir de bioensayos de actividad*

| VITAMINAS (ppm) | |
|---|---|
| Tiamina (B1) | ~18 |
| Rivoflavina B2 | ~12 |
| Acido fólico | ~10 |
| Acido folínico | ~20 |
| Vitamina C | ~5 |
| Tocoferoles | ~2 |
| Provitamina A | ~6 |

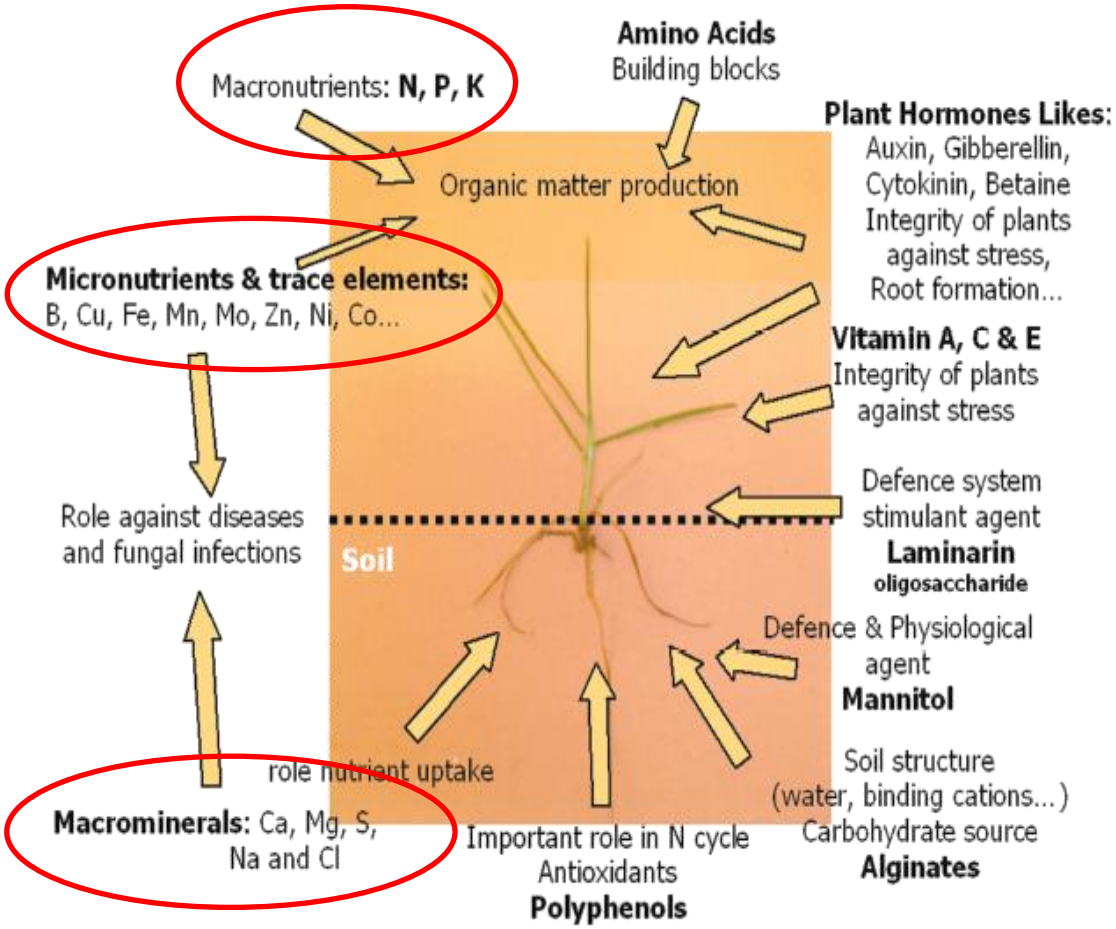
*Esta es la composición típica y es variable lote a lote como en todos los extractos de origen natural*

# MODE OF ACTION

- Thanks to the exclusive BC method of purification of *A. nodosum*, the **seaweed Extract** of **ALGALIV** mantains the activity of its components and their effect on the plant development.
- Among these components, we can differentiate two main range of substances:
  - Nutrient elements: macro and micro
  - Bioactive organic molecules: hormones, polysaccharides, etc

