S-Chelate Plant Nutrition
Biologically Friendly Chelates

PRODUCT DATA SHEET

S-Chelate Ca

Water Soluble Powder

Elemental Calcium (Ca) ..... 10% minimum

Non-bioaccumulative and sulphur-free chelated Calcium.

pH of 1% solution in water - 4.2

Bulk Density - 0.94

Particle Size - <500microns

Level of Chelation - Precipitation Point pH 13

Packing: 5kg or 20kg polythene lined tinplate drums

Application Guide Rates:

As a coating on NPK or for each foliar application:
Maintenance rate: 1kg/ha
Moderate Deficiency: 2kg/ha
Severe Deficiency: >3kg/ha

The application rate will vary depending on the crop and application regime and you may for example prefer fewer applications and apply up to double the guide amount for each application.
Due to the escalated uptake, we recommend you perform tissue tests to determine the optimum application rate and optimise your costs.

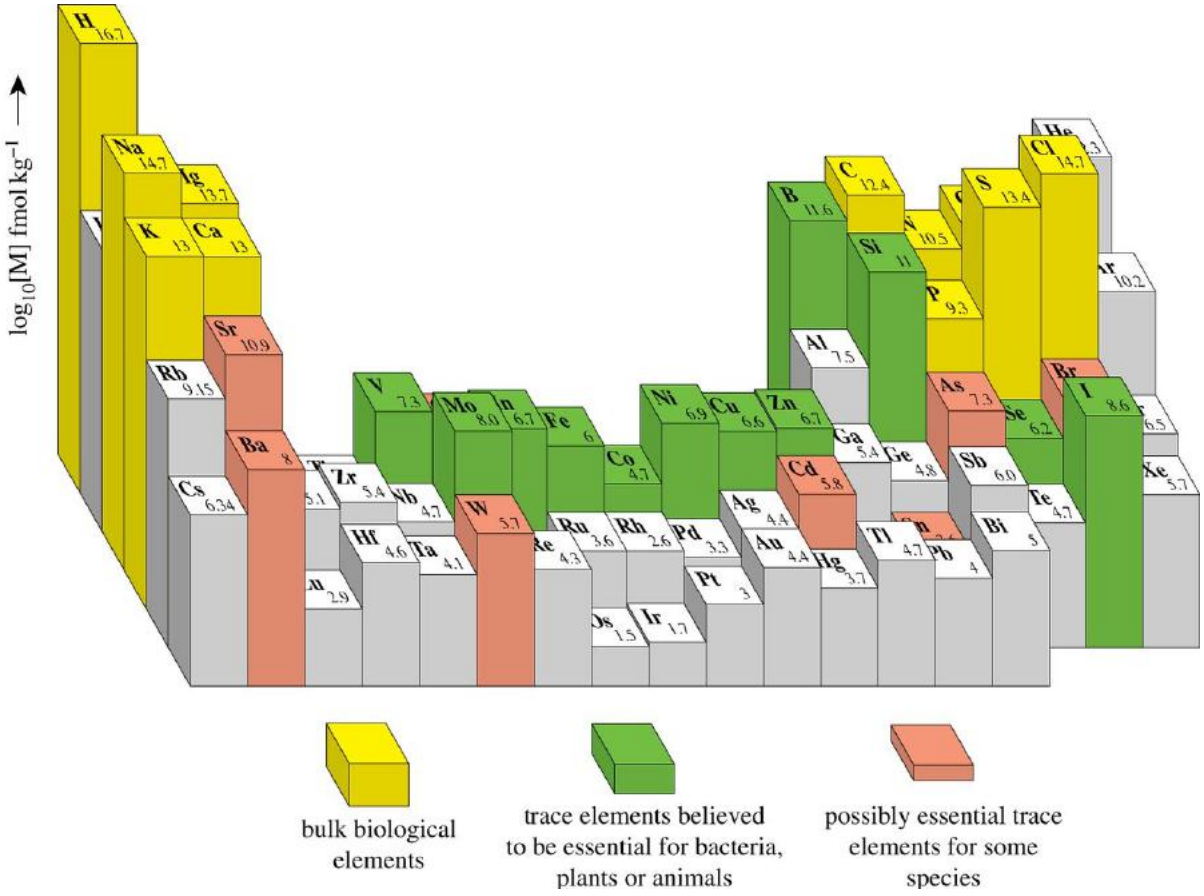
Foliar application – as a guide dissolve the above amounts in 200 litres of water to apply over one hectare. However, the guide application quantities are easily soluble in smaller volumes of water or can be dissolved in larger volumes as long as there is sufficient stirring to ensure it has diffused evenly throughout the mixing tank in the greater volume (See below for more detail on foliar application).

Application

Preventive: apply at early stage after establishment of the seedlings, at 4-6 leaves stage.
Remedial: start at first sign of micronutrient deficiency; apply 2 additional sprays at 10-15 day intervals.

Product Features

S-Chelate Ca has a unique chelate chemistry that transports the cation of this important element into the plant with remarkable effectiveness. It is sulphur free.



S-Chelate Ca is a water soluble powder recommended for correction of calcium deficiency disorders such as blossom end rot in tomatoes and melons and for other crops such as cabbage, cotton, onions, potatoes and sugar

beets that often require supplemental calcium.
Helps reduce alkaline hydrolysis of pesticides.

It is generally agreed that the overuse and misuse of conventional pesticides has placed our foodchain and environment at risk and has contributed to a rise in pesticide resistance. Although few plant diseases are completely controlled by the application of fertilisers, Botrytis and many other diseases can be alleviated by the proper application and management of plant micronutrients. There is much scientific support that micronutrients such as Calcium can reduce the severity of plant diseases by increasing disease tolerance and the resistance of plants to pathogens. Just as proper nutrition strengthens human health, an integrated pest management programme should incorporate proper nutrition.

