PRODUCT CATALOGUE 2023

CalciSoil®

Agricultural Gypsum

A Natural Fertilizer & Soil Conditioner

ISO 9001

Packing 25 KG
AD*STAR®
Polypropylene Bag

CalciSoil®
AGRICULTURAL GYPSUM

CalciSoil® gypsum is a mineral derived from natural gypsum rocks formed centuries ago. Being moderately soluble, it is a good source of essential macronutrients Ca (Calcium) and S (Sulfur). It is also an effective soil amendment as it can improve physical and chemical properties of soil. Chemically speaking, it is calcium sulfate dihydrate $CaSO_4 2H_2O$.

PHYSICAL & CHEMICAL PROPERTIES	
Calcium (Ca)	23%
Sulfur (S)	17%
Moisture	0.1% max
pH	6.7
Solubility	2.6 g $CaSO_4$. $2H_2O$ per litre
Purity as $CaSO_4 2H_2O$	95%
Appearance	Fine powder with off-white color

SIEVE ANALYSIS	
Passing 325 mesh (44µm)	50%
Passing 200 mesh (74µm)	73%
Passing 100 mesh (149µm)	87%

FEATURES & ADVANTAGES:

- ✓ **Value for money**; an inexpensive fertilizer with lots of benefits to soil and plant.
- ✓ It is **moderately soluble** in water; This degree of solubility is a substantial contribution to the ionic strength of most soil solutions, yet is low enough to allow continued release of nutrients over a considerable time period.
- ✓ **Fine powder**; A fine particle size helps it dissolve more quickly in the soil.
- ✓ **Neutral pH**; It is not acid soluble and will not change the soil pH.
- ✓ It contains **sulfur as sulfate**, therefore the sulfur in gypsum is readily available to plant.
- ✓ It is Calcium Sulfate **Dihydrate** (Ca2SO4 +2H2O). The addition of the two naturally occurring water molecules in CalciSoil® make it more water soluble.
- ✓ **Natural mineral**; It is pure calcium sulfate and does not contain any toxic wastes or heavy metals.

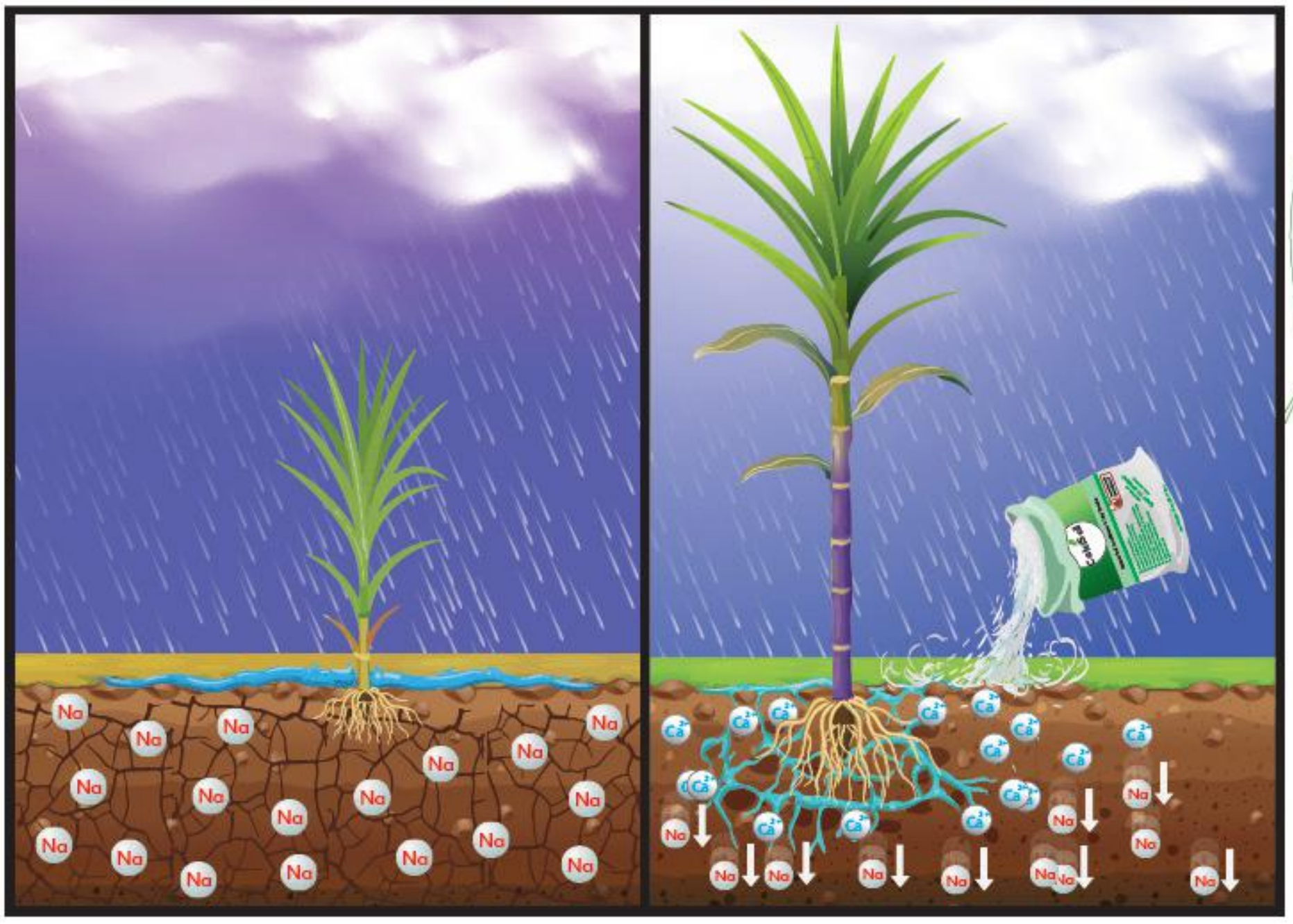
APPLICATION:

