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Better Yields More Profit

Daymsa
Europe's leading producer of Leonardite

TERRENOVA

FULL EQUIPMENT

SOIL IMPROVER

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The most complete soil product

Full Equipment (complete product)

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Our Leonardite mines in Spain

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The root application product with the most benefits currently on the market:

- Soil structure.
- Increases cation-exchange capacity (CEC).
- Unblocks fertilizers.
- Roots.
- Supplies available phosphorus and mobilises phosphorus in soil.
- Activates beneficial microbial flora and protects against pathogens.
- Crop protector (prevents physiological slowdown due to adverse conditions).
- Growth stimulator.

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A solution that prevents:

SOIL FATIGUE

Which causes loss of yield in agriculture soils.

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Soils suffer from fatigue due to:

1. **Chemical disorders**
2. **Biological disorders**
3. **Physical disorders**

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Chemical disorders

1. Deficiencies, antagonisms and blockages.

2. Presence of phytotoxic ions.

3. Contamination from different compounds, root secretions or other origins.

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Biological disorders

1. Presence of soil pathogens.
2. Rivalry between micro-organisms and crops.
3. Biological imbalance caused by soil disinfectants.
4. Poor microbiological and micro-fauna activity in the soil.

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Physical disorders

- Summed up as a loss of soil structure.

"The loss of soil structure generally acts as a catalyst to accelerate the incidence of chemical and biological factors causing soil fatigue"

Prof. Alarcón.

(Cartagena University, Murcia, Spain)

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Therefore:

"Soil structure maintenance is essential to prevent crop yield losses caused by soil fatigue"

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Soil structure degradation is caused by:

- **Slaking due to fast moistening.**

- **Breakage of aggregates through fast drying (differential swelling).**

- **Mechanical disruption: Impact of irrigation drops, crust formation (algae...).**

- **Aggregate grinding caused by tillage (ongoing machinery treading).**

- **Presence of sodium (physical-chemical dispersion of colloids).**

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Restores structure,

TERRENOVA works as an "aggregate builder":

- Microaggregates "Clay-humic complex" "change complex" "CEC" increase.

- Macroaggregates binding of several microaggregates.

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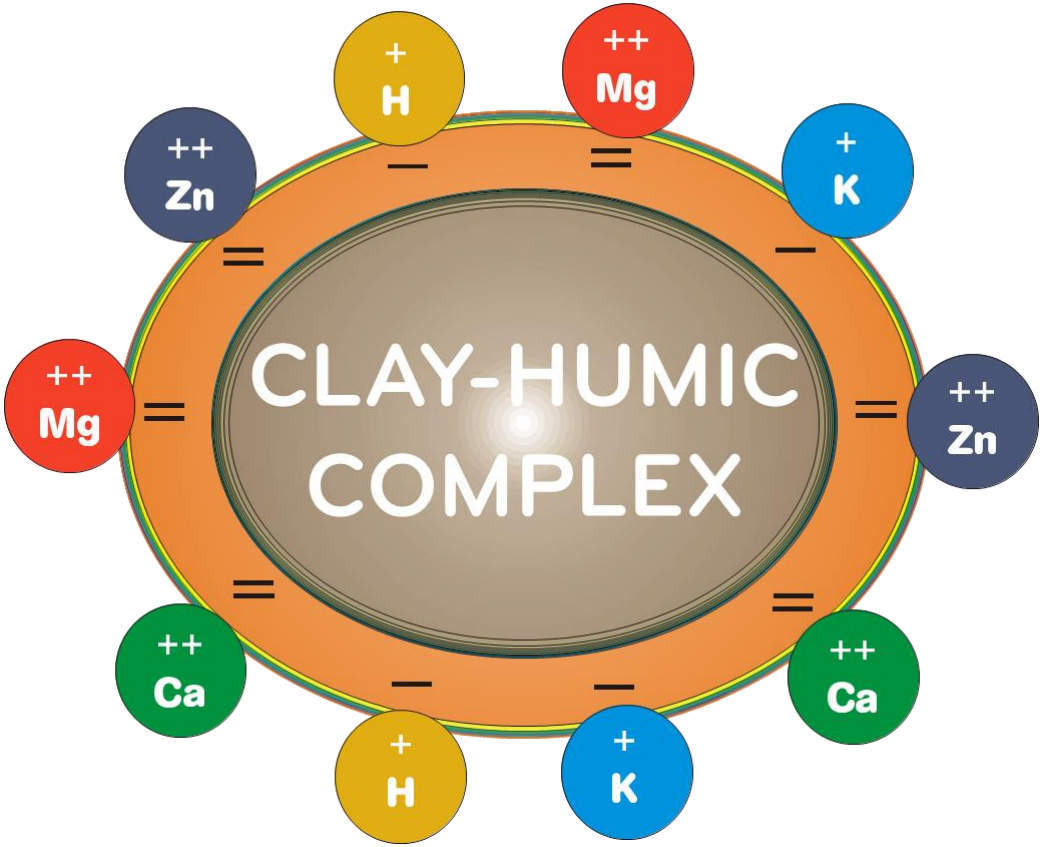

