Zeolites are an excellent soil amendment since they improve its chemical and physical properties and stabilize any type of soil, preventing ammonia and heavy metals toxicity, soil compaction, fixing sodium and salts excess, balancing pH and increasing soils nutrients retention (CEC or cation exchange capacity). This mineral has a selective affinity towards ammonium (NH₄), nitrates and nitrites, potassium and calcium among others, thanks to the fact that it is the only natural mineral in the world with a negatively charged molecule: it functions as a magnet storing these elements and releasing them as needed by the plant, in a form which will not burn it; it is an “intelligent fertilizer”. In addition, it holds up to 55% its weight in water, retaining the edafological leakage which contaminates the aquifers. All this implies savings in the irrigation and the use of fertilizers (whose application will decrease from 25% and up to 50%).

Overall, zeolites application not only increases the harvests and soils quality but also improves the seeds germination and increases the stability of the plants regarding diseases. Moreover, it favors the grounds productivity, extending the yield of harvests like those of carrot, eggplant, apple and wheat in percentage that goes from 15% to 63% (Torri, 1978). For example, a fertilizer mixture of manure - zeolite in a 2:1 proportion, besides having a 3 years residuality, increases the yield of tubercle crops in 40% when added with 50% NPK fertilizer.

**Benefits of using zeolite as soil amendment and intelligent fertilizer:**

- Reduces up to 35% the water necessary for irrigation, since it holds the moisture.
- Retains the nitrogen in the growth zone, so it is plant accessible, but not soluble in water; this allows to decrease the application of the chemical fertilizers commonly used in up to 50%.
- Extends the efficiency of fertilizers, such as ammonium nitrate, which in very few cases achieves an efficiency higher than 50% for the majority of the crops.
- Prevents in nearly 35% the edafological leakage of the nitrogen based fertilizers that infiltrate to the aquifers.
- It is self-recharged with further fertilizers application and rain water, without affecting its structure or cation exchange capacity.
- Avoids soil compacting and favors the aeration in deep root systems, due to its high surface area and porosity.

**Mineral:** Clinoptilolite Zeolite  
Particle size (mesh): 30x50  
Surface: 22.4 m²/gr.  
Pore average diameter: 8.95 nm  
Pore volume: 0.05 cm³/gr  
Apparent density: 0.953 gr/cc  
Hardness: 4 Moh’s  
Moisture: Up to 55%  
CEC: 90.6 meq/100 gr  
Sodium: 1.290%  
Potassium: 2.573%  
Calcium: 5.890%  
Color: Pale green to beige
**Application**

The quantity of zeolite required to amend soils is variable and depends on the soil type and composition, as well as the crops to be harvested. For sandy soils amendment, it is recommended to replace from 10% to 20% soil by an equal volume of zeolite of a small particle size. In order to increase aeration during the ploughing process, it is recommended to apply from 2.80 to 6.80 Kg of zeolite of a particle size from 3 to 5mm for every 100 ft², or from 150 Kg up to 300 Kg /acre. In order to improve harvests and crops, successful results have been achieved with as little as 245 kg /acre, although this quantity also depends on the type of crop. For optimal results the zeolite layer should be placed from 5 to 10 cm from the surface (just in the root zone), plowing the soil along with the zeolite with either scarifiers, rotary ploughs, disc ploughs or chisel plows, attempting not to place the mineral too deep. Generally, from 0.35 up to 4 ton /acre are applied by hand or using machinery as the manure spreader. Right after the application, the area must be fertilized as usual and abundantly irrigated, so that the zeolite can adsorb and store humidity and nutrients.

Merely as a fertilizer, zeolites only contain a low percentage of some macro and micro nutrients such as Ca, K, Mg, and traces of B, Cu and Fe among others; therefore, it is essential to add either organic or inorganic fertilizer in order to complete its nutritional contribution. Optimal results are obtained when mixing fresh manure and zeolite in a 2:1 proportion and then adding 50% inorganic fertilizer. Zeolites have a lower cost than fertilizers so the original cost per acre will decrease.

**Contact Information**

If you wish more information about our products, do not hesitate to get in touch:

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- Increases the crops yield and the fruit size, improving its color and consistency.
- Stabilizes organic matter and avoids its loss due to the mineralization.
- Considerably improves the land leveling due to its structure.
- Constitutes a permanent water storage, assuring an extended moisture effect even during dry seasons, which prevents plants from hydric stress.
- Improves sandy soils, increasing their water retention capacity, while avoiding clayey soils agglutination, improving water penetration in these last ones.
- Improves the physical properties of soils (aeration, water retention, structure, porosity, density, capilar ascention, etc.)
- Decreases Sodium (Na) content, which degradates soils and could become toxic for plants.
- Improves soil nitrification since providing an ideal adherence environment for nitrifying bacteria, increasing as well the population of the bacteria which attacks pathogen fungus.
- Favors Fosforous (P) solubilization and Potassium (K) assimilation.
- Increases soil retention capacity, controlling its acidity or alkalinity by balancing the pH.
- Adsorbs and ionically holds toxic contaminants such as heavy metals, since it has great selectivity especially for lead (Pb), iron (Fe) and manganese (Mn), among others.
- Promotes the germination and sustained growth of grass and grains.
- Controls disgusting odors during the composting process.
- Elevates the agricultural and commercial quality of the composting.
- Increases the biological quality of organic fertilizers.