# ALGALIV: ASCOPHYLLUM NODOSUM

## Macro and micronutrients



# MODE OF ACTION

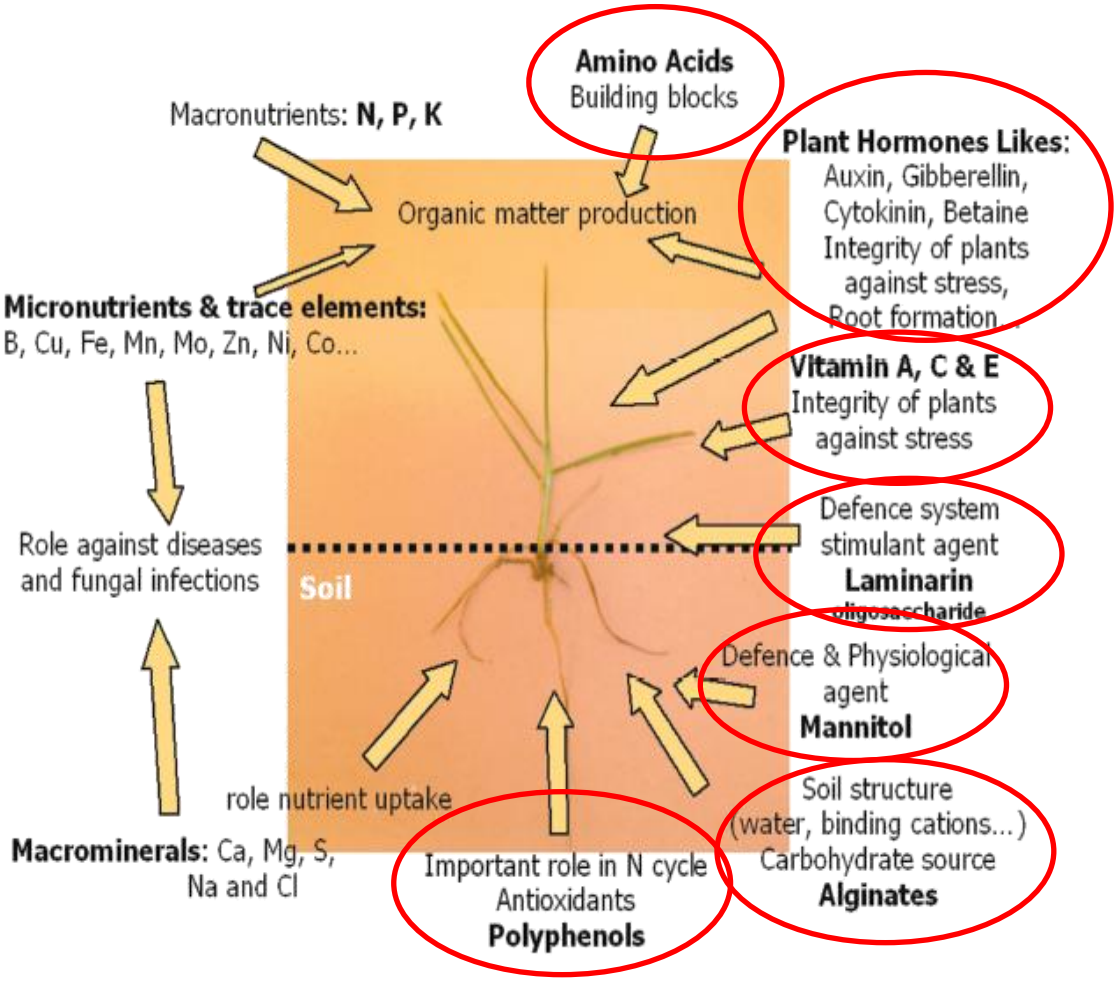
- Nitrogen and phosphorous help growth and normal development of crops, as they are involved in several biosynthetic routes of important cellular components such as clorophylls, ATP or nucleic acids.
- ALGALIV also contains boron (B) that improves the absorption and fixation of calcium, that is a key element in cell wall maintainance. IT is also important for sugars metabolism and cell division (growth).
- Copper (Cu) improves the use of N present in soils and it helps protein synthesis.