CalciSoil® can be applied on the surface of soil using manual or mechanical spreaders. Irrigation or rainfall should be followed. Apply once or twice a year. It can also be applied with irrigation water but with care. The application rates may vary from 500 kg/ha to 5 tons/ha depending on the purpose of application (e.g. removing sodium, supplying calcium etc.), soil type (clay, sandy etc.), soil chemical and physical properties, rainfall regime and cropping system. For customized application rates you can communicate with your local distributor.

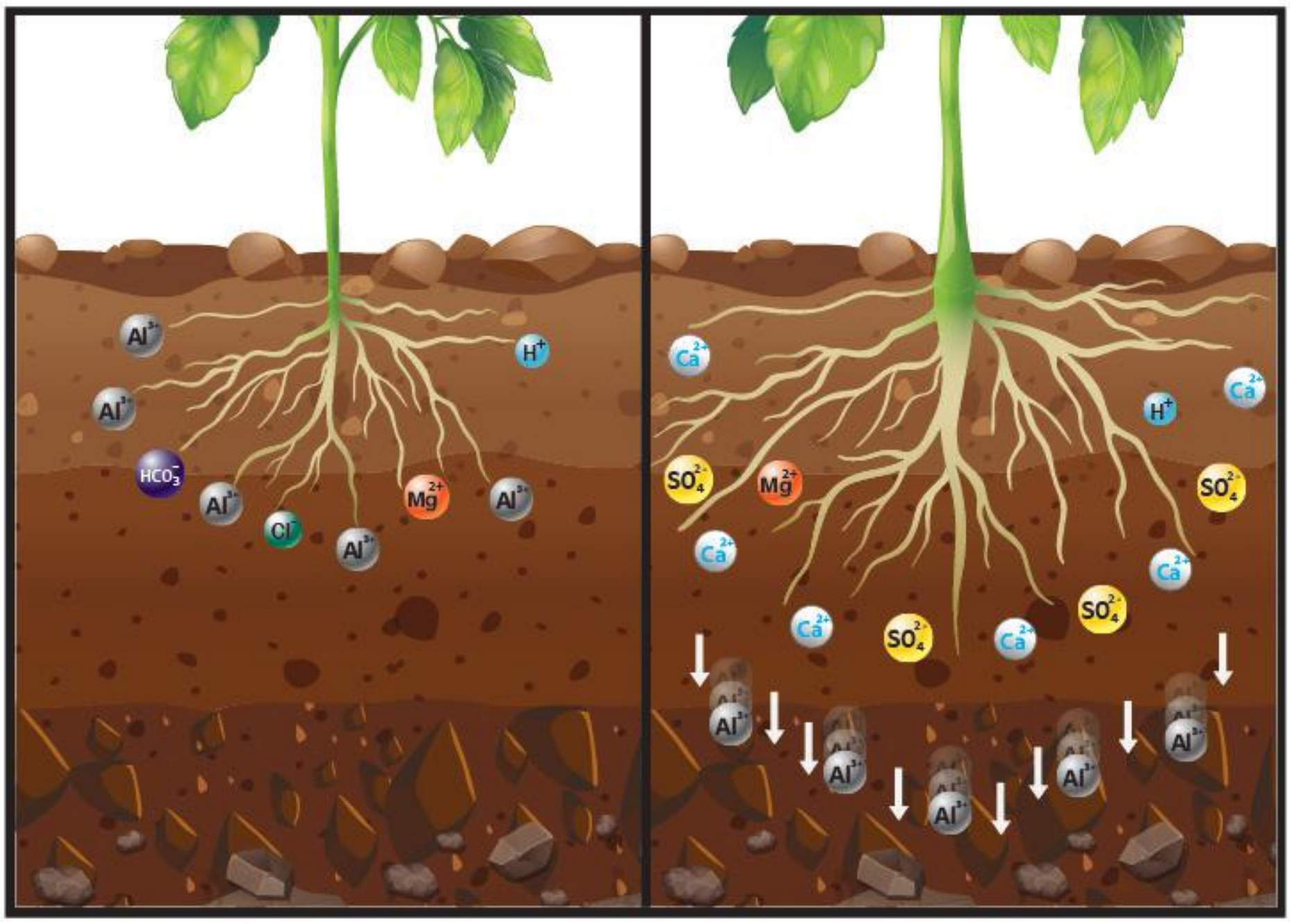
6 KEY BENEFITS

1 **CalciSoil® gypsum is a source of essential macronutrients Calcium (Ca) & Sulfur (S).** Its calcium is moderately soluble. This level of solubility is a substantial contribution to the ionic strength of most soil solutions yet is low enough to allow continued release of calcium over considerable time period. Lime (CaCO3) also has high amount of calcium but it is insoluble. CalciSoil® gypsum is nearly 200 time more soluble than lime and 10 times more soluble than dolomite ($CaMg(CO_3)_2$). CalciSoil® gypsum contains sulfur as sulfate (SO_4^{2-}), the form taken up by plant roots. Therefore the sulfur is readily available, so it can be used where a quick response to sulfur is required without acidifying the soil pH. In comparison, elemental S is totally unavailable to plants; Plants simply cannot absorb S^o through the root system.

2 **CalciSoil® removes sodium from soil.** It is effective in washing out Na, because it contains calcium sulfate. Ca ions in CalciSoil® displace Na (sodium) ions on the exchange sites of soil clay particles. Sodium then binds with the sulphate (SO4) ions and since they are very soluble, they leach out deeper into soil profile away from zone in which roots grow.



3 **CalciSoil® corrects aluminum toxicity and subsoil acidity.** Research shows that even micro molar amount of aluminum can inhibit root growth within hours. Traditionally, lime is applied on surface of soil to correct soil acidity. However, the lime applied on the topsoil has very limited effect on the subsoil acidity because lime is almost insoluble. In contrast, CalciSoil® gypsum applied on soil surface can leach down to subsoil thanks to its moderate solubility. There, calcium (Ca^{2+}) displaces aluminum (Al3+) on soil particles. Also sulfate (SO_4^{2}) forms a complex with Al^{3+} and forms $Al_2(SO_4)_3$ which is leachable and is not toxic to plant growth.