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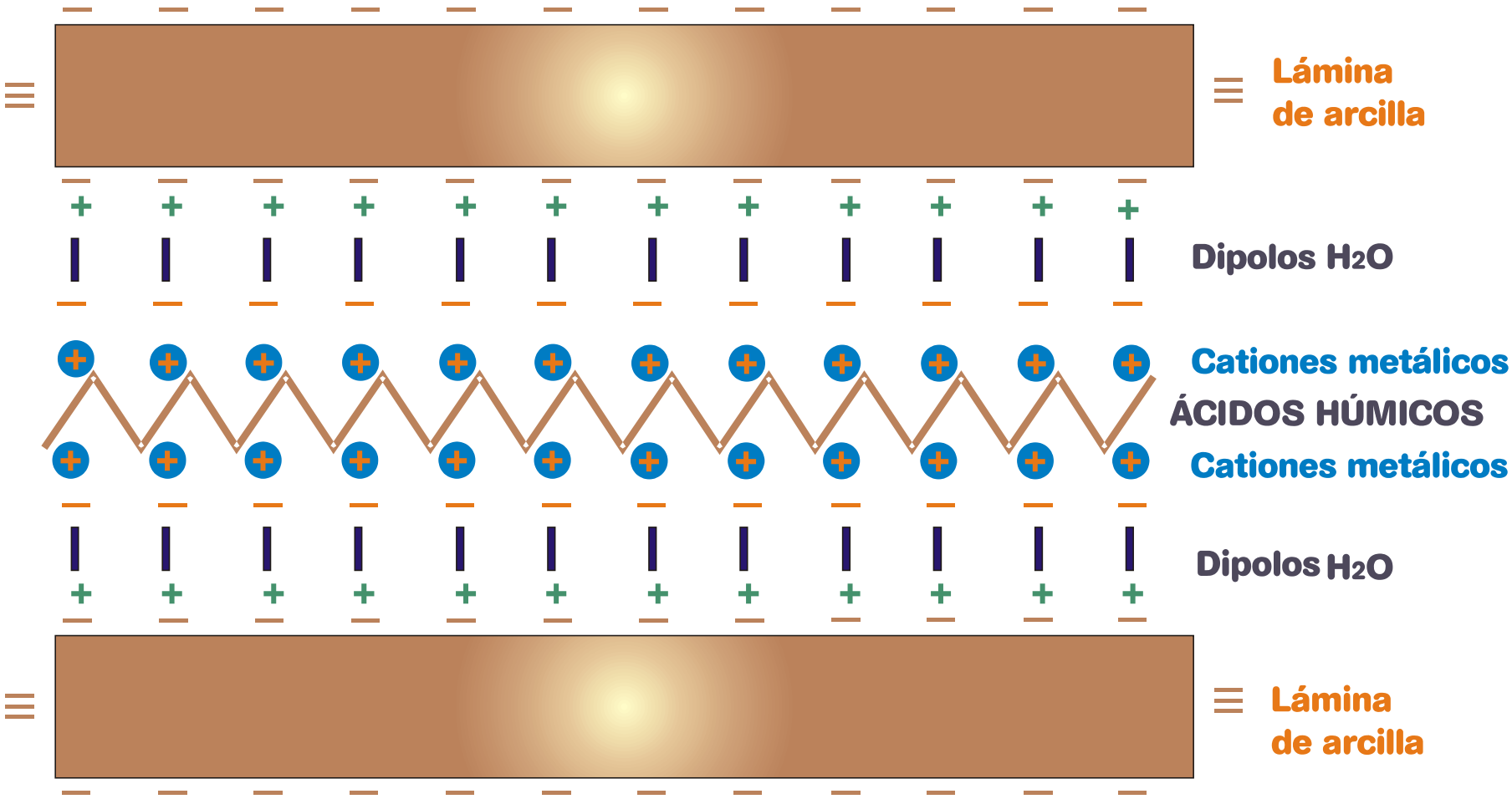