# MODE OF ACTION

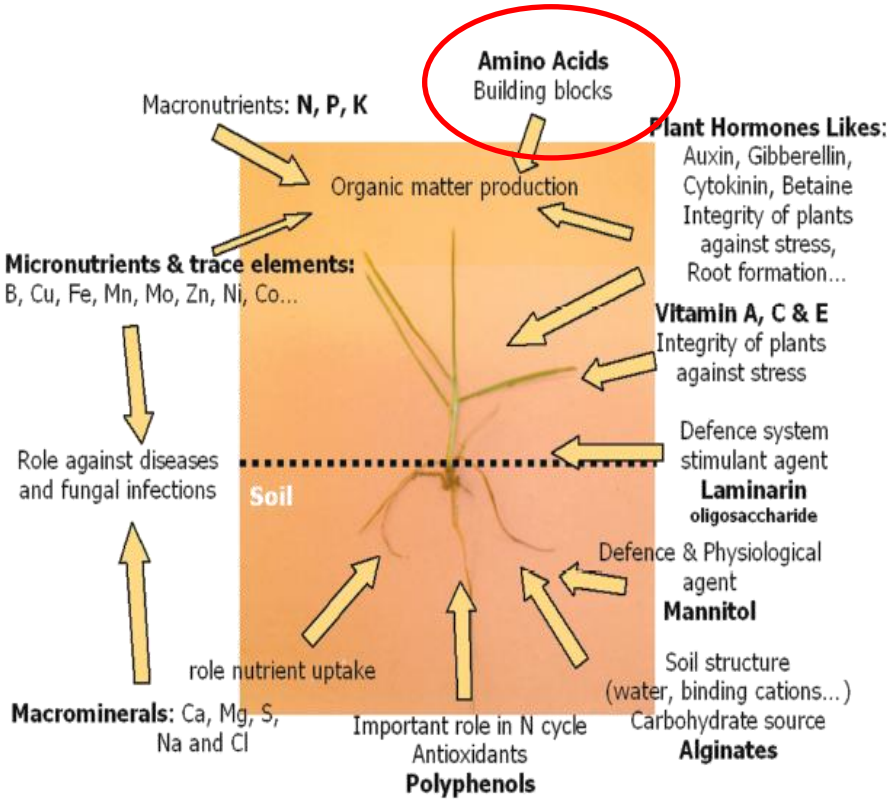
- Iron (Fe) is related with chlorophylls, cytochromes synthesis and also with the enzyme nitrogenase (nitrogen availability).
- Manganese (Mn) is essential for chlorophyll biosynthesis and therefore for photosynthesis.
- Molibdenum (Mo) is a component of the enzyme Nitrate reductase (NR), converting Nitrates to nitrites (conversion of N into amino acids).
- Zinc (Zn) activates general plant metabolism and it is also a precursor of Tryptophan biosynthesis (precursor of endogenous auxins).

