



Micronutrients: An on-farm decision making matrix

Background

Micronutrients are essential trace elements required by plants in very small quantities (mg/kg dry matter). They are critical for normal plant growth, development, and reproduction. A micronutrient is considered essential only if:

- Without it, the plant cannot complete its vegetative or reproductive life cycle.
- Deficiency symptoms are specific to that element and can only be corrected by supplying it.
- The element has a direct role in plant nutrition.

Currently, only boron (B), chloride (Cl), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo), nickel (Ni) and zinc (Zn) are considered to be essential for crop growth.

Other trace elements such as cobalt (Co), chromium (Cr), fluoride (F), iodine (I), and selenium (Se) are important for animal health but are not considered essential for crop growth.

Key points

- Micronutrients are essential trace elements required by plants in very small quantities.
- Only boron, chloride, copper, iron, manganese, molybdenum, nickel and zinc are considered essential for crop growth.
- Only apply micronutrients when there is evidence of a deficiency or a clearly identified production constraint.

Evaluating micronutrient products

Before investing in a micronutrient product, undertake careful due diligence. Only apply micronutrients when there is evidence of a deficiency or a clearly identified production constraint. The decision should be supported by:

- Soil and/ or plant tissue test results.
- Independent scientific research.
- Relevant New Zealand field trials.
- Economic analysis showing a likely return on investment.

Avoid making decisions based solely on marketing claims, testimonials, or promises of general productivity improvements. Evidence-based nutrient management is usually the most cost-effective and sustainable approach.

Thing to consider

1. Is there a proven deficiency or problem?

Only apply micronutrients when specific deficiency or crop issue has been identified through soil tests, plant tissue tests, or visible symptoms. Claims of general “yield increases” or “improved health” are not sufficient justification.

2. Is there credible evidence supporting the claims?

Look for independent research, data, and trial results. Results from independent scientific organisations are generally more reliable than studies funded solely by product promoters. Customer testimonials are not scientific evidence.

3. Were the trials relevant to New Zealand conditions?

Soils, climate and farming systems differ significantly between countries. New Zealand field trials are more valuable than overseas, laboratory, or glasshouse studies.

4. Has the product been tested over multiple seasons?

Short-term or single-season results may not reflect long-term performance.

5. Are actual production figures provided?

Percentage improvements alone can be misleading. Ask for the baseline figures and real production outcomes.

6. Are comparisons realistic?

The product should be compared with current standard farming practices, not with alternatives that do not represent realistic farm management or accepted industry practice.

7. Is there a clear scientific explanation for how the product works?

Be cautious of vague claims, such as “improves health” or “boosts soil vitality”, that do not explain the mechanisms involved.

8. Who benefits financially?

Consider whether the advice is objective or influenced by product sales.

9. Is the advisor credible?

Assess the professional experience and track record of the salesperson, consultant, or promoter, especially in New Zealand farming systems.

Do your own on-farm testing

1. Identify a paddock with low micronutrient levels (use results of soil tests or plant tissue testing from previous or current crop).
2. Mark out a representative part of the paddock (similar soil type, soil depth, slope etc) and treat with the recommended micronutrient rate (g/ha).
3. Compare results with those from your standard field management / practice.
4. If trying an alternative product, you will need an extra treatment - Standard minus the amount of the micronutrient supplied by the alternative input within your system.

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