



## Go the extra mile with trace elements

*Jim Laycock and Lee Menhenett, technical agronomists with Incitec Pivot Fertilisers, give their take on using trace elements to encourage healthy productive pasture growth.*

Even the smallest deficiency can put the handbrake on your pasture program, so go the extra mile and check your pasture's requirements for trace elements.

Getting trace element levels right encourages the strong growth of clover and other nitrogen-fixing legumes and can bolster stock health and fertility.

For example, deficiencies of molybdenum, zinc or copper can limit pasture production, and appropriate copper and cobalt levels are essential for healthy stock.

Many farmers use rules of thumb for trace element applications, but every farm and every paddock is different.

Because of their micro nature, a need for trace elements is difficult to pick up in soil tests. Leaf tissue testing is the best way to assess the status of molybdenum, copper, zinc, boron, cobalt and manganese. This shows exactly what the plants are taking up and animals are consuming.

Correct plant tissue sampling requires a specific plant part, at a particular growth stage, for a particular species.

Trace elements can be supplied in blends or as spray coatings on annual fertiliser applications if levels need a boost.

### Copper

Copper applications can be needed to maintain adequate copper levels in the herbage for stock. Adequate copper levels drive the persistence of annual pasture legumes like sub-clover.

Animal health issues can arise before the pasture shows signs of copper deficiency.

As well as tissue testing the pasture to check on copper levels, stock can have their copper levels monitored with blood tests.

Where copper is required, application rates are typically 1-2 kg/ha of copper every four to five years.



## Zinc

Zinc deficiency is widespread in Australia. Zinc is essential for a range of critical plant growth functions, including photosynthesis.

Deficiencies can lead to animal health problems including poor reproductive performance, skin lesions and hoof integrity issues.

Tissue testing is the best way to monitor zinc levels in pasture. Zinc availability is greatest in acidic soils, with plant or animal deficiencies seldom observed. However, in alkaline soils, particularly where limestone is present, zinc deficiencies can be a major issue.

Where zinc is required, apply 1-2 kg/ha of zinc every three to five years.

## Boron

Boron is necessary for the nodulation of roots in legumes as well as a range of plant functions.

Boron deficiencies have been known to occur in clover and lucerne. Boron is a mobile nutrient in the soil and can be taken up by plants from depth by deep rooted species such as lucerne.

There is only a small margin between boron deficiency and toxicity, so graziers and dairy farmers need to be certain about the need for boron before application.

Always confirm a boron deficiency with a leaf tissue test prior to applying boron fertiliser.

Care should be taken when applying boron to avoid boron toxicity. Low rates should be used, such as 0.5-0.75 kg/ha of boron every six years. On limed paddocks, rates of up to 2.5 kg/ha of boron could be required.

## Cobalt

Cobalt is needed by the rhizobial bacteria responsible for fixing atmospheric nitrogen in the nodules on the roots of legumes.

It is also essential for the health of ruminant animals. Vitamin B12 is synthesised by rumen microbes from dietary cobalt.

Cobalt deficiencies tend to occur in spring or when pasture growth rates are high, because of a lack of soil ingestion by the animals.



Cobalt can be applied in legume-based pastures and lucerne at rates of 25-50 grams/ha every two to four years.

## **Manganese**

Manganese deficiency is often associated with coastal calcareous soils and alkaline soils.

Manganese deficiency in plants is typified by chlorosis or yellowing.

Where it is required, manganese sulphate can be blended with SuPerfect®. It should be applied soon after blending to avoid the degradation of product quality.

See your pasture adviser to discuss trace elements for your pastures and arrange tissue testing through the Nutrient Advantage® laboratory.

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