



All lime is not created equal

Quality is an essential consideration when purchasing lime

To lime or not to lime? That is no longer the question. For many Australian farmers, incorporating a regular lime application into their crop rotations is now standard, beneficial, and essential practice. The key question is: which is the right lime to apply for your specific soil conditions?

Warren Mirtschin, Graymont Southern Australia Account Manager, says Aglime application can help pasture growth and enhance crop root health by increasing soil pH levels. However, securing those benefits depends on:

- the nature and quality of the limestone used, and
- knowing the pH levels of your soil before you place your Aglime order.

Since limestone is alkaline, its application reduces the build-up of harmful acids in the soil. How quickly and effectively this improvement can occur is directly linked to:

- the calcium carbonate and magnesium carbonate levels within the lime i.e., the neutralising value (NV).

- the particle size of the crushed limestone applied. The finer the lime, the more quickly it will react in the soil due to the greater surface area of the liming material.

“That neutralising value is the relative ability of liming material to counteract the effects of soils acidity. Ideally, we’re aiming for a pH between 5.0 to 6.5 (CaCl) in the soil, says Mirtschin.

The process of adding lime and the reactions undertaken to reduce soils acidity are complex. Soil acidity is measured in pH which is an expression of the hydrogen ion activity in the soil. A simplified view is that by adding aglime, some of the hydrogen ions are converted to water, and aluminium toxicity is reversed. By maintaining the soil pH towards a neutral level as possible, the availability of some key soil nutrients are released to the plant.

Over the years, Mirtschin says he’s seen farmers and growers repeatedly apply lime, because the limestone has been selected on price, not quality.

“Cheaper is never cheaper in the long run, because more product is required to do the same job,” he says.

“It’s understandable that farmers will buy their limestone from the nearest possible source, as that keeps transportation costs down.

Choosing a quality product will prove its worth. Farmers just need to remember lime is a long-term investment, and one that will pay dividends.”

How to identify quality lime

To get the best out of your application of lime, Mirtschin recommends regular soil testing, not only for liming but for any fertiliser decision. For the decision on liming, select a product with a high NV and do your homework. Understand the neutralising value and particle size of the product selected.

1. Understand the technical data

The essential information, which suppliers must detail, relates to particle size, chemistry, and neutralising value.

“We talk a lot about the neutralising value (NV) and effective neutralising value (ENV) of lime and limestone,” explains Mirtschin.

“These values give us a good idea of how the applied limestone can take effect and neutralise soil acidity, and that has a lot to do with the particle size of the chosen product.”

2. Recognise the terminology

Neutralising value (NV), and effective neutralising value (ENV) are closely related terms, but the values differ between lime products, depending on the geological source and how the limestone is processed.

In brief:

- The NV is the lime’s capacity to neutralise soil acidity. That capacity relates to the amount of calcium and magnesium in the lime. Since pure calcium carbonate has an NV of 100%, that figure is used as the standard and benchmark measurement.

Ideally, the NV specified for high quality lime to be used for agricultural purposes should be as close to 100% as possible.

- The crushing and processing method of the limestone will determine the fineness of the particles in the finished product. Particle size determines how quickly and effectively (ENV) the applied lime will move through the soil profile and react with acids in the soil to move the soil pH.

3. Liming checklist

- Are the soils acidic? (This is determined by a soil test.)
- Is the proposed crop sensitive to acidity?
- Is the liming material being of a suitable high quality, high NV, and suitable particle size?
- Is the liming rate (tonnes/ha) being correctly applied to rectify the acidity problem?
- Have you planned ahead? Lime is a long-term solution, to a problem, it takes time to do its job.
- Are there underlying soils health issues such as disease or soil structure that are limiting crop growth?

“Lime is a long-term investment,” says Mirtschin. “But it’s a worthwhile one. And it’s always better to start liming yesterday than tomorrow.”

References:

http://www.ccmaknowledgebase.vic.gov.au/brown_book/23_Lime_Comparison.htm
<https://www.dpi.nsw.gov.au/agriculture/soils/guides/soil-acidity/best-lime>

SOME COMMON TYPES OF LIMING MATERIALS

- **Agricultural lime:** Widely used and usually the most economic means of correcting soil acidity, good quality lime has 37-39% calcium and little magnesium.
- **Dolomite:** Good quality dolomite contains approximately 30% calcium and 18% magnesium. The NV of a good dolomitic lime is in the range of 99-101%.
- **Calcium Oxide:** Also known as Quicklime, or Ground Burnt Aglime has a NV in the range of 120-150%.
- **Calcium Hydroxide:** Also known as Hydrated Lime, Slaked Lime, Brickies Lime or Limil™ which has an NV of approx. 110-120%.

NB: Calcium Oxide and Calcium Hydroxide are not recommended for broad agricultural use.

