Micro-nutrient fertilisation requirements to produce quality canola oil

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Canola (*Brassica napus* L.) is one of the three major oil crops in the world, and provides essential edible oils and raw materials for bio-energy production. The physical and chemical properties of canola oils, and consequently their end use, depend on the composition of fatty acids that accumulate in the storage lipids during seed development.

Seed development is greatly affected by abiotic stress that includes nutrient deficiencies, limiting plant growth and development, crop yield and oil quality.

Fatty acids in canola oil

Fatty acids are the building blocks of fats (lipids) and are vital dietary sources for humans as they are a structural component of cells. The fatty acid composition in canola seeds can vary according to the cultivar, and largely depends on the crop development and processing technology used during production.

Canola oil is a source of many fatty acids, the most important being oleic acid (omega-9) and linoleic acid (omega-6) since these depict the shelf life of seeds/oil and the resulting suitability for human health.

Micronutrient requirements

Micro-nutrients such as zinc (Zn), boron (B) and molybdenum (Mo) play an important role in the growth and development of canola crops. These micro-nutrients are essential in improving seed formation, pollen grain germination, protein and amino acid synthesis.

Foliar nutrition is an effective way to supply micro-elements, especially in conditions that are not favourable for the proper supply of nutrients through the root system of plants. Deficiencies mostly occur early in the season because the translocation of elements from the root to the above-ground part may not be sufficient before leaf expansion.

> Foliar fertilisation with rapidly available forms of nutrients improves plant vigour, and thus increases the seed/oil yields and the fatty acid profile of the oil.

Foliar feeding results in faster delivery of deficient micro-nutrients, high efficiency of small amounts of substances compared to soil fertilisation, even distribution of nutrients, as well as the reduction of environmental pollution, and avoidance of chemical and biological sorption. Foliar fertilisation with rapidly available forms of nutrients improves plant vigour, and thus increases the seed/oil yields and the fatty acid profile of the oil.

B, Zn and Mo: A power combo

A recent study investigated the effects of treating canola crops with a combined application of B, Mo and Zn on seed yield and fatty acid profile in comparison with the application of B, Mo or Zn alone. The seed yield of the B plus Mo and Zn treatment delivered a statistically significant increase in the seed yield, compared to any of the treatments containing only the individual micro-nutrients.

A significant increase in the seed oil content and an improvement in the oil quality were also observed for the combination treatment of B, Mo and Zn. These results suggest that optimal micro-nutrient application could provide both yield and quality advantages for canola oil. The increased mono-unsaturated fatty acid (e.g., oleic acid) composition associated with the application of B, Zn and Mo may offer several health benefits.

Canola oil that is high in oleic and linoleic acid is also more chemically stable than conventional canola oil because it is less susceptible to oxidation, offering a longer shelf life during processing.

Nutrico has expertly formulated MolboroX® (Reg no B5122, *Act 36 of 1947*) to combine the benefits of B, Zn, Mo and bio-stimulants into a powerful liquid foliar fertiliser. MolboroX® encompasses patented technology to deliver nutrients to crops in a highly mobile and absorbable format. Each 1ℓ/ha contains 100g B, 40g Mo and 6g Zinc, as well as other proprietary ingredients to boost crop growth, seed yield and quality.

For more information on how to use micro-nutrient fertilisation practices to boost oilseed yields and increase the quality of the oil produced, contact your local Nutrico representative at 011 392 4072 or info@nutrico.co.za.