

## LIME ANALYSIS – FACT SHEET

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### BACKGROUND

Soil acidity (low pH) is a serious concern across large areas of rural Australia. For example, over 65% of the Western Australian wheat belt experiences soil acidity problems. The symptoms of acidic soils include the following:

- Nodulation failure of legumes
- Deficiency symptoms of major plant nutrients (such as Molybdenum, Magnesium, Sulphur, Calcium, Phosphorus)
- Poor root growth
- Relatively low crop yields and pasture growth

The application of lime is the simplest way to overcome the problems associated with soil acidity.

### OVERCOMING SOIL ACIDITY

Before applying lime, there are two important considerations:

1. the pH and the buffering capacity of the soil that is to be treated
2. the quality of the lime that is to be applied

A soil fertility test will determine the soil pH, the soil buffering capacity and will also identify nutrient deficiencies. If the soil is of low pH, then the application of lime is recommended by most agronomists.

Although there are significant quantities of lime available, its quality varies significantly. Both neutralising value and particle size distribution (fineness) are significant factors of lime quality and directly influence the quantity of lime required to increase the pH of acidic soils.

Neutralising value (NV): It is the carbonate in agricultural lime which neutralises acidic soils. As such, the quantity of carbonate in lime is vital and is reflected by the neutralising value. The neutralising value is the capacity of the material under test to neutralise acid in comparison to pure calcium carbonate, which is given a value of 100%. Lime of high NV has a greater capacity to raise the pH of the soil.

Particle size: The size of lime particles impacts on the speed at which the pH can be raised. This is based on the fact that fine particles have a larger surface area to react with acidic soil. Particles under 0.5 mm are most effective, with particles greater than 1 mm in diameter having limited value.

There are a number of calculators readily available from agronomists and The Department of Agriculture and Food that determine the quantity of lime that needs to be applied in order to lower the soil pH. These calculators use the neutralising value and the particle size information provided by laboratories such as Agrifood Technology.

### CODE OF PRACTICE in WA

Due to the prevalence of acidic soils in WA, the Department of Agriculture and Food WA released a 'Time to Lime' campaign to increase the awareness of the damaging effects of soil acidity and the benefits of applying lime. Lime producers have also formed an independent association to advance industry issues. This association, Lime WA Incorporated, has developed a voluntary Code of Practice to provide guidelines for mining operations, product testing and reporting. The Code ensures that the testing of lime is conducted using specific test methods.

Recently Agrifood Technology has conducted proficiency trials with Lime WA in order to demonstrate compliance with the standards set as part of the Code of Practice. The results of these proficiency trials have been pleasing and Agrifood Technology is now able to offer lime producers and farmers a test that complies fully with the Code of Practice. To be able to accurately differentiate the quality of lime samples and to maximise production, it is important that testing is conducted in accordance with the Code of Practice.