



D.A.L.

DENSE MOLECULAR



CaNo STAR
CALCIUM NITRATE
15% N 31% CaO

MAGNO STAR
MAGNESIUM NITRATE
14% N 17% MgO 3,5% CaO
12% N 16% MgO

DUAL STAR
NITRATE CALCIUM & MAGNESIUM
15% N 15% CaO 10% MgO

CaON
25% N 10% CaO
20% N 15% CaO

MAGON
20% N 7% MgO

CaNiMa
20% N 7% CaO 5% MgO

HUC
10% N 20% CaO 30% H.O.C.

HUMA
8% N 10% MgO 30% H.O.C.

HUMICA
10% N 10% CaO 5% MgO 30% H.O.C.

IDENTITY OF D.A.L.

D.A.L. CALCIUM-MAGNESIUM is a top agriculture technology group of products for nutrition-fertilization, that differ from competitive products in basic points:

- ✓ They are dense Molecular Liquids containing three times more fertilization units (content) than their competitive liquid and water soluble crystalline fertilizers.
- ✓ They are products of chemical reactions, not solutions of Calcium Nitrate and Magnesium Nitrate in water or suspensions, such as all their competitive.
- ✓ Their properties remain unaltered for an unlimited period of time, they will not undergo in suspension layers and sedimentation and their chemical structure cannot be altered.
- ✓ Calcium, Magnesium and Nitrogen co-exist in the same molecule, without having a competitive activity (total absence of displacement of MAGNESIUM by CALCIUM). Thus, they can be easily absorbed by the plant.
- ✓ They are high clarity products and combine in their Nitric form, Nitrogen + Calcium, or Nitrogen + Magnesium, or Nitrogen + Calcium + Magnesium, in the same drop.

ACTION

- ✓ Prevent deficiencies of Calcium, Magnesium and Nitrogen and suppress, heal the existing ones.
- ✓ They can act foliarly, by penetrating the plant from the leaf and achieving the desired effect within 6 hours.
- ✓ They do not pose risks to the farmer and his equipment,
- ✓ They do not contribute to the accumulation of salts and heavy metals in the soil.
- ✓ They are user friendly, environment and soil friendly.
- ✓ They can be easily applied, quickly, low cost.

EXCELLENCE OF D.A.L.

- ➔ The elements Calcium and Magnesium, are 100% assimilable by the maximum possible rate in all parts of the plant. **At the DENCE MOLECULAR LIQUID CALCIUM MAGNESIUM NITRATE**, Nitrogen, Calcium and Magnesium exist in the same molecule. **Consequently, when the plant absorbs the Nitrogen anion, it carries also with it, the ions of Calcium and Magnesium.**
- ➔ **They are the only Ca-Mg products to give solution on the competition between CALCIUM and MAGNESIUM ions**, in their formula there is no displacement of Mg^+ ion by the Ca^{++} ion.
- ➔ They do not accumulate in the soil as undissolved salts. **Thus, they do not block or neutralize the other nutrient elements in soil.**
- ➔ Nitrogen exists in its Nitric form (NO_3).

The Nitric is the best form of Nitrogen because:

1. The action of the element is direct and immediate. **Moreover, the activity and the limits of its activity time line are specific.**
2. It cannot be bound. **On the contrary, it is available in the soil at the root-layer of the plant and it is used according to the needs.**
3. It cannot be vaporised. **Therefore, it cannot be transferred into vapour Ammonia under soil drought conditions or under alkaline conditions.**
4. It has non-acidic effects and thus, it cannot alter the pH of the soil - **as ordinarily happens during the Nitrification of Ammonia or Urea, or during the absorption procedure of Ammonium by the root-system of the plant.**
5. **The farmer has the opportunity to schedule the supply of Nitrogen according to the needs of his crops, by using less amount of fertilizer and increased number of applications. Therefore, we can control the growth of the plants with the smallest possible financial cost and the best production results.**

D.A.L. - DENSE MOLECULAR LIQUIDS AND SOIL IMPROVEMENT

The **CALCIUM NITRATE**, **MAGNESIUM NITRATE** and **CALCIUM MAGNESIUM NITRATE**, beyond their nutrient role for the crops, have precious, unique properties for the improvement of the soil conditions, soil structure and soil health generally, thus they have priceless soil improvement action.