The focus of a fertility programme should be on providing appropriate nutrition and preventing deficiencies rather than waiting for a deficiency to occur.

The current micronutrient critical values used in soil and tissue testing are outdated and inadequate for maximising production. A potential exists for sampling errors due to in-field variation in nutrient distribution and the non-uniform distribution for plant roots.

Micronutrient availability is dependent on weather, root activity, translocation and microbial activity. Cold soils in the spring can result in low microbial and root activity, low micronutrient uptake and micronutrient cations moving slowly in soils. Many micronutrients demonstrate poor translocation in plants, causing the micronutrients to move only about 6mm in the plant. As a result, during periods of high plant growth (eg flowering), it is common for plants to exhibit transitory micronutrient deficiencies.

There are two types of immunising responses in a plant : Systemic Acquired Resistance (SAR), a response to some exogenous chemical with no associated infection. When plant is nutrient deficient, its defence responses can become impaired.

Micronutrients can control or reduce pathogen damage to the plant by direct toxicity to the pathogen or by promoting ISR. Applications of nutrients such as manganese, copper, and boron can release, through cation exchange, calcium from cell walls. Once released, the calcium ions act together with salicylic acid to trigger a SAR response (Reuveni et al, 1997a, b; Reuveni and Reuveni 1998).

Studies have shown that nutrients can play a significant role in disease prevention. As stated above, calcium is important for the structure of plant membranes and cell walls (Marshner 1995). Low levels of calcium make the plant's cell wall susceptible to fungal attacks, while proper levels of calcium in plant tissues protects from pathogens during storage. The application of calcium to fruit prior to storage, can be an effective measure for preventing fruit rot. As the ratio of potassium to calcium increases, so does the risk and severity of Botrytis infection (Krauss 1971). The incidence of Botrytis in table grapes is reduced when the K:Ca ratio is 0.82:1. Calcium also strengthens the plant's resistance to Pythium, Sclerotinia, Botrytis and Fusarium (Graham 1983). The timing of calcium and micronutrient applications is very important. Plant pathogens often infect the plant long before the actual symptoms of the disease are expressed. Control of the pathogens should start prior to infection to reduce the potential inoculums levels at later stages of fruit development. The use of sulfur and copper fungicides are good examples of this practice. Calcium can inhibit pectinace activity of Botrytis cinerea (Volpin and Elad 1991). Botrytis infects grape vines through

aborted flowers at bloom. Therefore, the application at bloom may reduce the severity of botrytis bunch rot.

(Dr Larry Parker, Westbridge Agricultural Products)

S-Chelate Ca is bioavailable in a much broader-than-normal range of pH and soil conditions such as in contact with clay, carbonates, phosphates, organic matter and other elements in the soil that seek to tie up and make secondary elements and micronutrients insoluble.

Chelation is defined as the capacity to hold the metal ion in solution above the precipitation point of the non-chelated ion and the Level of Chelation measurement is your assurance of the performance of our product which will stand up to independent verification.

This is the backbone of the performance of this technology resulting in markedly lower application rates than for non-chelated products because so much more of the metal ion will stay in solution and reach the plant tissues as has been

shown convincingly by yield and quality improvements alongside parallel tissue analysis.

There are two ways this works:

1) In the soil - Protecting the vulnerable cationic metal ions from being tied up and allowing them to reach and be absorbed by the root hairs.
2) In the plant – Carrying them in a more biologically compatible way to the regions of the plant where they are needed. Chlorophyll is a chelate structure so the plant's phloem system recognises ***S-Chelates*** as organic molecules with familiar structures, enabling them to be transported and assimilated more readily than traditional unchelated mineral salts.

S-Chelate Coating Powders

for coating NPK granular fertilizer

S-Chelate Coating Powders are made in the UK using a unique specially developed and crop safe chelation technology. This technology can be demonstrated to out-perform traditional chelation and for providing important secondary and trace element nutrition in a protected, constant and extraordinarily effective manner. Ground to a fine powder, ***S-Chelate Coating Powders*** coat and then cling to NPK granular fertilizers in such a way as to deliver a targeted nutrition straight to the plant. Nutrition is absorbed into the plant through the roots and is targeted in such a way that the elements are subsequently found in tissue samples of the plants instead of being wasted on surrounding soil. This enhanced nutritional bioavailability results in healthier plants, increased yields, and larger fruits and vegetables.

Remarkably low quantities from 200grams to 1 or 2kg are all that are needed to spread over a hectare.

Foliar Application

S-Chelate powders have a second important function - they are super soluble and can be dissolved for use as liquids for spray, drip, and fertigation. They are compatible with most liquid fertilizers, herbicides, insecticides, and fungicides, however

Please jar test before mixing with any agrichemicals.

S-Chelate Coating Powders demonstrate their tremendous bioavailability sprayed onto the leaves of crops that exhibit a nutrient deficiency.

S-Chelate Coating Powders are buffered and will not burn leaves if used as recommended. Results, even at this stage of plant growth and development, are striking when compared to traditional spraying regimens.

Guide application rates produce very dilute solutions of 0.2-2% but due to using conditions varying widely we always recommend trialling before adopting widely and cannot accept liability for damage or underperformance.

Please contact us or our agents for technical support.

Achieve greater yields with Super Bioavailable S-Chelate™ technology

Chemistry not Mystery

Made in the UK

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S-Chelate Plant Nutrition is a part of Align Chemical Ltd
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