# ALGALIV: ASCOPHYLLUM NODOSUM

## Active biomolecules



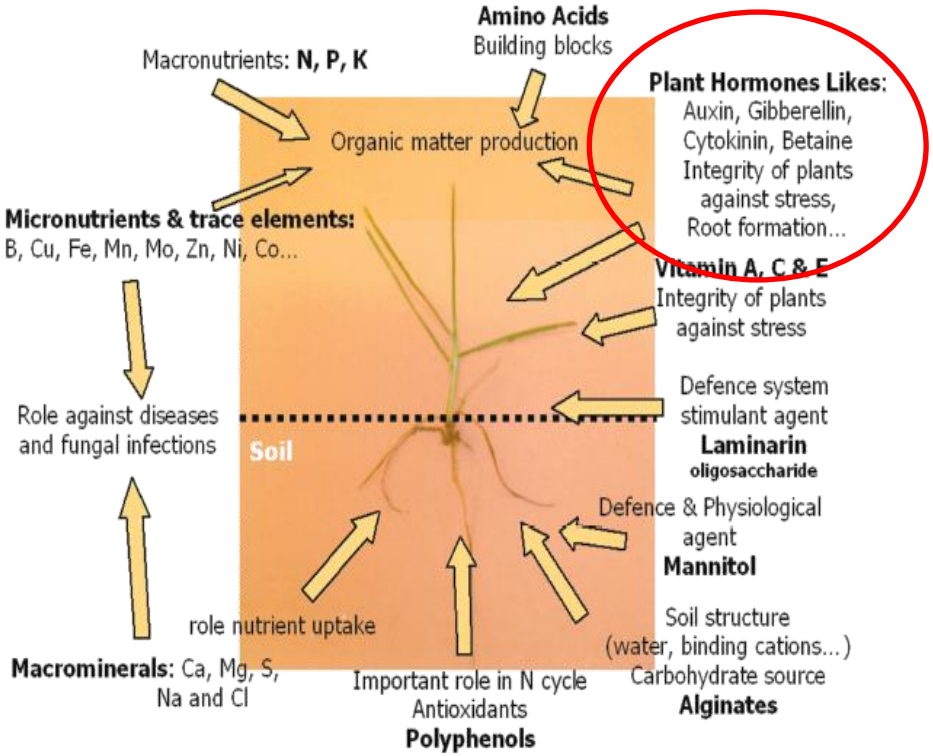
# ALGALIV: ASCOPHYLLUM NODOSUM
## Active biomolecules




**Amino acids, peptides and proteins**

- Nitrogen source
- Amino acids: bricks for protein biosynthesis
- Peptides: re-use
- Activate different metabolic pathways. i.e. tryptophan→IAA

# ALGALIV: ASCOPHYLLUM NODOSUM
## Active biomolecules




### Phytohormones

- Auxin, CKs, GBs, polyamines, brassinosteroids
- Several function that can be take advantatge of by tailoring ALGALIV applications (i.e. auxin needed during vegetative growth for apical dominance)

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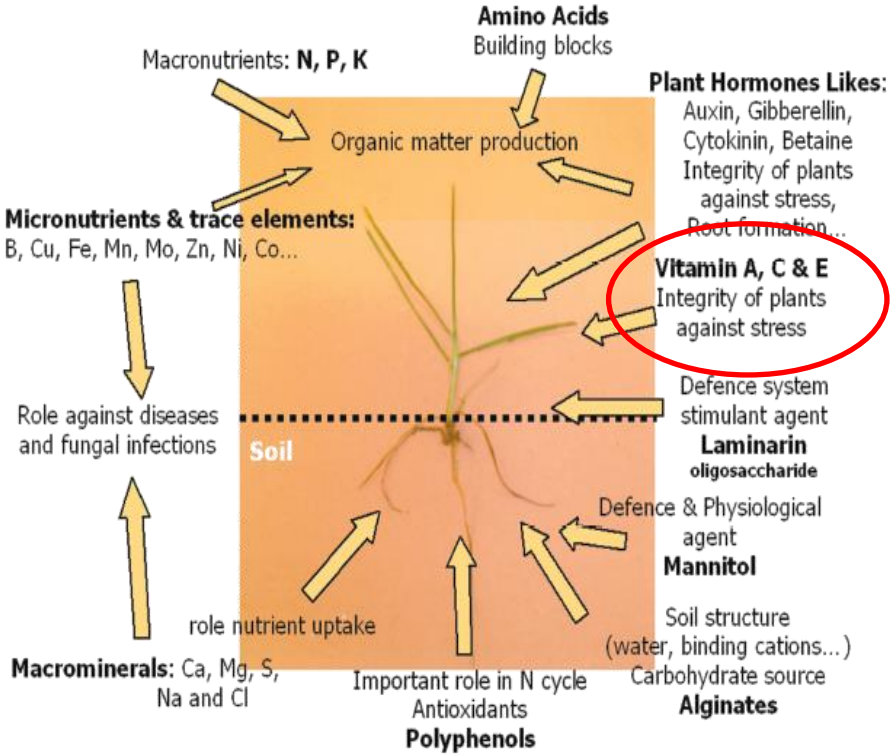
## Active biomolecules




