Product Data Sheet

S-Chelate Plant Nutrition
For Escalated Micronutrient Uptake

S-Chelate Cu

Foliar Powder

Element	Quantity
Copper (Cu)	13% minimum

This is the level of Copper quoted as an element not as an oxide or any other compound.

Level of Chelation

Precipitation Point pH 12

Volume of 0.5M NaOH to precipitate 1% solution – >35ml

Particle Size Distribution

Volume Weighted Mean – 65 microns

50% under 29 microns

Appearance	Blue Powder
Bulk Density	0.77 g/cm3
Packing	20kg PE lined steel pails

Field Cereal Crop Application Guide Rates

(For use alongside NPK plant macronutrients)

For each foliar application:	
Maintenance Rate	0.2-0.3kg/ha
Moderate Deficiency	0.3-1.1kg/ha
Severe Deficiency	>1.1kg/ha

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The application rate will vary depending on the crop and application regime. For example you may prefer half the number of applications and apply up to double the guide amount for each application.

We recommend you perform soil and tissue tests to determine the optimum application rate and optimise your costs.

As with all S-Chelate products, the ingredients are food or feed grade and as long as they are used at the guide rates are completely safe to use on all crops.

This is a single, straight element product but we can offer customised multi-component formulated systems to suit your requirements. Please see below for a result achieved with our S-Chelate Cultiv-8 eight element system.

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 of water.

Application Timing

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.

S-Chelate Cu

Under-Cover, Controlled Growing Systems

S-Chelate Cu is ideal for use in drip fertigation polytunnel fruit growing systems where their pH range can overcome the locking up of nutrients which can be caused by growing media like coconut coir.

S-Chelate Cu is perfect for use in vegetable and herb hydroponic systems where the pH range tolerates other chemicals like hydrogen peroxide used to control pathogens in this intensive, high volume growing environment.

Product Features

S-Chelate Cu has a unique chelate chemistry that can transport this important element into the plant with remarkable effectiveness.

S-Chelate Cu 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 assessment.

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 repeatedly by yield and quality improvements alongside parallel tissue analysis.

S-Chelate Coating Powders are made in the UK using a unique specially developed and crop safe and environmentally friendly chelation technology. This technology can be demonstrated to out-perform traditional chelation (such as EDTA) 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.

Example of Copper Deficiency

Copper (Cu) deficiency in sweet potato is encountered on some acid, sandy soils of low total Cu content. It may also occur on calcareous soils, in which Cu availability is low due to its insolubility at high pH. In some organic soils, Cu may be tightly bound to soil constituents and poorly available to plants. Liming of soils low in Cu can lead to the appearance of Cu deficiency.

Symptoms

A number of visible symptoms of Cu deficiency have been observed on both mature and young leaves, their extent and order of development varying among cultivars. Conspicuous symptoms on the vines are usually associated with considerable growth reduction. Chlorosis, wilting and drooping of mature leaves may be the first visible symptom of Cu deficiency. Leaves of intermediate age are first affected, but in time the turnover of leaves will mean that the oldest leaves show symptoms. The chlorosis is interveinal, with a gradual fading of colour with distance from the main veins. Usually the minor veins retain less green colour than the main veins, but may be sufficiently well defined to give the chlorosis a mottled appearance. Chlorotic leaves may develop spots or patches of necrosis, which spread until the entire leaf is dead.

In some cultivars, necrotic spots have been observed on mature leaves without prior chlorosis. Initially the necrotic spots are small, dark and sharply defined. They may be clustered close to the point of petiole attachment, or more commonly scattered over the leaf surface. The necrotic spots are clearly visible on the lower side of the leaf, and are often adjacent to minor veins. Subsequently, a yellow chlorosis develops around them, spreading to encompass a number of lesions. Later, the area between the initial lesions becomes necrotic, and eventually the whole leaf dies.

Mottled or patchy yellowing, necrotic spots and droopiness of mature leaves.

Deformities, puckering and holes in young leaves.

Holes formed by the expansion of deformed tissue (J. O'Sullivan).

Newly opened leaves sometimes appear silvery (J. O'Sullivan).

Necrotic spots and chlorotic patches on mature leaves progress to spreading necrosis (J. O'Sullivan).

Patchy blackening of storage root cortical tissue just under the skin (J. O'Sullivan).

Blackened sections of cortical tissue in roots after a period of storage (L. Loader).

Symptoms affecting the young leaves and growing point may develop earlier or later than those described above, and in some cultivars they may be the only visible symptoms. Initially, the surface of young leaves may take on a silvery appearance. A variety of leaf deformities may occur. New leaves are usually small and may be misshapen, puckered, or thickened. They may develop holes due to uneven expansion of the blade. Some reduction in internode length is common.

Cu-deficient sweetpotato plants may produce storage roots which are normal in external appearance but contained brown streaks in the flesh (Pillai, et al., 1986). Similar symptoms have also been observed in Cu-deficient crops in northern Australia. Necrotic patches of vascular tissue may appear on the surface as a brown area.

References:
Troubleshooting nutritional problems in a new industry: sweet potato in North Queensland. Proceedings of the First Australian New Crops Conference, Gatton, July 1996. Rural Industries Research and Development Corporation, Australia.
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Pillai, N.G., Mohankumar, B., Kabeerathumma, S. and Nair, P.G. 1986. Deficiency symptoms of micronutrients in sweet potato (Ipomoea batatas L.). Journal of Root Crops 12 (2), 91-95.
Reuther, W. and Labanauskas, C.L. 1966. Copper. In: Chapman, H.D. (ed.) Diagnostic criteria for plants and soils. Dept of Soils and Plant Nutrition, University of California Citrus Research Centre and Agricultural Experiment Station, Riverside, California. pp 157-179.
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Contributed by: Jane O'Sullivan

Foliar Application

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

As a precaution please perform a jar test before mixing with other agrichemicals.

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.

S-Chelate Cu

An example we are proud to show of our product performance and formulating capability

Brown Turkey figs – Crop tripled with S-Chelate Cultiv-8 which includes S-Chelate Cu

Please contact us or our agents for technical support.

Achieve greater yields with Super Bioavailable S-Chelate™ Technology

Chemistry not Mystery

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