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"FAST AND LONG-LASTING EFFICACY"

- **Intervenes on a greater number of macro and micro-aggregates.**
- **First formulation that acts on soil aggregates of all sizes due to its phosphohumates and phosphofulvates in several molecular weights, among other substances.**

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Contains active humic/fulvic substances in a wide range of sizes:

- **Heavy phosphohumates** **> 150,000 Dalton**
- **Average phosphohumates** **70,000 – 150,000 Dalton**
- **Light phosphohumates** **> 70,000 Dalton**
- **Heavy phosphofulvates** **< 70,000 Dalton**
- **Average phosphohumates** **5,000 – 70,000 Dalton**
- **Light phosphohumates** **< 5,000 Dalton**

Determined by exclusion chromatography.

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The broad range of molecular weights of the phosphohumates allow for all the possible interactions:

- **Heavy phosphohumates: Acting on the larger aggregates.**

- **Intermediate phosphohumates: React with the intermediate aggregates.**

- **Light phosphohumates: Interact on small aggregates.**

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MAXIMISES BIOLOGICAL ACTIVITY

- An organic substrate for beneficial micro-organisms such as mycorrhizae and azotobacter.

- Presents an auxinic effect. Root growth increases.

- Includes arginine among its components.

- Directly and indirectly counteracts the effect of some soil pathogens. Particularly nematodes and fungi.

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"Plants treated with Daymsa leonardite-based products displayed lower incidences of nematodes".

Ing. Correa- Doctoral Thesis
(Lima University, Peru)

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"The incorporation of Daymsa leonardite products cause a change in biological activity and microbial diversity as well as enrichment of microbial populations able to control fungal diseases, registered by "in vitro" tests.

"...concluding that these materials provide biological control against these pathogens. The use of leonardite (Daymsa) greatly improves fungal disease control."

Cebas-CSIC
(Murcia, Spain)