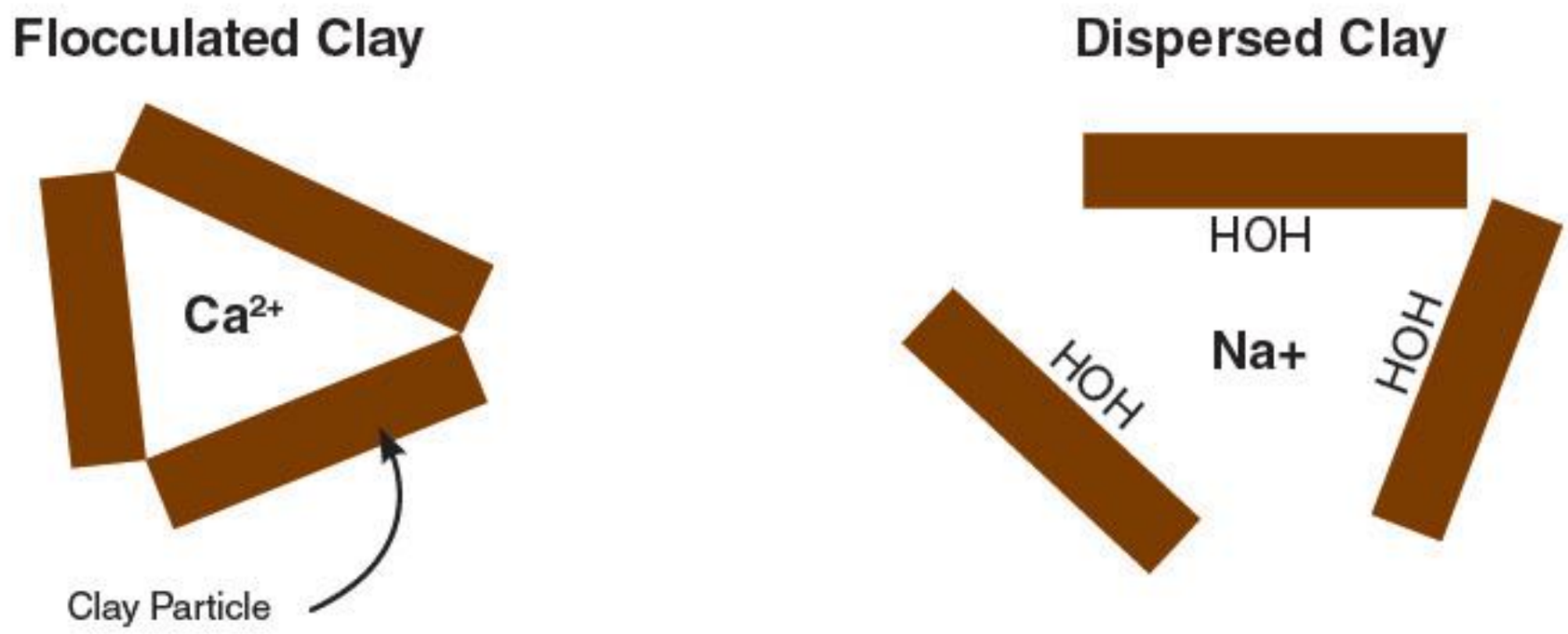


4 **CalciSoil® increases water infiltration in the soil.** By providing a high concentration of Calcium in soil solution and increasing the ionic strength, the double layer is decreased. This leads to higher soil permeability and more water infiltration in the soil profile.

6 KEY BENEFITS

5 **CalciSoil® improves soil structure and prevents dispersion.** It provides calcium which is needed to flocculate clays in soil. Flocculation is the process in which many individual small clay particles bind together to make much fewer but larger particles. In other words, CalciSoil® prevents and treats soil compaction which results in better root growth and water & air movement.

6 **CalciSoil® reduces surface crust formation and promotes seedling emergence.** Surface crust strength is largely dependent on clay and moisture content. CalciSoil® helps reduce the dispersion of the clay that leads to surface crust formation. Also it slows the rate of surface drying.



All above benefits are supported by extensive scientific research.

CalciSoil®

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