**Vitamins**

- Integrity of the plant against stress
- Groups A, B, C, E

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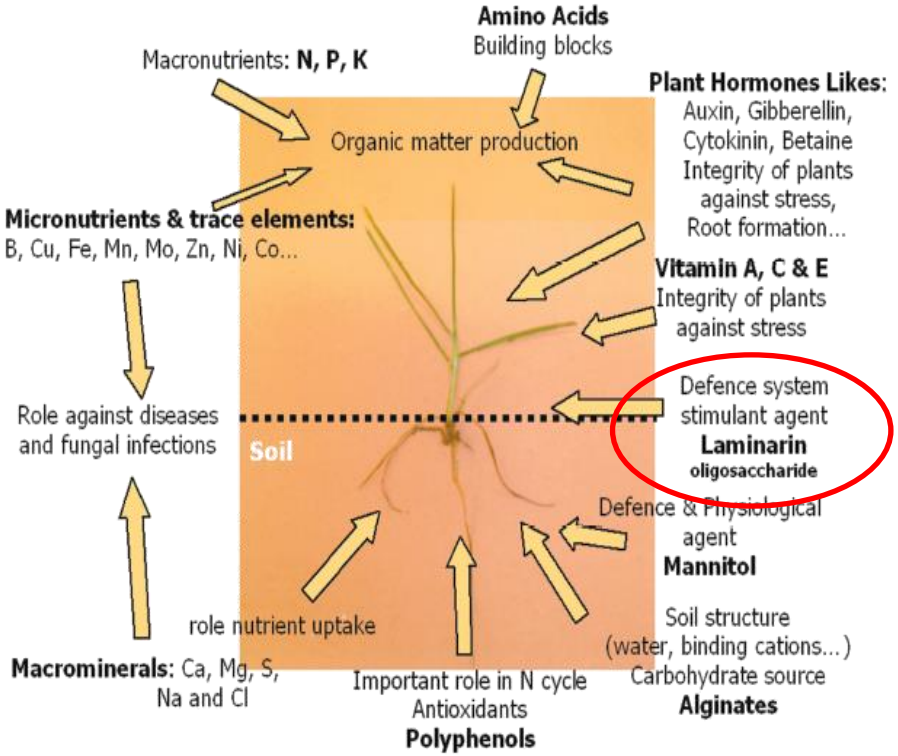
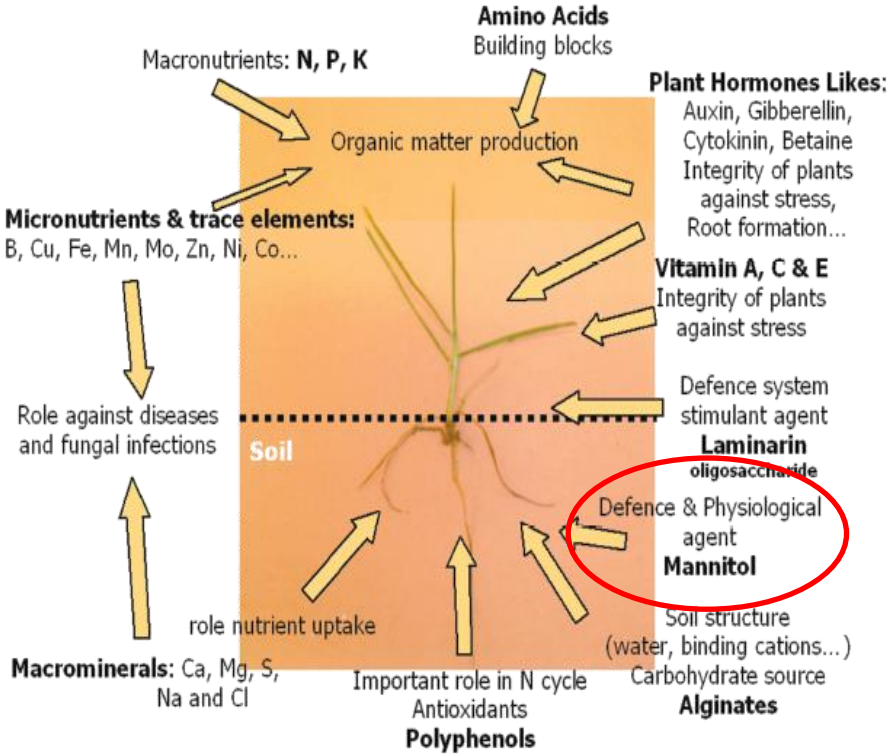
## Active biomolecules