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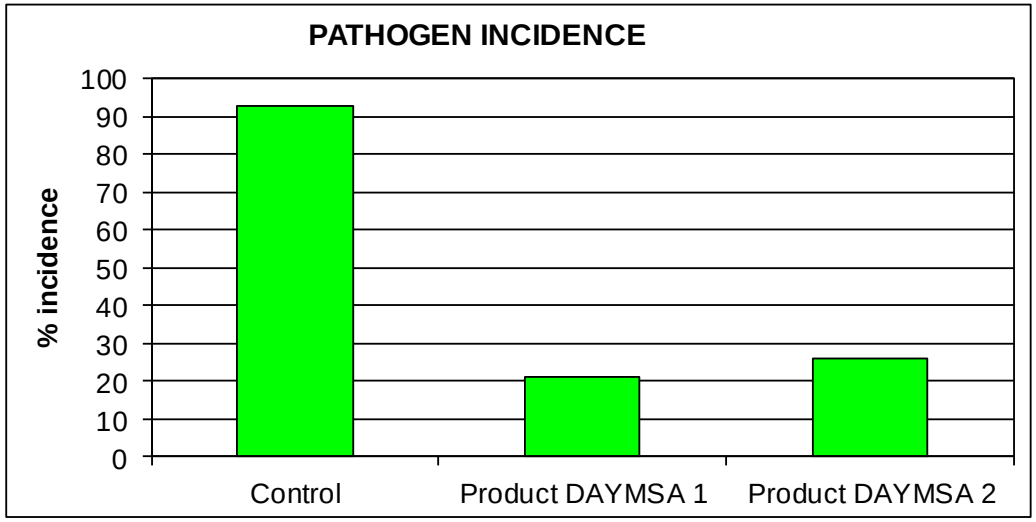
Sclerotinia



Pathogen incidence in lettuce yield with different organic treatments.

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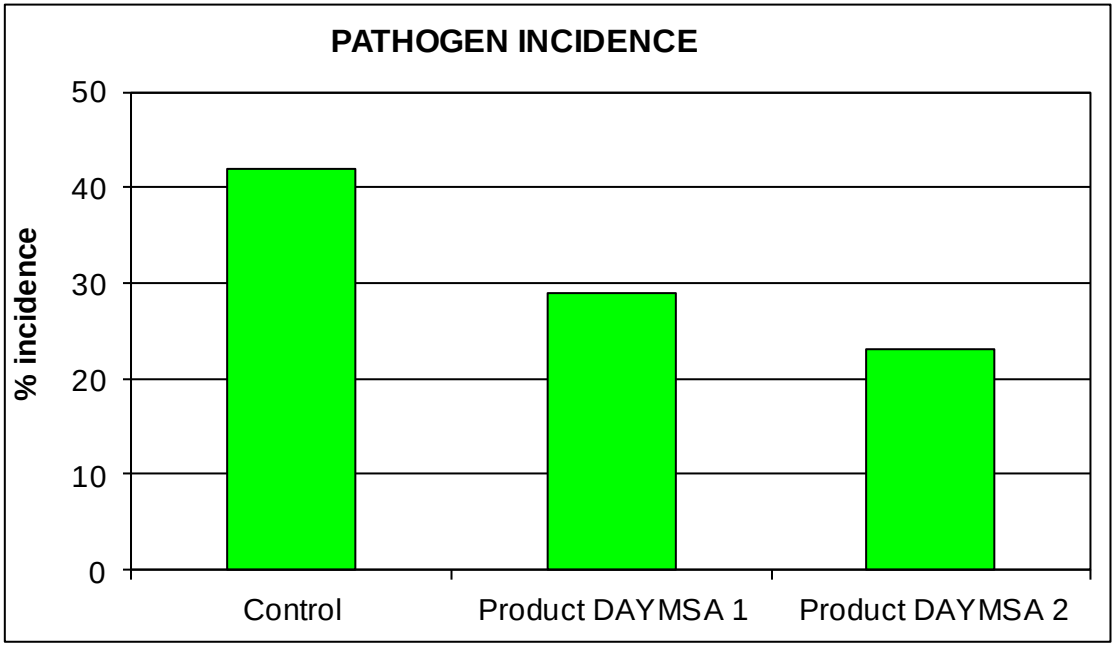
Fusarium oxyosporum



Pathogen incidence in melon plants with different organic treatments.

