



This is your fertiliser without proper Magnesium and Calcium

Standard NPK grows grass, but...

Chances are your grass grower of choice is a standard NPK fertiliser. Most farmers go for that. That's because they've been told that Nitrogen, Phosphorus and Potassium are the *three key nutrients* for growing pasture.

And there's no doubt that NPK works. Every farmer can see the grass growing results for themselves. But there are a couple of things you can't see.

The Two Missing Gears

Even though your *one-size-fits all* fertiliser will do a job for you, it won't condition the soil, grow grass and ultimately produce milk as well as it should. Not if two crucial elements are missing.

Calcium and Magnesium.

These two elements are crucial to a proper fertiliser programme. That's because Ca and Mg *regulate and activate the other nutrients*. They are the nutrients that link everything together to enable all the elements to function at full capacity.

When we say "everything" and "all the elements" we also mean the nutrients already existing in your soil and the millions of *living organisms* in the soil that are largely responsible for grass growth and soil health.

Before we examine what Calcium and Magnesium actually do, it's worth looking at what's really going on beneath the grass.

Your Soil is a Brown Factory

Think of what a factory is: *a place where goods are manufactured*. But manufacturing requires more than just a location. To produce goods, a factory needs to be filled with *workers* – labourers who have specific jobs that enable products to be made.



Just like a typical factory, your soil is filled with workers. These are the organisms that are labouring to make tonnes of healthy grass for your herd. Without this underground workforce, nothing grows. *They are literally that important.*

Meet Your Grass-growing Workers



Worker #1: Good bacteria.

In the soil factory, these guys make nutrients available to plants, increase nutrient retention, and enhance soil structure to improve the flow of water and reduce erosion. They release plant growth hormones that stimulate root growth and improve root architecture. They detoxify soil and suppress disease by protecting plants from Pathogens.

Worker #2: Fungi

Fungi decompose complex carbon compounds and improve the accumulation of organic matter. Some fungi produce hormones and antibiotics which enhance root growth and provide disease suppression. Others physically bind soil particles into aggregates which helps air and water flow as well as the transportation of nutrients to plants.

Worker #3: Protozoa

Protozoa are single-celled microorganisms that are active near the root zone. Protozoa release excess nitrogen and nutrients for plants to use and also help soil particles to bind together to provide pore space for retention and exchange of air and water.

Worker #4: Nematodes

These non-segmented worms mineralise nutrients into plant-available forms and consume disease-causing organisms.

Worker #5: Soil Arthropods

These guys improve the soil factory structure through burrowing. Their fecal pellets help bind soil particles and their waste is rich in plant nutrients.

Worker #6: Earthworms

These guys improve soil stability, porosity, and moisture-holding capacity by burrowing and binding soil. They even help root growth by creating channels lined with nutrients. The burrows of vertical earthworms pipe air deeper into the soil, stimulating microbial nutrient cycling at those deeper levels. During droughts these tunnels allow for deep plant root penetration into subsoil regions of higher moisture content.

How Calcium Helps

Calcium is known as the King of minerals. That's because Ca is the *transportation nutrient* that enhances the uptake of many other nutrients. Some of its functions include:

- Promotes healthy root, stem and leaf growth
- Improves the soil environment for micro-organisms
- Should be between 60 - 70% soil base saturation

Fertiliser effectiveness is based around the calcium content of your soil. If the base saturation calcium is below 60% then nutrient uptake is restricted.

What Magnesium Does

Magnesium is essential for plant growth. It is actively involved in photosynthesis and also plays an important role in plant respiration and energy metabolism.

- Mg is a carrier for Phosphorus so will ensure a steady flow of Phosphorus to the plant.
- Mg increases nitrogen fixation in legumes.
- Mg is an enzyme activator and constituent of many enzymes.
- Mg is responsible for sugar synthesis and starch translocation.
- Mg enables nutrient uptake control.

Magnesium is also necessary in hundreds of animal biochemical pathways, particularly those involved in nerve function. Ruminants also require magnesium for efficient feed conversion and metabolism.

But I already use Calcium and Magnesium!

Some off-the-shelf fertilisers have a Mg/Ca component in them. *Should work, right?* It depends. The Ca and Mg in standard fertilisers are *chemically produced* in laboratories. In artificially hardened forms, these nutrients are far less effective than the organic Ca/Mg that soil biology and plants prefer.

Golden Bay Dolomite is Organic

Dolomite is a **59% calcium 39% magnesium carbonate** occurring as a completely natural rock deposit found in New Zealand only at Mount Burnett, Golden Bay.

Dolomite's magnesium release rate makes it the perfect magnesium controlled release fertiliser. As plant root acid secretions in the soil work on dolomite, its rate of breakdown accelerates in demand to plant requirements, releasing both magnesium and calcium in quantities sufficient to meet requirements, something even a mixture of lime and MgO can't do.

Call us for a FREE soil consultation

Contact Golden Bay Dolomite on 03 5259843 or email sales@goldenbaydolomite.co.nz

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Dolomite
NZ's Finest Magnesium Fertiliser