- They contribute to the expansion of the soil pores. **Thus, the circulation and the amount of the soil air and water (moisture) can be significantly improved, especially in cases of heavy, irrigated soils.**
- The use of the **DENSE MOLECULAR LIQUIDS D.A.L.** is perfectly suitable for acidic soils, **because of the elements they can supply -water soluble Calcium, Magnesium, or both, plus the Nitrogen under its Nitric nature, so they will not create an additional acidity in the soils, like it happens with the products of the other forms of nitrogen (Ammonia, Urea)** The use of Calcium Nitrate reduces the need of costly, laborious limings of soil, expunge the toxic effects and the accumulation of heavy metals such as **Magnesium (Mg) and Aluminium (Al)**, while it contributes to the absorption of main micro-elements such as **Iron (Fe) and Molybdenum (Mo)**.
- The application of **D.A.L.** at Limy soils is imperative, **since the elements of Calcium and Magnesium exist in abundance at these soils but in their Carbonate form. Their solubility is very low as they are bound in insoluble groups, with such a way that they are not available for the plants.**
- The application of **D.A.L.** at saline and alkaline soils play the predominant role at the obstruction of absorbance of Sodium (**Na**) from the root system of the plants. **The Calcium ions, Ca^{++} take the place of Na^+ and liberates the Na^+ from the soil. Afterwards, the released Na can be washed out by the irrigation.**

SIGNIFICANCE OF AND IN PLANT NUTRITION

CALCIUM (Ca)

- ➔ essential for the division and elongation of cells. **The basic function is the stabilization of the cell structure.**
- ➔ influences the inflation of the protoplasm and the penetration of root cells.
- ➔ regulates the uptake of K, Na, Mg.
- ➔ takes effect against acidity (**attach with the acid molecules, neutralizes them and offers protection against their toxic effects**).
- ➔ provides vital co-factors for the activation of an significant number of enzymes.

This element moves difficulty into the plant and its redistribution from the leaves to the fruits is not easy. Thus, a continuous supply of a water soluble Calcium source such as the LIQUID MOLECULAR CALCIUM NITRATE “CANO STAR”, is demanded.

On the other hand, other nitrogen-calcium fertilizers such as granular Calcium Ammonium Nitrate etc., provide the element of interest in their carbonated form. However, the solubility of this form is low and totally immobilized. The consequence of these is that this form cannot be absorbed by the plant. On the contrary, the accumulation of the element occurs into the soil, and blocks the rest of the elements, causing deficiency symptoms of various forms (because of the lack of nutrient elements).

The lack of the element Calcium is shown by the suppression of the growth of the plant, by the appearance of slim, thin offshoots and small leaves with bad shape with chlorotic stains. **Moreover, the structure of the root system cannot be developed, while the new roots are dying and the old ones are turning brown. Diseases caused by the lack of Calcium is most common in apple trees (bitter pit), peppers and tomatoes. In addition, bulbs and melons are also sensitive as they develop internal brown spots.**

MAGNESIUM (Mg)

- ➔ the presence of this element is essential for the creation of the chlorophyll molecule.
- ➔ the metabolism of Phosphorus depends on this element.
- ➔ activates various enzymes, fundamental for the creation of carbohydrates and lipids, while it helps their metabolism into the plant.
- ➔ it is very difficult for the plant to absorb this element even when it is present in the soil. **This can be worse for sandy soils, highly acidic or alkaline soils, with high concentration of Nitrogen or Potassium where the ratio between (K) and (Mg) is not suitable.**

In situations that lack of MAGNESIUM occurs, the color of the leaves becomes yellow, because of the reduction of the chlorophyll molecules. The symptoms first appear at the peaks and the circumference of the leaves. Afterwards, symptoms are obvious at the area between the nerves of the older leaves and those that are closer to the ground. The color of the tissue of the affected plants turns brown.

APPLICATIONS

Foliar applications by spraying the leaf surface of the plant.

Dosage: 1-3 L/1000 L water.

Foliar applications should take place during cool hours of the day (very early in the morning or late at afternoon).

Fertigation, applying into the irrigation water.

Dosage: 1-5 L/1000 m² (or 10-50 L/Hectare)

Applications can be repeated every 7-10 days, during all cultivated season.