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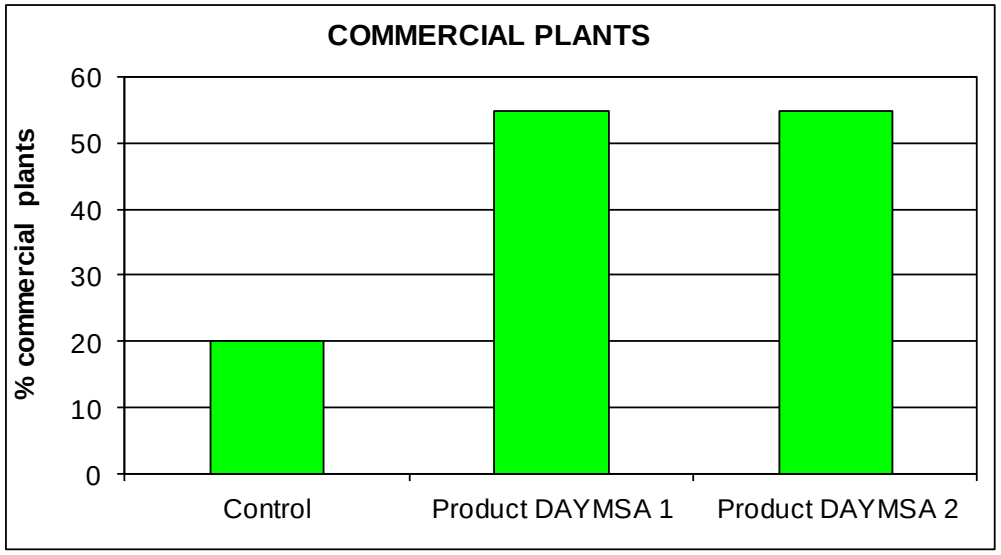
Phytophthora



Percentage of capsicum plant numbers able to reach commercial value in peat with different organic treatments.

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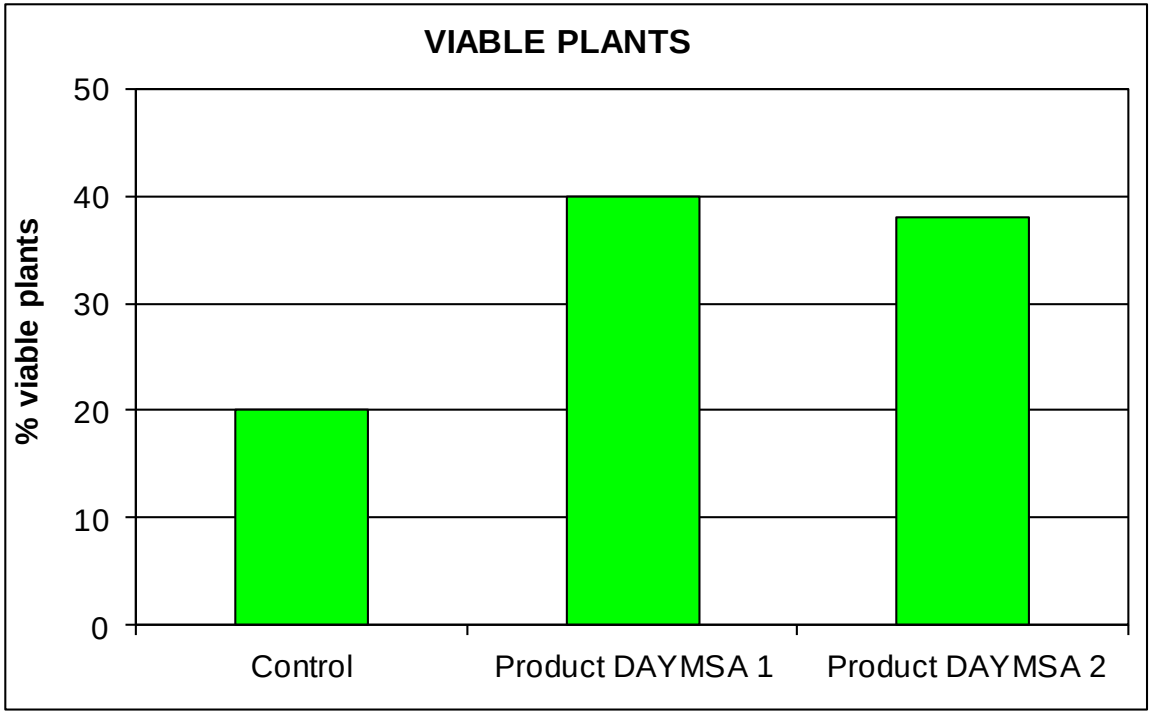
Pythium ultimum