### Polysaccharides: laminarin

- Source of energy: catabolism
- Stimulation of plant's own defence system
- Direct protection against fungi

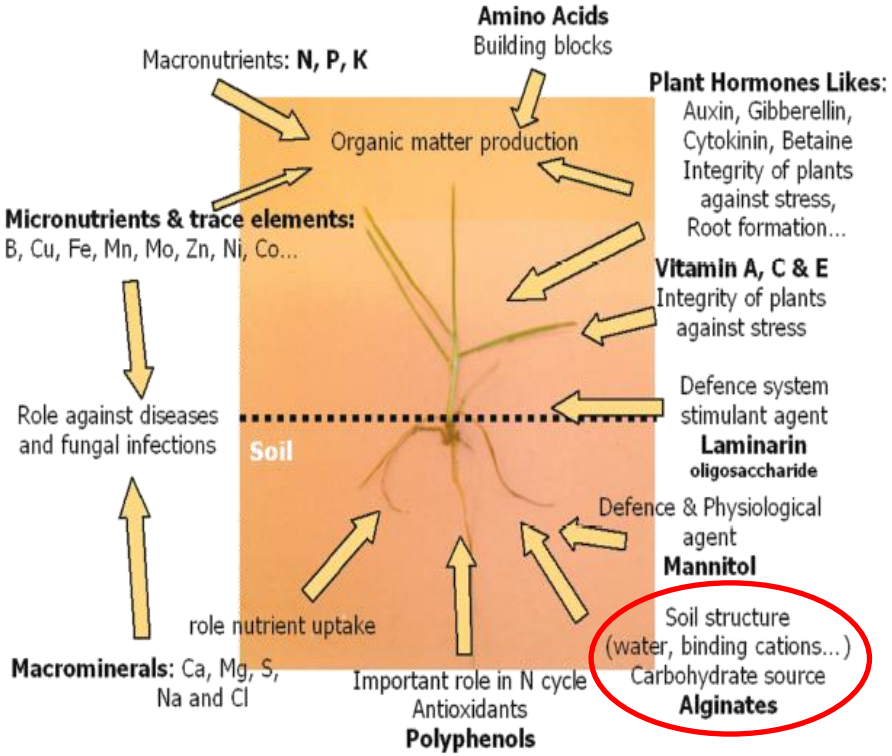
# ALGALIV: ASCOPHYLLUM NODOSUM
## Active biomolecules




**Sugar alcohol: mannitol**

- Source of energy: catabolism
- Osmolyte or compatible solute: tolerance to abiotic stress
- Triggers plant defence: coping with pathogen attacks

