



A guide to micronutrient management

Nutrient management is one of the important aspects of achieving higher crop yield and quality seed and oil. It is well known that macronutrients are essential to successful oilseed production. Still, certain micronutrients including iron (Fe), boron (B), zinc (Zn), manganese (Mn), molybdenum (Mo), cobalt (Cu) and copper (Co) are supplementary to boosting overall plant health and quality.

Each crop growth stage has a peak demand for different nutrients and uptake of some nutrients takes place at specific stages. Foliar nutrition is an effective way to ensure a steady supply of micronutrients, especially in conditions that are not favourable for the proper supply of nutrients through the root system.

The judicious application of micronutrients to align with the optimum/critical stage of nutrient uptake helps to use nutrients efficiently, address relevant abiotic/biotic stress conditions and ultimately to produce a good seed yield.

Seed germination and emergence

During this stage, the small seeds and relatively weak seedlings are very susceptible to poor seedbed conditions (e.g. compacted soil, weeds), unfavourable weather, pests and soilborne diseases. Since nutrient uptake is greater than crop growth, it is important to supplement with nutrients essential for germination and

stimulating root growth. Seed treatments containing Mn, Cu, Co and Zn applied during planting are an effective way to support growing seeds:

- Zn is vital in seed germination and early root development to promote the production of growth hormones (e.g. auxins) necessary for root elongation and establishment.
- Mn is involved in synthesising enzymes required to break down stored carbohydrates during seed germination.
- Co is involved in nitrogen fixation and contributes to the synthesis of vitamin B12, which is essential for the metabolism of oilseed crops.
- Cu is crucial during cell wall development, root elongation, the formation of lateral roots, and defence against pathogens.

Healthy development

Uneven canopy development can result in variations in light interception, nutrient uptake, and water utilisation among plants. Good plant structure ensures the efficient uptake of nutrients and enhanced mechanical stability which facilitates optimal light interception, and maximises photosynthesis and resistance to pathogens and pests.

During canopy and plant structure development, the following nutrients play a significant role:

- Fe is essential for the formation of chlorophyll, which is responsible for

capturing light energy and converting it into chemical energy through photosynthesis.

- Mn is required for the synthesis of chlorophyll and supports various metabolic processes, including photosynthesis, respiration, and nitrogen metabolism.
- Zn is required for cell division, elongation and differentiation, which are essential for proper leaf and shoot growth.

Even flowering

Even flowering ensures that enough flowers are available for pollination, increasing the chances of successful fertilisation and seed development. Nutrient management during the flowering phase should include:




- B is essential for cell division and differentiation, pollen tube development and seed formation. It is involved in the synthesis of nucleic acids and proteins, contributing to proper seed development.
- Mo is required for nitrogen metabolism, as it is involved in the conversion of nitrate to ammonium within plants. It aids in the production of proteins and enzymes necessary for seed development.
- Co is involved in the regulation growth processes, including coleoptile elongation, leaf expansion and bud development. It also enhances the efficiency of other essential nutrients such as iron and phosphorus.

Management programme

Nutrico's crop nutrition programme can help you achieve excellent crop performance and maximise the yield and quality of all oilseed crops. Nutrico's comprehensive product portfolio (*Table 1*) offers a wide range of options to meet all oilseed fertiliser requirements.

For more information on our tailor-made micronutrient management programmes, contact Nutrico at 011 392 4072 or info@nutrico.co.za.

Table 1: Nutrico product portfolio and application rate.

Product		Application rate	Physiological phase
	Seed treatment is made available immediately after application. STSA replaces talc and graphite for planter lubrication and contains high levels of Zn, Mn, Co and Cu.	2,5g/kg seed	Seed development
	Phosphonate-based plant nutrients and biostimulant to promote optimal growth. Nutrivo® can be used with glyphosate products.	2ℓ/ha	Canopy development
	Liquid plant nutrients containing high levels of B and Mo.	1ℓ/ha	Even flowering