Percentage of viable pea plants grown in peat.

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A solution that:
IMPROVES FERTILITY

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- Provides macro and micronutrients.
- Provides metabolic activators (mainly proline, serine and arginine).
- Prevents fertiliser waste.
- Makes "blocked or retained" fertilisers available to plants.
- Increases the amount of fertiliser available and therefore increases production.

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HOW DOES TERRENOVA IMPROVE SOIL FERTILITY?

1. Provides macronutrients (nitrogen, phosphorus and potassium).
2. Provides metabolic activators (mainly proline, serine and arginine among many others).
3. Provides micronutrients.
4. Provides phosphorus in the form of phosphohumates and phosphofulvates.
5. Unblocks soil nutrients, making them available to the crop.

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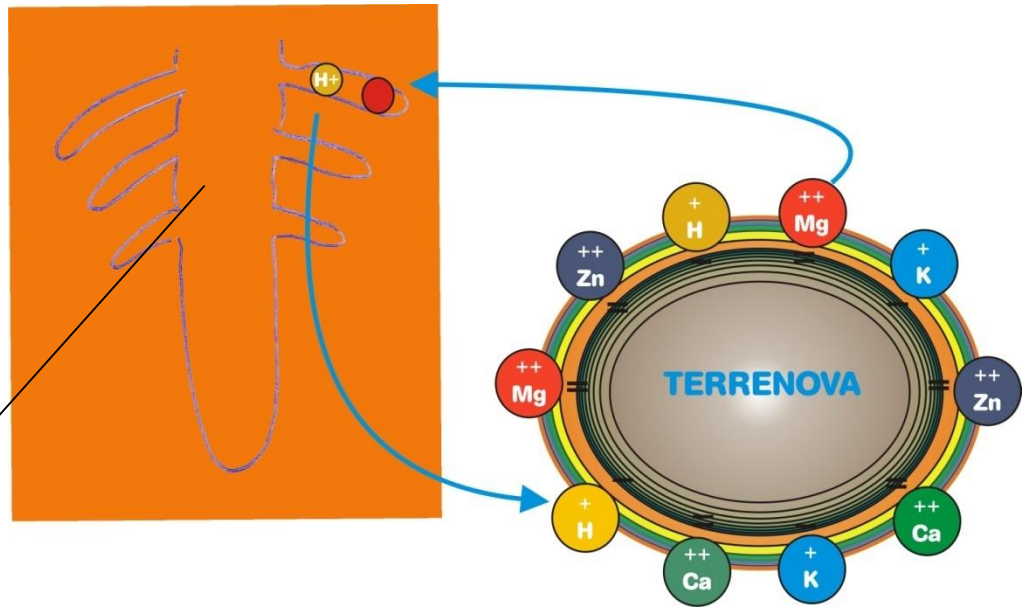
TERRENOVA **Releases cations retained in the soil through a cation exchange system. In this way, they can be absorbed by the roots. Protons, H^+, bind to the negative particles in the product and cations are released: K^+, Ca^{2+}, Mg^{2+} to the soil solution.**



