

PRINCIPLES AND APPROACHES FOR CHOOSING SOIL AND PASTURE TREATMENTS



Principles and approaches for choosing soil and pasture treatments

A review of the MLA Producer Demonstration Site projects designed to investigate the effects of alternative soil treatments on soil chemistry and biology and pasture and livestock production.

The project included the development of a set of principles for producers to use when making an assessment of particular products.

The principles underlying decisions about soil and pasture treatments can be summarised as:

- a range of nutrients are required by plants for growth
- agricultural production involves nutrient removal through the sale of livestock and/or forage and nutrient transfer to stock camps and these nutrients need to be replaced
- plant available nutrients are provided through
 - the application of nutrients in fertilisers and products
 - mineralisation of organic forms of nutrients to inorganic forms
 - capture of N from the atmosphere by symbiotic bacteria associated with plant roots
- the level of plant nutrients can be determined by soil chemical testing and deficiencies or toxicities can be determined by comparing results against established critical values
- where nutrient levels are low and limiting for plant growth, the evidence from this review is that adding fertilisers and products to the soil is the key to increasing required nutrients
- mineralisation alone cannot be relied upon to address nutrient deficiencies
- testing for soil biology provides an indication of microbial biomass and activity but these tests have not been demonstrated to be causally linked with pasture production

Choosing the right fertiliser

Fertilisers come at a cost, however, the cost of not fertilising through reduced production is usually far greater. It is important to know which nutrient is limiting production and apply fertiliser strategically.

Follow these steps to help you choose the right soil and pasture treatments for your property:

1. Decide your objective for pasture growth and soil fertility.
2. Determine what deficiencies and toxicities that need to be addressed are.
 - Conduct a soil chemical test which uses analyses which are predictive of plant growth
3. Identify fertilisers and soil treatments that address any nutrient deficiencies and toxicities that have been identified.
4. Obtain a nutrient analysis of the possible products and check for contaminants and livestock and human health risks.
5. Ask (suppliers) for evidence of nutrient availability and product performance.
 - If the evidence is unavailable then test the product/s on your farm using test strips (seek advice on how to establish test strips).
 - Seek advice to determine the rate and frequency of application.
6. Calculate the cost of the available nutrients in the possible products.
7. Choose the product on the basis of all information collected in steps 1-6.
8. Monitor the pasture's response to the product by conducting a soil chemical test every 2 years.

Read the final report: [A guide to fertiliser and soil treatments for beef and sheep meat production systems](#)