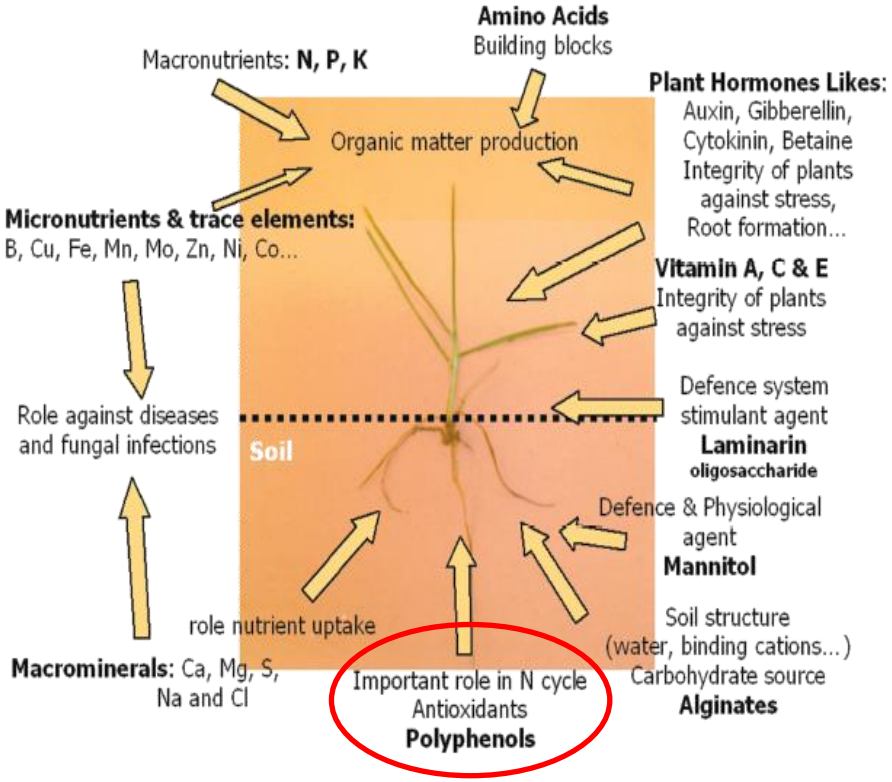
# ALGALIV: ASCOPHYLLUM NODOSUM
## Active biomolecules




### Polysaccharaides: Alginic acid

- Structuration of soils: more water retention, complexed nutrients

# ALGALIV: ASCOPHYLLUM NODOSUM
## Active biomolecules




**Polyphenols**

- Antioxidants

# ALGALIV: Physiological effects on crops

- Nutritional balance: essential nutrientes, microelements and vitamins
- Hormonal balance:
    - Vigorous growth: increase in foliar area
    - Increase in photosynthesis and thus in photoassimilates
    - Better flowering and fertilization
    - Improving of the root system and increased nutrient absortion
- Stronger plants: endogenous defense system activation against pathogens, and increased resistance against abiotic stress
- Induces natural shooting: no plant alterations.
- Helps overcome post-transplant stress
- Increase in yield and quality of production: uniformity in fruits

# USAGE RECOMMENDATIONS

- **ALGALIV** can be applied to any type of crop.
- Suitable for soil and foliar spraying applications
- General recommendation of use: apply after transplant and repeat 2-3 times each 15-20 days
- **Do not apply in tank mix with Ca- or Mg-based products. ALGALIV** contains phosphorous.
- Approved for **organic farming**

ALGALIV

# CROPS AND DOSAGES

| CROP | DOSAGE (CC/100L) | APPLICATION TIMINGS |
|---|---|---|
| Strawberry, berries | 150 - 250 | From shooting, every 15-20 days |
| Grapes | | During shooting-postharvest and during berries fattening- 2-3 applications when shootings are 20cm long. Applications in berries from 4mm to increase production. Together with GA3 for fattening of tablegrapes |
| Stone fruits | | From shooting every 15 days. Together with DEFENDER K: 45, 30 and 15 days before harvesting. |
| Apple, pear | | Every 15-20 days after shooting |
| Citrus | | Every 15-20 days during vegetative growth and flowering |
| Kiwis | | Every 15-20 days during vegetative growth and after fruit setting |
| Vegetables | | Apply every 15 days after transplant, during vegetative growth |
| Potato | | 2 applications: at 30 and 60 days post-emergence |
| Courgette | | Apply every 15 days during vegetative growth |
| Olive tree | | From flowering |
| Artichoke | | Apply every 15-20 days during vegetative growth |
| Cucurbits | | From 4-5 leaves and every 15-20 days |
| Lettuce, cabbage | | Apply 2 weeks after transplant and every 15 days during vegetative growth |
| Hydroponics | 2 -3 L/Ha | During the whole crop cycle |

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# THANKS FOR YOUR ATTENTION


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