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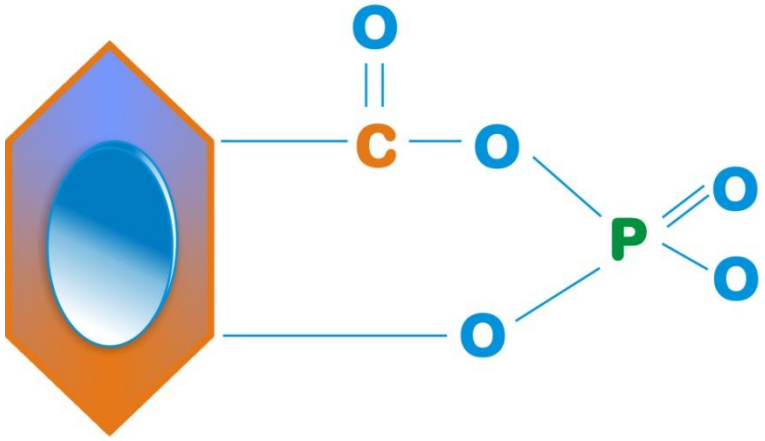
TERRENOVA CONTAINS PHOSPHOHUMATES AND PHOSPHOFULVATES



What is the function of these active substances?

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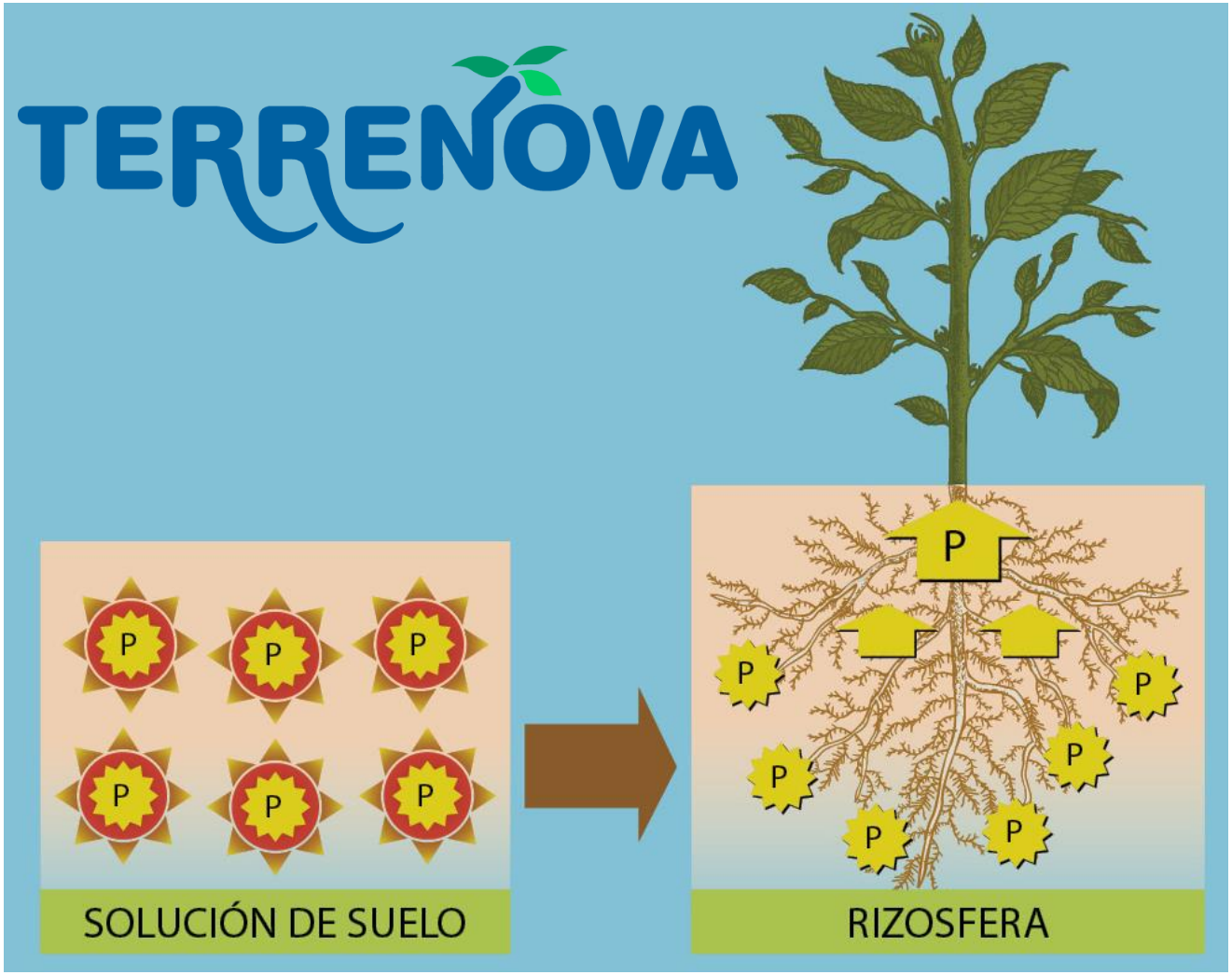

TERRENOVA is a source of phosphorus, directly available to plants through the roots

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- **Unblocks immobilised phosphorus in the soil. Phosphorus is passed onto the crop, forming new complexes with the soil phosphates, making this phosphorus available.**

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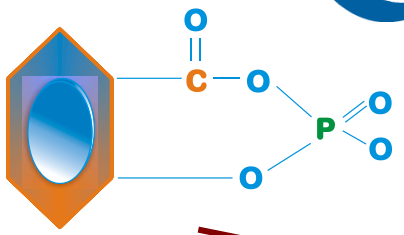
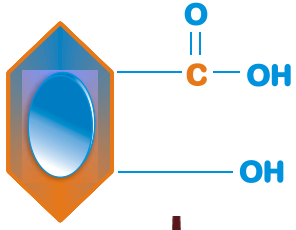
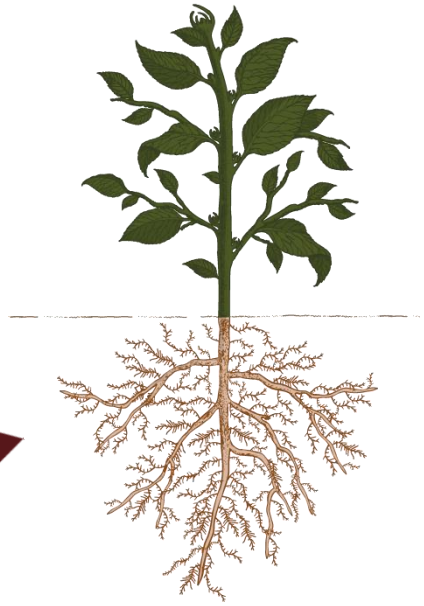


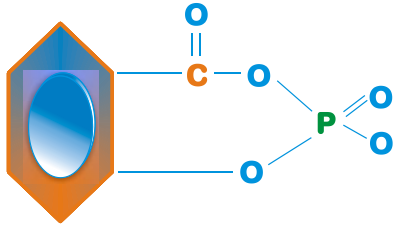
Transfer to the root



+ PO_4^{3-}



Esterification



(P) Immobilised and blocked phosphorus in the soil

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The most complete soil product
Full Equipment

- Prevents soil fatigue.
- Improves the biological and health conditions of the land.
- Fertilises crops.
- Increases soil fertility by unblocking immobilised fertilising substances and leading to improved yields.
- Acts on critical and degraded soils such as tropical (containing excess aluminium), limestone and saline soils.

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DOSAGE AND APPLICATION

Via drip irrigation.

Two applications, first at the start of the cycle and second before flowering.

Dosage: 10 - 15 l/ha in each application.

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More efficient fertilisation with:

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DAYMSA INNOVATION